PROCEEDING OF THE FOURTEENTH MEETING OF COMBINED JOINT AGRICULTURAL RESEARCH COUNCIL OF SAUs AND KAMDHENU UNIVERSITY OF GUJARAT - 2017-18

ORGANIZED BY

JUNAGADH AGRICULTURAL UNIVERSITY
JUNAGADH

(APRIL 03-05, 2018)

Directorate of Research
Junagadh Agricultural University
Junagadh-362001

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JUNAGADH – 362 001

MAY, 2018

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XIV Meeting of Combined Joint AGRESCO of SAUs and Kamdhenu University of Gujarat

Date: April 03-05, 2018 **Organizer: Junagadh Agricultural University**

Parallel Technical Sessions of 14th Combined Joint AGRESCO Sub-committees

Date: 03.04.2018		
Inaugural Session	**09:00 to 11:00 hrs (Place: Auditorium, JAU)**	
Technical Session	**11:30 to 19:00 hrs (Respective Places)**	
Cultural Programme	**19:00 to 20:00 hrs (Auditorium, JAU)**	
Date: 04.04.2018		
Technical Session	**08:30 to 19:30 hrs (Respective Places)**	
Date: 05.04.2018		
Plenary Session	**09:00 to 13:00 hrs**	**Place: Auditorium, JAU**
Valedictory Function	**15:00 to 17:00 hrs**	

Venue for Breakfast, lunch and dinner: Community Hall, JAU, Junagadh

Breakfast	**08:00 to 08:30 hrs**
Lunch	**13:00 to 14:00 hrs**
Dinner	**20:00 to 21:00 hrs**

:: INAUGURAL SESSION ::

Date: 03.04.2018 **Time: 09:00 to 11:00 hrs**

Venue: University Auditorium, Junagadh Agricultural University, Junagadh

Rapporteurs: Dr. I. U. Dhruj, ADR, JAU
Dr. H. R. Patel, ADR, AAU
Dr. K. A. Patel, ADR, NAU
Dr. R. N. Singh, ADR, SDAU

Lighting the lamp	**09.00 to 09:05**	**:**	All Dignitaries
Welcome Address	**09:05 to 09:10**	**:**	Dr. V. P. Chovatia, DR, JAU, Junagadh
Floral Welcome	**09:10 to 09:15**	**:**	
Address by Dignitaries	**09:15 to 10:15**	**:**	GoG Officers Dr. P. H. Vatalia, Hon'ble, VC, KU Prof (Dr.) Ashok A. Patel, Hon'ble,VC, SDAU Dr. C. J. Dangaria, Hon'ble, VC, NAU Dr. N. C. Patel, Hon'ble, VC, AAU Dr. A. R. Pathak, Hon'ble, VC, JAU
Address by Chief Guest	**10:15 to 10:25**	**:**	Principal Secretary (Agri.), GoG
Vote of Thanks	**10:55 to 11:00**	**:**	Dr. I. U. Dhruj, ADR, JAU
Tea Break: 11:00 to 11:30			

Parallel Technical Sessions of XIV Combined Joint AGRESCO Sub-committees

Particulars	AGRSCO Sub-Committee			
	1. Crop Improvement, Plant Physiology & Biotechnology	2. Crop Production /Natural Resource Management	3. Plant Protection/ Crop Protection	4. Horticulture & Agro Forestry
Technical Session-I Presentation of Recommendations 11.30 to Onwards, 03.04.2018				
Chairman	Dr. A. R. Pathak, VC, JAU	Prof. (Dr.) Ashok Patel, VC, SDAU	Dr. A. M. Patel, DR, SDAU	Dr. C. J. Dangaria, VC, NAU
Co-Chairmen	Dr. K. B. Kathiria, DR, AAU Dr. D. B. Patil, DR, KU	Dr. K. P. Patel, Dean, AAU Dr. B. K. Sagarka, Principal, JAU	Dr. I. U. Dhruj, ADR, JAU Dr. K. A. Patel, ADR, NAU	Dr. V. P. Chovatia, DR, JAU Dr. B. N. Patel, Principal, NAU
Rapporteurs	Dr. K. L. Dobaria, RS, JAU Dr. R. M. Chauhan, RS, SDAU Dr. R. R. Acharya, RS, AAU	Dr. R. M. Solanki, AP, JAU Dr. M. V. Patel, Prof., AAU Dr. V. P. Usdadiya, RS, NAU	Dr. P.G. Shah, RA, AAU Dr. L. F. Akbari, Prof., JAU Dr. P. K. Borad, Prof., AAU	Dr. D. K. Varu, AP, JAU Dr. Piyush Varma, Prof., SDAU Dr. Alka Singh, AP, NAU
Statistician	Dr. H. R. Pandya, Dean, NAU	Dr. P. R. Vaishnav, AAU	Dr. M. S. Shitap, AP, JAU	Dr. D. V. Patel, AP, JAU
Presentation	Conveners of the AAU, JAU, NAU and SDAU	Conveners of the AAU, JAU, NAU and SDAU	Conveners of the AAU, JAU, NAU and SDAU	Conveners of the AAU, JAU, NAU and SDAU
Technical Session-II Presentation of New Technical Programmes, 04.04.2018				
Chairman	Dr. A. R. Pathak, VC, JAU	Prof. (Dr.) Ashok Patel, VC, SDAU	Dr. A. M. Patel, DR, SDAU	Dr. C. J. Dangaria, VC, NAU
Co-Chairmen	Dr. K. B. Kathiria, DR, AAU Dr. D. B. Patil, DR, KU	Dr. M. K. Aravadiya, Dean, NAU Dr. B. K. Sagarka, Principal, JAU	Dr. K. G. Patel, Principal, NAU Dr. H. R. Patel, ADR, AAU	Dr. B. N. Patel, Principal, NAU Dr. R. R. Snakhela, RS, SDAU
Rapporteurs	Dr. K. L. Dobaria, RS, JAU Dr. R. M. Chauhan, RS, SDAU Dr. R. R. Acharya, RS, AAU	Dr. K. G. Patel, AP, NAU Dr. D. M. Patel, AP, SDAU Dr. R. K. Mathukia, AP, JAU	Dr. M. F. Acharya, Prof., JAU, Dr. A. G. Desai, Prof., SDAU Dr. H. V. Pandya, AP, NAU	Dr. N. D. Polara, AP, JAU Dr. M. J. Patel, AP, AAU Dr. Manmohan Dobriyal, AP, NAU
Statistician	Dr. H. R. Pandya, Dean, NAU	Dr. P. R. Vaishnav, Prof., AAU	Dr. M. S. Shitap, AP, JAU	Dr. D. V. Patel, AP, JAU
Presentation	Conveners of the AAU, JAU, NAU and SDAU	Conveners of the AAU, JAU, NAU and SDAU	Conveners of the AAU, JAU, NAU and SDAU	Conveners of the AAU, JAU, NAU and SDAU
Venue	**Seminar Hall, Department of Biotechnology**	**Seminar Hall, College of Agriculture**	**Seminar Hall, Department of Entomology**	**Seminar Hall, College of Horticulture**

Parallel Technical Sessions of XIV Combined Joint AGRESCO Sub-committees

Particulars	AGRSCO Sub-Committee			
	5. Agriculture Engineering and AIT / Agril. Engg., Dairy & Food Tech./ Dairy Science and FPT & Bio Energy/ Agril. Engg.	6. Social Science	7. Basic Science & Humanities (Plant Physiology, Bio-chemistry & Biotechnology)	8. Animal Health, Animal Production and Animal Science & Fisheries Science
Technical Session-I Presentation of Recommendations 11.30 to Onwards, 03.04.2018				
Chairman	Dr. N. C. Patel, VC, AAU	Dr. K. A. Thakkar, DEE, SDAU	Dr. S. R. Chaudhari, DR, NAU	Dr. P. H. Vatalia, VC, KU
Co-Chairmen	Dr. D. C. Joshi, Dean, AAU Dr. N. K. Gontia, Dean, JAU	Dr. G. R. Patel, DEE, NAU Dr. H. B. Patel, ADEE, AAU	Dr. B. A. Golakia, Prof., JAU Dr. A. D. Patel, RS, AAU	Dr. A. M. Thakar, Dean, AAU Dr. A. Y. Desai, Dean, JAU
Rapporteurs	Dr. H. D. Rank, Prof., JAU Dr. A. K. Sharma, Prof., AAU Dr. R. S. Parmar, Prof., AAU	Dr. K. P. Thakar, Prof., SDAU Dr. N. B. Jadav, Sr. Sci., JAU	Dr. J. B. Patel, ARS, JAU Dr. R. S. Tomar. AP, JAU Dr. Sanjay Jha, AP, NAU	Dr. J. S. Patel, Prof., JAU Dr. S. V. Shah, RS, AAU Dr. R. V. Borichangar, AP, NAU
Statistician	Dr. N. J. Rankja, AP, JAU	Dr. S. M. Upadhyay, Prof., JAU	Dr. A. P. Prajapati, AP, JAU	Dr. A. D. Kalola, AP, AAU
Presentation	Conveners of the AAU, JAU, NAU and SDAU	Conveners of the AAU, JAU, NAU and SDAU	Conveners of the AAU, JAU, NAU and SDAU	Conveners of the AAU, JAU, NAU, SDAU and KU
Technical Session-II Presentation of New Technical Programmes, 04.04.2018				
Chairman	Dr. N. C. Patel, VC, AAU	Dr. K. A. Thakkar, DEE, SDAU	Dr. S. R. Chaudhari, DR, NAU	Dr. P. H. Vatalia, VC, KU
Co-Chairmen	Dr. P. K. Srivastava, Dean, NAU Dr. D. C. Joshi, Dean, AAU	Dr. M. R. Prajapati, Dean, SDAU Dr. P. R. Kanani, ADEE, JAU	Dr. S. R. Vyas, Dean, SDAU Dr. R. S. Fougat, Head, AAU	Dr. D. V. Joshi, Dean, SDAU Dr. A. M. Thakar, Dean, AAU
Rapporteurs	Prof. D. M. Vyas, Prof., JAU Dr. K. D. Aparnathi, Prof., AAU Dr.V. M. Modi, AP, SDAU	Dr. J. B. Patel, AP, AAU Dr. Swaminathan, AP, JAU	Dr. H. P. Gajera, AP, JAU Dr. S. B. Gondaliya, ARS, SDAU Dr. Divakar Singh, AP, NAU	Dr. H. S. Panchasara, RS, SDAU Dr. P. R. Pandya, RS, AAU Dr. S. I. Yusufzai, AP, JAU
Statistician	Dr. N. J. Rankja, AP, JAU	Dr. S. M. Upadhyay, Prof., JAU	Dr. A. P. Prajapati, AP, JAU	Dr. A. D. Kalola, AP, AAU
Presentation	Conveners of the AAU, JAU, NAU and SDAU	Conveners of the AAU, JAU, NAU and SDAU	Conveners of the AAU, JAU, NAU and SDAU	Conveners of the AAU, JAU, NAU, SDAU and KU
Venue	**Seminar Hall, College of Agril. Engg. & Technology**	**Seminar Hall, Department of Agril. Economics**	**Seminar Hall, Department of Seed Science & Technology**	**Seminar Hall, College of Veterinary Sci. & A. H.**

:: PLENARY SESSION ::

Date: 05.04.2018	**Time: 09:00 to 13:00 hrs.**	**Venue : Auditorium, JAU, Junagadh**
Welcome Address	:	Dr. V. P. Chovatia, DR, JAU
Floral Welcome	:	All Dignitaries
Chairman		Dr. A. R. Pathak, Hon'ble VC, JAU
Co-Chairmen	:	Dr. N. C. Patel, Hon'ble VC, AAU Dr. C. J. Dangaria, Hon'ble VC, NAU Prof (Dr.) Ashok Patel, Hon'ble VC, SDAU Dr. P. H. Vatalia, Hon'ble VC, KU
Rapporteurs	:	Dr. P. Mohnot, ADR, JAU Dr. H. R. Patel, ADR, AAU Dr. K. A. Patel, ADR, NAU Dr. R. N. Singh, ADR, SDAU

Presentation Schedule:

1.	Crop Improvement	Dr. M. A. Vaddoria, JAU
2.	Crop Production	Dr. B. D. Patel, AAU
3.	Plant Protection	Dr. S. P. Saxena, NAU
4.	Horticulture & Agro Forestry	Dr. D. K. Sharma, NAU
5.	Agriculture Engineering, Dairy & Food Technology, AIT, (Dairy Science, FPT & Bio Energy and Agril. Engineering Research-AAU)	Dr. R. F. Suthar, AAU
6.	Social Science	Dr. V. T. Patel, SDAU
7.	Basic Science & Humanities, (Plant Physiology and Bio technology-SDAU)	Dr. Sarvesh Shah, SDAU
8.	Animal Health, Animal Production & Animal Science, Fisheries, (Animal Production-SDAU), (Animal Health-NAU), (Animal Production-AAU)	Dr. K. S. Murthy, JAU
9.	Vote of Thanks	Dr. A. M. Parakhia, DEE & Registrar, JAU, Junagadh

:: Valedictory Function ::

<table>
<tr><td colspan="2">Date: 05.04.2018</td><td>Time: 15:00 to 17:00 hrs.</td><td>Venue : Auditorium, JAU, Junagadh</td></tr>
<tr><td colspan="4">Rapporteurs: Dr. I. U. Dhruj, ADR, JAU
Dr. H. R. Patel, ADR, AAU
Dr. K. A. Patel, ADR, NAU
Dr. R. N. Singh, ADR, SDAU</td></tr>
<tr><td colspan="4">Venue : Auditorium, JAU, Junagadh</td></tr>
<tr><td>Visit to Exhibition</td><td>15:00 to 15:20</td><td colspan="2">All Dignitaries</td></tr>
<tr><td>Lighting the lamp</td><td>15:20 to 15:25</td><td colspan="2">All Dignitaries</td></tr>
<tr><td>Welcome address</td><td>15:25 to 15:30</td><td colspan="2">Dr. V. P. Chovatia, DR, JAU</td></tr>
<tr><td>Floral welcome</td><td>15:30 to 15:40</td><td colspan="2">Dr. A. R. Pathak, Hon'ble VC, JAU
Dr. N. C. Patel, Hon'ble VC, AAU
Dr. C. J. Dangaria, Hon'ble VC, NAU
Prof. (Dr.) Ashok Patel, Hon'ble VC, SDAU
Dr. P. H. Vatalia, Hon'ble VC, KU</td></tr>
<tr><td>Presentation -
University Progress</td><td>15:40 to 16:30</td><td colspan="2">Dr. P. H. Vatalia, Hon'ble VC, KU
Prof (Dr.) Ashok Patel, Hon'ble VC, SDAU
Dr. C. J. Dangaria, Hon'ble VC, NAU
Dr. N. C. Patel, Hon'ble VC, AAU
Dr. A. R. Pathak, Hon'ble VC, JAU</td></tr>
<tr><td>Release of Publication</td><td>16:30 to 16:35</td><td colspan="2">Hon'ble Minister (Agri.)</td></tr>
<tr><td>Presidential Address</td><td>16:35 to 17:05</td><td colspan="2">Hon'ble Minister (Agri.)</td></tr>
<tr><td>Presentation of Momento</td><td>17:05 to 17:10</td><td colspan="2">Dr. A. R. Pathak, Hon'ble VC, JAU</td></tr>
<tr><td>Vote of Thanks</td><td>17:10 to 17:15</td><td colspan="2">Dr. K. B. Kathiria, Director of Research, AAU, Anand</td></tr>
</table>

Proceeding of 14th Combined Joint AGRESCO meeting of SAU's and Kamdhenu University held at Junagadh Agricultural University (JAU), Junagadh during April 3-5, 2018.

INAUGURAL SESSION

Venue: University Auditorium **Date: 03.04.2018**
Time: 09:00 to 11:00

The inaugural session of 14th Combined Joint AGRESCO meeting of SAU's and Kamdhenu University was held at University Auditorium, JAU, Junagadh in presence of Dr. A. R. Pathak, Hon'ble Vice Chancellor, JAU Junagadh as a Chairman; Dr. N. C. Patel, Hon'ble Vice Chancellor, Anand Agricultural University, Anand; Dr. C. J. Dangaria, Hon'ble Vice Chancellor, Navsari Agricultural University, Navsari; Prof. (Dr.) Ashok A. Patel, Hon'ble Vice Chancellor, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar; Dr. P. H. Vataliya, Hon'ble Vice Chancellor, Kamdhenu University, Gandhinagar; Dr. B. M. Modi, Director of Agriculture., Govt. of Gujarat, Gandhinagar; Dr. V. P. Chovatia, Director of Research and Dean PG studies, JAU, Junagadh and Dr. I. U. Dhruj, Associate Director of Research, JAU, Junagadh.

The meeting was commenced with the university song of JAU followed lightning a lamp by the dignitaries.

Dr. V. P. Chovatia, Director of Research and Dean PG studies warmly welcomed the dignitaries on and off the dais. He also briefed the house about the role of the Agricultural Universities in agricultural growth of the state.

Dr. B. M. Modi, Director of Agriculture, Govt. of Gujarat, Gandhinagar appreciated the role of Agricultural Universities in development of the state. He also mentioned that the strategies adopted to manage the pink boll worm in Gujarat state are adopted by other state as model. He stressed to work on organic farming, natural resource management, pest control, micro irrigation as well as priority to research on crops grown in the state according to its coverage. He also mentioned the role of Biotechnology in managing Aflatoxin in groundnut and salinity tolerant rice through transgenic plants. Use of Agricultural Information Technology (AIT) in agriculture sector to be intensified.

Dr. P. H. Vatalia, Hon'ble Vice Chancellor, Kamdhenu University expressed his views on research areas of animal health, production, small animal's problems, role of livestock in GDP of the state, role of vaccination in disease management, fisheries with respect to large coastal region of Gujarat. He also emphasized about the use and role of biotechnology and nanotechnology in improving health as well as production of animals. He informed the house about the publication of 'Kamdhenu Research Journal' by the university and asked to support the journal publishing good research articles.

Prof. (Dr.) Ashok Patel, Hon'ble Vice Chancellor, SDAU, Sardarkrushinagar, in his speech focused on the faculties in the agricultural universities of the state and output given by the faculties. He was very much worried about the low inputs to research in agriculture either in terms of man power or recurring and nonrecurring expenditures. He mentioned to rethink about the charges fixed for seed, testing of pesticides and so on. He insisted on compilation of results on organic farming.

Dr. C. J. Dangaria, Hon’ble Vice Chancellor, Navsari Agricultural University, Navsari endorsed the views of Prof. (Dr.) Ashok Patel, Hon’ble Vice Chancellor of SDAU. He appreciated the efforts made by the scientists to come out with good numbers of recommendations and new technical programmes. He mentioned to solve the problems of pesticides registration with Central Insecticides Board (CIB) as a results number of effective compounds are not in the hand of farmers.

Dr. N. C. Patel, Hon’ble Vice Chancellor, Anand Agricultural University, Anand in his address briefed the house about the recommendations and new technical programmes to be presented by AAU, Anand. He expressed his views about the protoplast fusion and told the scientists that the doors of AAU’s are open for use and benefits of farmers especially with respect to NABL accredited labs like Pesticides Residues and Food Testing Laboratories. He also mentioned about the facilities of radiation at the university. He highlighted the points pertaining to CIB registration, micro irrigation, value addition, as well as capacity building of students.

Dr. A. R. Pathak, Hon’ble Vice Chancellor of Junagadh Agricultural University, Junagadh congratulated the scientists for the recommendations and new technical programmes. He also endorsed the view of his earlier speakers. He discussed about the food and nutritional security, sustainable development growth (SDG) of agriculture sector. He mentioned that monetary return realized by research is more than the inputs given to it. He also pinpointed various challenge to be faced by us in future with respect to natural resource management, climate change, soil fertility, speed breeding, precision farming, water use efficiency, value additions, farm mechanization, organic farming etc.

At the end, Dr. I. U. Dhruj, Associate Director of Research, JAU, Junagadh proposed vote of thanks.

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14.1. CROP IMPROVEMENT

Chairman	Dr. A. R. Pathak, Hon'ble Vice Chancellor, JAU, Junagadh
Co-Chairmen	1. Dr. K. B. Kathiria, Director of Research, AAU, Anand 2. Dr. D. B. Patil, Director of Research, KU, Gandhinagar
Rapporteurs	1. Dr. K. L. Dobariya, Research Scientist (Groundnut), JAU, Junagadh 2. Dr. R. M. Chauhan, Research Scientist, Dept. of GPB, SDAU, SKNagar 3. Dr. R. R. Acharya, Research Scientist (Vegetable), AAU, Anand

Presentation of recommendations and technical programmes by Conveners of SAUs

SN	Name	Designation & University
1	Dr. Sasidharan N.	Prof. & Head, Dept. of Genetics & Plant Br., BACA, AAU, Anand
2	Dr. M. A. Vaddoria	Prof. & Head, Dept. of Genetics & Plant Br., CoA, JAU, Junagadh
3	Dr. P. B. Patel	Assoc. Res. Scientist, Main Rice Research Station, NAU, Navsari
4	Dr. S .D. Solanki	Assoc. Prof., Dept. of Genetics & Plant Br., CPCA,SDAU, SKNagar

Summary

Name of University	No. of Recommendations				New Technical Programmes	
	Farming Community		Scientific Community			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU, Anand	05+01	05*+01	02	02	21	21
JAU, Junagadh	07	07*	00	00	00	00
NAU, Navsari	12	11*	00	00	01	01
SDAU, SKNagar	01	01*	01	01	09	09
Total	**25+01**	**24*+01**	**03**	**03**	**31**	**31**

***No. of varieties released**

14.1.1 RECOMMENDATION/ RELEASE PROPOSAL OF VARIETIES/ HYBRIDS FOR FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

14.1.1.1 Summer bunch groundnut: Gujarat Groundnut 34 (GG 34).

The farmers of Gujarat growing summer groundnut are advised to grow groundnut variety "Gujarat Groundnut 34" (GG 34) which has recorded 3715 kg/ha pod yield. This was 22.40, 21.69, 12.14 and 5.62 % higher in pod yield than check varieties GG 6, GJG 31, TG 26 and TG 37A, respectively. This variety gave higher kernel yield (2525 kg/ha), oil yield (1334 kg/ha) and oil content (52.8 %) than check varieties. It showed lower infestation of thrips and jassids as compared to all the checks. In this variety tikka and rust diseases did not appear during summer season.

The variety is recommended for release in summer groundnut growing areas of Gujarat state.

ગુજરાત રાજયમાં ઉનાળુ ઋતુમાં ઉભડી મગફળી ઉગાડતા ખેડૂતોને ગુજરાત મગફળી ૩૪ (જીજી ૩૪) જાતનું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતમાં ડોડવાનુ સરેરાશ ઉત્પાદન પ્રતિ હેકટરે ૩૭૧૫ કિ.ગ્રા. મળેલ છે, જે સ્થાનિક જાત જીજી ૬, જીજેજી ૩૧, ટીજી ૨૬ અને ટીજી ૩૭એ કરતા અનુક્રમે ૨૨.૪, ૨૧.૬૯, ૧૨.૧૪ અને ૫.૬૨ ટકા વધારે માલુમ પડેલ છે. આ જાત અંકુશ જાતો કરતા દાણાનું ઉત્પાદન (૨૫૨૫ કિ.ગ્રા./હે.), તેલ ઉત્પાદન (૧૩૩૪ કિ.ગ્રા./હે.) અને તેલનુ પ્રમાણ (૫૨.૮ %) વધારે ધરાવે છે. આ જાતમા થ્રિપ્સ અને તડતડીયાનો ઉપદ્રવ અંકુશ જાતો કરતા ઓછો જોવા મળેલ છે. ઉનાળુ ઋતુમાં આ જાતમાં ટીકકા અને ગેરૂનો રોગ જોવા મળેલ નથી.

આ મગફળીની જાત ગુજરાત રાજયમાં ઉનાળુ ઋતુ દરમ્યાન વાવેતર માટે ભલામણ કરવામા આવે છે.

The variety is approved for the recommendation with the following suggestions:

1. FLDs to be conducted in North Gujarat.

	2. Delete Sansoli data of 2014 from the calculation of mean yield. ***[Action:** Research Scientist, Regional Research Station, AAU, Anand**]***
14.1.1.2	**Tomato: Gujarat Anand Cherry Tomato 1 (GACT 1)**
	The proposed Cherry Tomato variety “Gujarat Anand Cherry Tomato 1”(GACT 1) gave 114.7 q/ha fruit yield, which is 52.6 % higher than the local check ACTL 10-06 (75.2 q/ha) at Anand. The genotype has indeterminate growth habit with dark intensity of green colour and less serrated leaves. The fruits of proposed genotype are red in colour, ovoid in shape, less number of the seeds with good pericarp thickness, firmness and shelf life. The proposed genotype showed less incidence of ToLCD, leaf minor damage and fruit borer as compared to the local check. The fruits of this genotype contain higher total soluble solid, lycopene and total soluble sugar as compared to the local check. The proposed Cherry Tomato variety, GACT 1 is recommended for release in middle Gujarat for late *kharif-rabi* season under irrigated condition.
	ચેરી ટામેટાની ‘‘ગુજરાત આણંદ ચેરી ટોમેટો–૧’’જાતનું સરેરાશ ઉત્પાદન ૧૧૪.૭ કિવ./હે. જેટલું આવે છે, જે અંકુશ જાત એસીટીએલ ૧૦– ૦૬ (૭.૫ર કિવ./હે.) કરતાં ૫ર.૬ ટકા વધારે છે. અનિયંત્રિત વૃધ્ધિવાળી આ જાતના પાન ઘાટા લીલા રંગના હોય છે તથા કિનારી પર ઓછા ખાંચા ધરાવે છે. આ જાતના ફળો આકર્ષક લાલ રંગના, લંબગોળ, ઓછી બીજની સંખ્યાવાળા અને વધારે ટકાઉ શકિત ધરાવતા છે. આ જાતમાં કોકડવાનો રોગ તેમજ પાનકોરીયાનો અને ફળ કોરી ખાનાર ઈયળનો ઉપદ્રવ પ્રમાણમા ઓછો જોવા મળે છે. આ જાતના ટામેટામા કુલ દ્રાવ્ય ઘન પદાર્થ, લાઈકોપીન અને કુલ દ્રાવ્ય શર્કરાનુ પ્રમાણ અંકુશ જાત કરતા વધારે જોવા મળેલ છે. આ જાતને મધ્ય ગુજરાતમાં પાછોતરા ચોમાસા–શિયાળામાં વાવેતર માટે ભલામણ કરવામાં આવે છે.
	The variety is approved for the recommendation. ***[Action:** Research Scientist, Main Vegetable Research Station, AAU, Anand**]***
14.1.1.3	**Maize hybrid: Gujarat Anand Yellow Maize Hybrid 3 (GAYMH 3)**
	The proposed maize single cross hybrid “Gujarat Anand Yellow Maize Hybrid 3” (GAYMH 3) recorded 6656 kg/ha grain yield in *rabi* season. It showed 35.6, 34.9 and 29.2 % yield superiority over checks, GM 2, GAYMH-1 and GAWMH 2, respectively. It has medium maturity, orange flint grains, high test weight (350 g) and high yield. From the quality point of view, this hybrid contains 66.32 % starch, 13.53 % protein, 4.42 % oil, 0.54 % tryptophan in protein and 2.64 % lysine in protein. The hybrid is moderately resistant to *Turcicum* leaf blight, sorghum downy mildew and resistant again common rust. It is highly resistant against stem borer under field condition. The proposed maize single cross hybrid GAYMH 3 is recommended for release in middle Gujarat for *rabi* season.
	મકાઈની સંકર જાત “ગુજરાત આણંદ પીળી મકાઇ હાઈબ્રીડ ૩” શિયાળુ વાવેતરમાં સરેરાશ ૬૬૫૬ કિગ્રા/હેકટર દાણાનુ ઉત્પાદન આપે છે. જે અંકુશ જાત ગુજરાત મકાઇ-૨, ગુજરાત આણંદ પીળી સંકર મકાઇ-૧ અને ગુજરાત આણંદ સફેદ સંકર મકાઇ-૨ કરતાં અનુક્રમે ૩૫.૬, ૩૪.૯ અને ૨૯.૨ % વધારે ઉત્પાદન આપે છે. આ જાત મધ્યમ પાકતી ,નારંગી રંગના મોટા દાણાવાળી તથા ૩૫૦ ગ્રામ ૧૦૦૦ દાણાનુ વજન ધરાવે છે. આ સંકર જાતમાં ૬૬.૩૨ % સ્ટાર્ચ, ૧૩.૫૩ % પ્રોટીન, ૪.૪૨ % તેલ, ૦.૫૪ પ્રોટીનમા રહેલ ટ્રીપ્ટોફેન અને ૨.૬૪ % પ્રોટીનમા રહેલ લાયસીન ધરાવે છે. આ સંકર જાત પાનના સુકારા તેમજ તળછારા રોગ સામે મધ્યમ પ્રતિકારક શક્તિ અને સામાન્ય ગેરુ રોગ સામે પ્રતિકારક શક્તિ ધરાવે છે જ્યારે ગાભમારાની ઈયળ સામે વધુ પ્રતિકારક શક્તિ ધરાવે છે. મધ્ય ગુજરાત માટે આ સંકર જાતની રવિ ઋતુ દરમ્યાન વાવેતર કરવા માટે ભલામણ કરવામા આવે છે.
	The variety is approved for the recommendation with the following suggestion: Point No. 6 and 7a of proposal should be completed. ***[Action:** Associate Research Scientist, Main Maize Research Station, AAU, Godhra**]***
14.1.1.4	**Castor: Gujarat Anand Castor 11 (GAC 11)**
	The proposed castor variety “Gujarat Anand Castor 11” (GAC 11) has recorded 3230 kg/ha seed yield. It exhibited 26.3 % yield advantage over check variety GC 3 under irrigated condition in Middle Gujarat Agro-climatic Zone. Under rainfed conditions of middle Gujarat, it also recorded seed yield of 2366 kg/ha, which is 35.6 % higher than check GC 3. It is early maturing than all the check hybrids. This variety

	found wilt resistant. The infestation of thrips, leaf hopper and whitefly were comparable in the proposed variety under field conditions as compared to checks. The proposed castor variety GAC 11 is recommended for release in castor growing areas of middle Gujarat under irrigated and rainfed conditions.
	મધ્ય ગુજરાત ખેત આબોહવાકીય પરિસ્થિતિ હેઠળ સૂચિત ગુજરાત આણંદ દિવેલા ૧૧ સરેરાશ ૩૨૩૦ કીગ્રા/હેક્ટર ઉત્પાદન આપે છે, જે વાવેતર માટે ભલામણ કરેલ સ્થાનિક જાત જી.સી. ૩ કરતા ૨૬.૩ ટકા વધુ છે. જ્યારે બિનપિયત પરિસ્થિતિ હેઠળ ગુજરાત આણંદ દિવેલા ૧૧ સરેરાશ ૨૩૬૬ કીગ્રા/હેક્ટર ઉત્પાદન આપે છે જે સ્થાનિક જાત જી.સી. ૩ કરતા ૩૫.૬ ટકા વધારે છે. આ સ્થાનિક જાત ચકાસણી હેઠળની બધી જાતો કરતા વહેલી પાકે છે અને સુકારાના રોગ સામે પ્રતિકારક શક્તિ ધરાવે છે. થ્રિપ્સ, તડતડીયા અને સફેદ માખીનો ઉપદ્રવ ભલામણ કરેલ દિવેલાની જાતોની સરખામણીમાં સમકક્ષ જોવા મળેલ છે. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર માટે દિવેલાની નવી જાત ગુજરાત આણંદ દિવેલા ૧૧ (જી.એ.સી. ૧૧) પિયત તેમજ બિનપિયત પરિસ્થિતિ માટે ભલામણ કરવામાં આવે છે.
	The variety is approved for the recommendation with the following suggestions: 1. Point No. 7a of proposal should be completed. 2. Remove data of check entries GCH-4 and GJCH-9 from Table 1. ***[Action:** Associate Research Scientist, Agricultural Research Station, AAU, Sansoli]*
14.1.1.5	**Forage Bajra: Gujarat Anand Forage Bajra 4 (GAFB 4)**
	The proposed "Gujarat Anand Forage Bajra 4" (GAFB 4) recorded green forage yield of 580.8 q/ha, which is 17.8 and 13.2 % higher over the checks GFB 1 (LC) and Giant Bajra (NC), respectively. GAFB 4 also recorded 120.3 q/ha dry fodder yield which is 20.4 and 13.9% higher than the check varieties GFB 1 (LC) and Giant Bajra (NC), respectively. The crude protein yield of the proposed variety GAFB 4 is 9.66 q/ha which is 31.3 and 33.4 % higher than the check varieties GFB 1 (LC) and Giant Bajra (NC), respectively. On quality point of view, the proposed variety contains 20.9% dry matter, 7.7 % crude protein, 80.5 % neutral detergent fiber, 30.8 % crude fiber and 42.3 % acid detergent fiber content. It has higher plant height (240.1 cm), more number of tillers per plant (3.7), higher number of leaves per plant (29.5) and high leaf stem ratio (0.9) than checks. This proposed variety has single cut nature, light green foliage and thin stem. The proposed variety Gujarat Anand Forage Bajra 4 (GAFB 4) is recommended for release in forage bajra growing areas of the middle Gujarat during *kharif* season.
	ઘાસચારા બાજરીની જાત ગુજરાત આણંદ ઘાસચારા બાજરી ૪ (જીએએફબી ૪)૫૮૦.૮ કિવ/.હે . લીલાચારાનું ઉત્પાદન આપે છે જે જીએફબી ૧ (લોકલ અંકુશ જાત) અને જાયન્ટ બાજરા (રાષ્ટ્રીય અંકુશ જાત)કરતાં અનુક્રમે ૧૭.૮ અને ૧૩.૨ % વધારે છે. તદ્ઉપરાંત જીએએફબી ૪ નું સૂકાચારાનું સરેરાશ ઉત્પાદન ૧૨૦.૩ કિવ/.હે . છે, જે જીએફબી ૧ (લોકલ અંકુશ જાત) અને જાયન્ટ બાજરા (રાષ્ટ્રીય અંકુશ જાત) કરતાં અનુક્રમે ૨૦.૪ અને ૧૩.૯ % વધારે છે. આ જાતમાં ક્રુડ પ્રોટીનનું સરેરાશ ઉત્પાદન ૯.૬૬ કિવ/.હે .છે, જે જીએફબી ૧ (લોકલ અંકુશ જાત) અને જાયન્ટ બાજરા (રાષ્ટ્રીય અંકુશ જાત) કરતાં અનુક્રમે ૩૧.૩ અને ૩૩.૪ % વધારે છે.ગુણવત્તાની દ્રષ્ટિએ આ જાત શુષ્ક પદાર્થ ૨૦.૯ %, ક્રુડ પ્રોટીન ૭.૭ %, ન્યુટ્રલ ડીટરજન્ટ ફાઈબર ૮૦.૫ %, ક્રુડ ફાઈબર ૩૦.૮ % અને એસિડ ડીટરજન્ટ ફાઈબર ૪૨.૩ % ધરાવે છે. આ જાતમાં છોડની ઉંચાઇ (૨૪૦.૧ સે.મી), ફુટની સંખ્યા (૩.૭),પાનની સંખ્યા (૨૯.૫) પ્રતિ છોડ અને પાનઃથડનો ગુણોત્તર (૦.૯) છે, જે અંકુશ જાતો કરતાં વધારે છે. આ જાત એક કાપણીની પ્રકૃતિ,આછા લીલા રંગના પર્ણ સમુહ અને પાતળુ થડ ધરાવે છે . મધ્ય ગુજરાતના વિસ્તારમાં ખરીફ ઋતુ દરમ્યાન ઘાસચારા બાજરીનું વાવેતર કરતા વિસ્તાર માટે આ જાતની ભલામણ કરવામાં આવે છે.
	The variety is approved for the recommendation with the following suggestion: Give frequency in top non-significant group for checks also. ***[Action:** Research Scientist, Main Forage Research Station, AAU, Anand]*
14.1.1.6	**Effect of seed priming treatment in chickpea (*Cicer arietinum* L.)**
	The farmers cultivating chickpea varieties GG-1 and GJG-3 are advised for priming of seeds with KNO_3 100 ppm solution (100 mg in 1000 ml water) for eight

	hours, followed by shade drying before sowing for maximum germination per cent and seedling vigour.
	ચણાની ખેતી કરતા ખેડૂતો માટે ચણાની જાત જીજી-૧ અને જીજેજી-૩ના બીજમાં અંકુરણ વધારવા તથા છોડના તંદુરસ્ત વિકાસ માટે બીજ માવજત તરીકે બીજને પોટેશિયમ નાઈટ્રેટ KNO_3 ૧૦૦ પી.પી.એમ (૧૦૦ મિલી ગ્રામ /૧લિ) દ્રાવણમાં વાવણી પહેલા ૮ કલાક પલાળી છાંયડામાં સુકવીને વાવેતર કરવાની ભલામણ કરવામાં આવે છે .
	The Recommendation is approved for farming community **[Action:** *Prof. & Head, Dept. of Seed Science & Technology, BACA, AAU, Anand***]**

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14.1.1.7	**Groundnut: Gujarat Groundnut-HPS-2 (GG HPS-2)** Farmers of Gujarat state growing groundnut during *kharif* season are advised to grow large seeded confectionery type groundnut variety Gujarat Groundnut HPS 2 (GG HPS 2). This variety recorded pod yield of 2835 kg/ha, which is 13.2 and 14.4 % higher over the check varieties; GJG HPS 1 (2505 kg/ha) and ICGV 86564 (2478 kg/ha), respectively. This variety possessed large seed size than the check varieties. It is more resistant against tikka and rust diseases as compared to the check varieties.
	ગુજરાત રાજયમાં ચોમાસુ ઋતુમાં મગફળી ઉગાડતા ખેડૂતોને મોટા દાણાવાળી કન્ફેકશનરી પ્રકારની જાત ગુજરાત મગફળી એચપીએસ ૨ (જીજી એચપીએસ ૨) નું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતના ડોડવાનું સરેરાશ ઉત્પાદન પ્રતિ હેકટરે ૨૮૩૫ કિ.ગ્રા. મળેલ છે, જે નિયંત્રિત જાત જીજેજી એચપીએસ ૧(૨૫૦૫ કિ.ગ્રા./હે.) અને આઈસીજીવી ૮૬૫૬૪ (૨૪૭૮ કિ.ગ્રા./હે.) કરતા અનુક્રમે ૧૩.૨ અને ૧૪.૪ ટકા વધારે માલુમ પડેલ છે. નિયંત્રિત જાતોની સરખામણીએ આ જાત મોટા કદના દાણા ધરાવે છે. પાનના ટપકા અને ગેરુના રોગો સામે નિયંત્રીત જાતો કરતા આ જાત પ્રમાણમાં વધારે રોગ પ્રતિકારક શકિત ધરાવે છે.
	The variety is approved for the recommendation. **[Action:** *Res. Scientist (Groundnut), Main Oilseed Res. Station, JAU, Junagadh***]**
14.1.1.8	**Cotton: Gujarat Junagadh Cotton 102 (GJ.Cot 102)** The farmers of Gujarat state growing Non Bt cotton (*Gossypium hirsutum* L.) under irrigated condition are advised to grow variety Gujarat Junagadh Cotton-102 (GJ.Cot 102). This variety has recorded a seed cotton yield of 2215 kg/ha, which is 15.9, 24.9, 20.1, 13.2 and 51.8 % higher than the check varieties, G.Cot-10, G.Cot-18, G.Cot 20, GN.Cot 22 and CNHO 12 as a zonal check, respectively. The lint yield in GJ.Cot-102 was 769 kg/ha, which is 12.7, 30.8, 20.3, 13.6 and 49.1 % higher than check varieties G.Cot 10, G.Cot 18, G.Cot 20, GN.Cot 22 and CNHO 12, respectively. It has 35.1 per cent ginning outturn and 18.32 % oil content. This variety is medium late in maturity.
	ગુજરાત રાજયના પિયત વિસ્તારમાં નોન બીટી કપાસ ઉગાડતા ખેડૂતોને હીરસુતમ કપાસની જાત ગુજરાત જૂનાગઢ કપાસ ૧૦૨ (જીજે.કોટ ૧૦૨) નું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતે કપાસનું ઉત્પાદન ૨૨૧૫ કિ.ગ્રા./હે. આપેલ છે, જે નિયંત્રિત જાતો જેવી કે જી. કોટ ૧૦, જી. કોટ ૧૮, જી. કોટ ૨૦, જીએન. કોટ ૨૨ અને ઝોનલ નિયંત્રિત જાત સીએનએચઓ ૧૨ કરતા અનુક્રમે ૧૫.૯, ૨૪.૯, ૨૦.૧, ૧૩.૨ અને ૫૧.૮ ટકા કપાસનું વધુ ઉત્પાદન આપેલ છે. જીજે.કોટ ૧૦૨ નું રૂનું ઉત્પાદન ૭૬૯ કિ.ગ્રા./હે. મળેલ છે, જે નિયંત્રિત જાતો જેવી કે જી. કોટ ૧૦, જી. કોટ ૧૮, જી. કોટ ૨૦, જીએન. કોટ ૨૨ અને સીએનએચઓ ૧૨ કરતા અનુક્રમે ૧૨.૭, ૩૦.૮, ૨૦.૩, ૧૩.૬ અને ૪૯.૧ ટકા રૂનું વધુ ઉત્પાદન આપેલ છે. આ જાત ૩૫.૧ ટકા રૂ અને ૧૮.૩૨ ટકા તેલ ધરાવે છે. આ જાત મધ્યમ મોડી પાકતી જાત છે.
	The variety is approved for the endorsement with the following suggestion: Modify the title of Table 6A and 6B. **[*Action:*** *Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh]*
14.1.1.9	**Cotton: Gujarat Cotton Hybrid 22 (G.Cot.Hy 22)** The farmers of Gujarat state growing Non Bt cotton (*Gossypium hirsutum* L.) under irrigated condition are advised to grow hybrid variety Gujarat Cotton Hybrid-22 (G.Cot.Hy 22). The hybrid has recorded 2865 kg/ha seed cotton yield which is 20.4, 48.7, 36.7 and 45.9 % higher than the checks, G.Cot.Hy 10, G.Cot.Hy 12, GN.Cot.Hy 14 and Ankur 651, respectively. The lint yield in G.Cot.Hy22 is 1010 kg/ha, which is 26.0, 55.0, 42.2 and 37.3 % higher than hybrid checks, respectively. It

	has 34.7 % ginning outturn and 18.37 % oil content. This hybrid is medium late in maturity. ગુજરાત રાજયના પિયત વિસ્તારમાં નોન બીટી કપાસ ઉગાડતા ખેડૂતોને હીરસુતમ કપાસની સંકર જાત ગુજરાત સંકર કપાસ ૨૨ (જી.કોટ.હાઈબ્રીડ ૨૨) નું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતે કપાસનું ઉત્પાદન ૨૮૬૫ કિ.ગ્રા./હે. આપેલ છે, જે સંકર નિયંત્રિત જાતો જેવી કે જી. કોટ. હાઈબ્રીડ ૧૦, જી. કોટ. હાઈબ્રીડ ૧૨, જીએન. કોટ. હાઈબ્રીડ ૧૪ અને અંકુર ૬૫૧ કરતા અનુક્રમે ૨૦.૪, ૪૮.૭, ૩૬.૭ અને ૪૫.૯ % કપાસનું વધુ ઉત્પાદન આપેલ છે. જી.કોટ.હાઈબ્રીડ ૨૨ નું રૂનું ઉત્પાદન ૧૦૧૦ કિ.ગ્રા./હે. મળેલ છે, જે નિયંત્રિત જાતો કરતા અનુક્રમે ૨૬.૦, ૫૫.૦, ૪૨.૨ અને ૩૭.૩ % વધુ રૂનું ઉત્પાદન આપેલ છે. આ જાત ૩૪.૭ % રૂ અને ૧૮.૩૭ % તેલ ધરાવે છે. આ જાત મધ્યમ મોડી પાકતી જાત છે. **The variety is approved for the recommendation with the following suggestions:** 1. Modify the title of Table 6A and 6B. 2. Give range for insect-pest observations in Table 5. ***[Action:** Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh**]***
14.1.1.10	**Brinjal: Gujarat Round Brinjal 5 (GRB 5)** The farmers of Gujarat growing brinjal crop during late *kharif-rabi* season are advised to grow brinjal variety Gujarat Round Brinjal 5 (GRB 5). The variety has recorded 395.04 q/ha mean fruit yield, which was 10.12 and 24.38 % higher over check varieties; GAOB-2 and GJB-3, respectively. The fruits of GRB 5 are medium in size with medium round shape and light green in colour with purple shadow strip and good shining. The proposed genotype was found superior against insect-pests and disease resistance. ગુજરાત રાજયમાં પાછોતરા ખરીફ થી રવિ ઋતુમાં રીંગણનો પાક ઉગાડતા ખેડૂતોને રીંગણની ગુજરાત ગોળ રીંગણ ૫ (જીઆરબી ૫) જાતનું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતના રીંગણનું ઉત્પાદન ૩૯૫.૦૪ કવીન્ટલ/હેકટર મળેલ છે, જે નિયંત્રિત જાત ગુજરાત આણંદ લંબગોળ રીંગણ ૨ તથા ગુજરાત જૂનાગઢ રીંગણ ૩ કરતા અનુક્રમે ૧૦.૧૨ તથા ૨૪.૩૮ % વધારે માલુમ પડેલ છે. આ જાતના રીંગણ મધ્યમ કદના, મધ્યમ ગોળ તથા આછા લીલા રંગના જાંબલી ઝાંય વાળા સારા ચળકાટવાળા છે. આ જાત રોગ–જીવાત સામે સારી પ્રતિકારક માલૂમ પડેલ છે. **The variety is approved for the recommendation with the following suggestion:** Give range for disease and pest data in Table 6 & 7. ***[Action:** Research Scientist (G & O), Vegetable Research Station, JAU, Junagadh**]***
14.1.1.11	**Tomato: Gujarat Tomato 6 (GT 6)** The farmers of Gujarat growing tomato crop during late *kharif-rabi* seasons are advised to grow tomato variety Gujarat Tomato 6 (GT 6). The variety has recorded 316.05 q/ha fruit yield which is higher than Anand Tomato 3 (240.84 q/ha), Junagadh Tomato 3 (246.94 q/ha) and National check DVRT 2 (248.26 q/ha), which is 31.23, 27.99 and 27.31 % higher over checks, respectively. The fruits of GT 6 are medium in size, flat round in shape with attractive red color and 3 to 4 locules with high T.S.S. It was found superior against leaf curl and fruit borer to all the checks. ગુજરાત રાજયમાં પાછોતરા ચોમાસા તથા રવિ ઋતુમાં ટમેટાનો પાક ઉગાડતા ખેડૂતોને ટમેટાની ગુજરાત ટમેટા ૬ (જીટી ૬) જાત વાવેતર માટે ભલામણ કરવામાં આવે છે. આ જાતના ટમેટાનું ઉત્પાદન ૩૧૬.૦૫ કિવ./હે. મળેલ છે, જે નિયંત્રિત જાતો આણંદ ટમેટા ૩(૨૪૦.૮૪ કિવ./હે.), જૂનાગઢ ટમેટા ૩ (૨૪૬.૯૪ કિવ./હે.) તથા ડીવીઆરટી ૨ (૨૪૮.૨૬ કિવ./હે.) કરતા અનુક્રમે ૩૧.૨૩, ૨૭.૯૯ તથા ૨૭.૩૧ ટકા વધારે માલુમ પડેલ છે. આ જાતના ટમેટાના ફળો મધ્યમ કદના, ચપટા ગોળાકાર અને લાલ રંગના, ફળો ૩ થી ૪ ખાનાવાળા તથા ફળમાં કુલ દ્રાવ્ય ઘન પદાર્થોનું પ્રમાણ વધારે છે. આ જાત પાનનો કોકડવા તથા ફળ કોરી ખાનારી ઈયળમાં નિયંત્રિત જાતો કરતા સારી પ્રતિકારક માલુમ પડેલ છે. **The variety is approved for the recommendation with the following suggestions:** 1. Give range for disease and pest data in Table 6 & 7. 2. In Table 6, replace "leaf damage" with "leaf miner damage" and "fruit borer" by "fruit borer damage" in Table 7. ***[Action:** Research Scientist (G & O), Vegetable Research Station, JAU, Junagadh**]***
14.1.1.12	**Okra: Gujarat Okra 6 (GO 6)** The farmers of Gujarat State growing okra crop during *kharif* season are advised to grow okra variety Gujarat Junagadh Okra 6 (GJO 6). This variety recorded a mean fruit yield of 125.77 q/ha, which was 13.36, 21.89 and 15.46 per cent higher

	over check varieties; GJO 3 (110.95 q/ha), GAO 5 (103.18 q/ha) and Pusa Sawani (108.93 q/ha). The fruits of this variety are smooth, tender, dark green in colour and attractive fruits with green base. The YVMV incidence was found less in proposed variety as compared to all the check varieties at Junagadh and GJO-3 and Pusa Sawani at Anand. Looking to the pest incidence the proposed entry was found superior against fruit borer, jassids and white fly to all the checks at Junagadh, while at Anand, the proposed entry was found superior against fruit borer to all the checks, whereas for jassids and white fly, it found comparable to all the check varieties.
	ગુજરાતમાં ચોમાસુ ૠતુમાં ભીંડાનો પાક ઉગાડતા ખેડૂતોને ભીંડાની ગુજરાત જૂનાગઢ ભીંડા૬ (જીજેઓ ૬) જાતનું વાવેતર કરવા ભલામણ કરવામાં આવે છે. આ જાતના ભીંડાનું સરેરાશ ઉત્પાદન ૧૨૫.૭૭ કિવન્ટલ/હેકટર મળેલ છે. જે નિયંત્રિત જાતો ગુજરાત જૂનાગઢ ભીંડા ૩ (૧૧૦.૯૫ કિવન્ટલ/હે.), ગુજરાત આંણદ ભીંડા ૫ (૧૦૩.૧૮ કિવન્ટલ/હે.) અને પુસા સાવની (૧૦૮.૯૩ કિવન્ટલ/હે.) કરતા અનુક્રમે ૧૩.૩૬, ૨૧.૮૯ અને ૧૫.૪૬ ટકા વધારે માલૂમ પડેલ છે. આ જાતના ભીંડાની શીંગો લીસી, કુણી, ઘેરા લીલા રંગની, આકર્ષક અને આકર્ષક અને લીલા રંગની બેઠક વાળી થાય છે. જૂનાગઢ કેન્દ્ર ખાતે આ જાતમાં બધી જ નિયંત્રિત જાતો કરતા પંચરંગીયાનો રોગ ઓછો જોવા મળે છે, જયારે આણંદ ખાતે ગુજરાત જૂનાગઢ ભીંડા ૩ અને પુસા સાવની કરતા ઓછો જોવા મળે છે. આ જાત જીવાતની દ્રષ્ટીએ જોતા, શીંગો કોરી ખાનાર ઈયળ, તડતડીયા અને સફેદ માખીના ઉપદ્રવ સામે જૂનાગઢ ખાતે બધી નિયંત્રિત જાતો કરતા સારી માલુમ પડેલ છે, જયારે આણંદ કેન્દ્ર ખાતે શીંગો કોરી ખાનાર ઈયળના નુકસાન સામે સારી માલુમ પડેલ છે, જયારે તડતડીયા તથા સફેદ માખી સામે સમાન જોવા મળેલ છે.
	The variety is approved for the recommendation with the following suggestion: Give range for disease and pest data in Table 6 & 7. ***[Action:** Research Scientist (G & O), Vegetable Research Station, JAU, Junagadh**]***
14.1.1.13	**Sesame: Gujarat Til 6 (GT 6)** The farmers of Gujarat growing sesame in *kharif* rainfed condition are advised to grow sesame variety Gujarat Til 6 (GT 6). The variety recorded the seed yield of 1010 kg/ha which is 16.62 % higher over the check variety G.Til 4 (866 kg/ha). It contains 49.68 % oil and yielded 502 kg/ha oil which is 17.60 % higher than G.Til 4 (427 kg/ha). Proposed variety possessed white and bold seeds.
	ગુજરાત રાજયના ચોમાસુ ૠતુમાં તલ ઉગાડતા ખેડૂતોને તલની ગુજરાત તલ ૬ (જીટી ૬) જાતનું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ જાતનું સરેરાશ ઉત્પાદન ૧૦૧૦ કિ.ગ્રા./હે. મળેલ છે, જે નિયંત્રિત જાત ગુ. તલ ૪ (૮૬૬ કિ.ગ્રા./હે.) કરતા ૧૬.૬૨ % વધારે માલુમ પડેલ છે. આ જાતમાં તેલનું પ્રમાણ ૪૯.૬૮ % છે અને ૫૦૨ કિ.ગ્રા./હે. તેલનુ ઉત્પાદન મળેલ છે જે ગુ. તલ ૪ (૪૨૭ કિ.ગ્રા./હે.) કરતા ૧૭.૬૦ % વધારે છે. આ જાતના દાણા સફેદ રંગના અને મોટા છે.
	The variety is approved for the recommendation with the following suggestions: 1. Give range for disease and pest data in Table 6. 2. Remove negative per cent increase over checks from Table 1 and 2. ***[Action:** Research Scientist (Pl. Br.), Agricultural Research Station, JAU, Amreli**]***

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14.1.1.14	**Rice : NVSR-6121 (GR-15)**
	The biofortified rice culture, NVSR-6121 (5540 kg/ha) performed very well in Gujarat state and it exhibited overall 10.6, 19.9 and 16.1 % grain yield superiority with easy threshability over the checks Dandi, NAUR-1 and GNR-3, respectively. It has long bold grain, long panicle, more productive tillers and more number of grains per panicle. It contains zinc in grains (21.58 ppm) than check varieties along with other good quality characters. NVSR-6121 is moderately resistant against bacterial leaf blight, grain discoloration and sheath rot. It is tolerant to brown plant hoppers and moderately resistant to stem borer, leaf folder and sheath mite. This variety NVSR -6121(GR-15) recommended for transplanted rice growing areas of Gujarat.
	ડાંગરની નવી બાયોફોર્ટીફાઈડ જાત એન.વી.એસ.આર.–૬૧૨૧ (જી.આર.–૧૫)નું ગુજરાતમા સરેરાશ ઉત્પાદન ૫૫૪૦ કિલોગ્રામ/હેકટર છે જે દાંડી, એન.એ.યુ.આર–૧ અને જી.એન.આર.–૩ કરતાં અનુક્રમે ૧૦.૬, ૧૯.૯ અને ૧૬.૧ % વધુ ઉત્પાદન આપે છે. નવી જાતનો દાણો જાડો, કંટીની લંબાઈ, ફુટ તેમજ કંટીમાં દાણાની સંખ્યા વધુ છે. આ જાતના દાણામાં અંકુશ જાતો કરતા વધારે ઝીંકનું પ્રમાણ (૨૧.૫૮ પી.પી.એમ.) તેમજ અન્ય ગુણવત્તા પણ સારી છે. એન.વી.એસ.આર.–૬૧૨૧ ડાંગર જાત સુકારા, ભુખરા દાણાનો રોગ અને પર્ણ છેદના કોહવારા સામે મધ્યમ પ્રતિકારક શકિત ધરાવે છે. ડાંગરની નવી જાત પાનના ચુસીયા સામે પ્રતિકારક તેમજ ગાભમારાની ઈયળ, પાન

	વાળનારી ઈયળ અને પર્ણતલ કથીરી સાથે મધ્યમ પ્રતિકારક શકિત ધરાવે છે. ડાંગરની નવી જાત એન.વી.એસ.આર.–૬૧૨૧ (જી.આર.–૧૫)ને ગુજરાતના રોપાણ ડાંગર વિસ્તાર માટે ભલામણ કરવામાં આવે છે.
	The variety is approved for the recommendation. *(**Action:** Associate Research Scientist, Main Rice Research Centre, NAU, Navsari)*
14.1.1.15	**Rice hybrid : NVSR-H 1011 (GRH 2)**
	Mid-late rice hybrid NVSR-H-1011 (6129 kg/ha) performed well in Gujarat state and exhibited over all 7.1, and 17.9 % grain yield superiority over the checks, hybrid US-312 and variety GNR-3, respectively. Medium slender grain rice hybrid NVSR-H-1011 contains intermediate amylose and high head rice recovery. The proposed hybrid is moderately resistant against bacterial leaf blight, leaf blast, grain discolouration and sheath rot. The proposed hybrid is tolerant to insect pest like brown plant hopper, white backed plant hopper, leaf folder and stem borer. This hybrid recommended for rice growing areas of Gujarat state as GRH 2.
	મધ્યમ મોડી ડાંગરની સંકર જાત એન.વી.એસ.આર.–એચ.–૧૦૧૧ (જી.આર.એચ. ૨) સમગ્ર ગુજરાત રાજયમાં ઘણું સારૂં ઉત્પાદન (૬૧૨૯ કિલોગ્રામ/હેકટર) આપે છે જે યુ.એસ.–૩૧૨ અને જી.એ.આર.–૩ કરતાં અનુક્રમે ૭.૧ અને ૧૭.૯ % વધુ છે. સંકર એન.વી.એસ.આર.–એચ.–૧૦૧૧નો દાણો મધ્યમ પાતળો તેમજ આખા ચોખાના ટકા પણ વધુ છે. ડાંગરની નવી સંકરજાત સુકારા, પાનનો કરમોડી, ભુખરા દાણાનો રોગ તેમજ પર્ણછેદના કોહવારા સામે મધ્યમ પ્રતિકારક શકિત ધરાવે છે. ડાંગરની આસંકર જાત બદામી ચુસિયા, સફેદ પીઠવાળા ચુસિયા, પાનાવાળનારી ઈયળ તેમજ ગાભમારાની ઈયળ સામે સારી પ્રતિકારક શકિત ધરાવે છે. ડાંગરની આ સંકર જાત સમગ્ર ગુજરાત રાજય માટે જી.આર.એચ. ૨ તરીકે ભલામણ કરવામાં આવે છે.
	The variety is approved for the recommendation with the following suggestions: 1. Give mean and range for ancillary observations in Table 5. 2. Specify the agency (scientist) responsible for maintaining the breeder seed. *(**Action:** Assoc. Research Scientist, Regional Rice Res. Station, NAU, Vyara)*
14.1.1.16	**Pigeonpea : NPMK-15-05 (GT-104)**
	The yield of pigeonpea variety NPMK-15-05 (GT-104) is 1890 kg/ha. It exhibited overall yield advantage of 21.9, 21.2, 12.5 and 27.6 % over the checks Vaishali, GJP-1, AGT-2 and BDN–2, respectively. The variety GT-104 matures within 160-170 days (medium group) with semi spreading in nature, having red flower colour, long pod, 5-7 seeds per pod and cream seed colour. It has high yield potential and resistant against sterility mosaic disease. The pigeonpea variety GT-104 recommended for *kharif* season in Gujarat.
	તુવેરની જાત જી.ટી.–૧૦૪ નું સરેરાશ ઉત્પાદન ૧૮૯૦ કિ.ગ્રા. પ્રતિ હેકટર છે. જે અન્ય પ્રચલિત જાતો વૈશાલી, જી.જે.પી.–૧, એ.જી.ટી.–૨ અને બી.ડી.એન.–૨ કરતાં અનુક્રમે ૨૧.૯, ૨૧.૨, ૧૨.૫ અને ૨૭.૬ ટકા વધારે છે. આ નવી જાત ૧૬૦–૧૭૦ દિવસમાં પાકતી હોય, મધ્યમ મોડી પાકતી જાતોના વર્ગમાં સમાવેશ થાય છે. આ જાત મધ્યમ ઘેરાવો ધરાવતી, લાલ રંગના ફૂલવાળી, લાંબી શીંગો ધરાવતી અને પ્રતિ શીંગ ૫–૭ સફેદ રંગના દાણા ધરાવે છે. આ જાતની ઉત્પાદકતા વધારે છે તેમજ વંધ્યત્વ રોગ સામે પ્રતિકારકતા ધરાવે છે. તુવેરની જાત જી.ટી.–૧૦૪ ને સમગ્ર ગુજરાત રાજયમાં ચોમાસું ૠતુમાં વાવેતર માટે ભલામણ કરવામાં આવે છે.
	The variety is approved for the recommendation with the following suggestions: 1. Give mean and range for ancillary observations for test entry along with check. 2. Give range for disease and insect pest data in Table 8 and 9. *(**Action:** Assoc. Research Scientist, Pulses Research Station, NAU, Navsari)*
14.1.1.17	**Mung bean :NMK-15-08 (GM 7)**
	The average yield of mung bean variety NMK-15-08 (GM-7) is 995 kg/ha. It exhibited overall yield advantage of 22.3, 10.5, 27.7 and 24.1 % in *kharif* season and 12.2, 50.3, 22.7 and 12.1% in summer season over the check varieties Meha, GM-4, GAM-5 and GM-6, respectively. It matures within 70-75 days (medium group), having indeterminate in growth habit with medium seed size and shiny green seed colour. It has high yield potential and resistant against MYMV disease. The variety GM-7 is recommended for *kharif* as well as summer seasons of Gujarat.
	મગની જાત જી.એમ.–૭ નું સરેરાશ ઉત્પાદન ૯૯૫ કિ.ગ્રા. પ્રતિ હેકટર છે. જે અન્ય પ્રચલિત જાતો મેહા, ગુ.મગ–૪, ગુ.આણંદ મગ–૫ અને ગુ.મગ–૬ કરતાં અનુક્રમે ચોમાસુ ૠતુમાં ૨૨.૩, ૧૦.૫, ૨૭.૭ અને ૨૪.૧ ટકા અને ઉનાળુ ૠતુમા ૧૨.૫, ૫૦.૩, ૨૨.૭ અને ૧૨.૧ ટકા વધુ છે. આ નવી જાત ૭૦–૭૫ દિવસમાં પાકી જાય છે તે અનિયંત્રિત વૃધ્ધિ ધરાવતી અને મધ્યમ કદનાં ચળકતા લીલા રંગના દાણા ધરાવે છે. આ જાતની ઉત્પાદકતા વધારે છે

	તેમજ પીળા પંચરંગીયા રોગ સામે પ્રતિકારકતા ધરાવે છે. મગની જાત જી.એમ. ૭ ને સમગ્ર ગુજરાતમાં ચોમાસુ અને ઉનાળુ ઋતુમાં વાવેતર માટે ભલામણ કરવામાં આવે છે.
	The variety is approved for the recommendation with the following suggestions: 1. Mention ancillary observations with range in separate table. 2. Add disease pest data of GM-6 in Table 8, 9 and 10. 3. Separate data for *kharif* and summer seasons and write recommendation accordingly. ***(Action:*** *Associate Research Scientist, Pulses Research Station, NAU, Navsari)*
14.1.1.18	**Soybean : Phule Agrani (Endorsement)**
	The variety is differed due to insufficient yield data. The house suggested to evaluate the variety including NRC-37 as a check for one more year along with two other locations (Devgadh bariya and Dahod) form middle Gujarat.
	The variety was differed. ***(Action:*** *Assoc. Research Scientist, Niger Research Station, NAU, Vanarasi)*
14.1.1.19	**Finger millet : WN 585 (GN 8)**
	The early maturing finger millet variety WN-585 (3079 kg/ha) performed well with 21.3 and 13.6 % grain yield advantage over early maturing national checks VL-149 and VL-352, respectively. It have attractive red colour with bold grain size (2.61 g per 1000 seed weight) and erect growing with non-lodging plant type. It is moderately resistant to leaf, neck and finger blast and foot rot disease under field condition. WN-585 (GN-8) recommended for *kharif* cultivation in Gujarat.
	નાગલીની વહેલી પાકતી જાત ડબલ્યુ.એન.–૫૮૫ (૩૦૭૯ કિલો / હેકટર)નુ ઉત્પાદન રાષ્ટ્રીય કક્ષાની વહેલી પાકતી જાતો વી.એલ.–૧૪૯ તથા વી.એલ.–૩૫૨ કરતાં અનુક્રમે ૨૧.૩ ટકા અને ૧૩.૬ ટકા વધુ છે. આ જાત આકર્ષક લાલ રંગના મોટા દાણા (૨.૬૧ ગ્રામ/ ૧૦૦૦ દાણા) તથા સીધા વિકાસ અને ઢળી ન પડવાનો ગુણધર્મ ધરાવે છે. આ જાત પર્ણ, ડોક તેમજ આંગળાની કરમોડી અને મુળસડાના રોગ સામે મધ્યમ પ્રતિકારકતા ધરાવે છે. આ જાત ડબલ્યુ.એન.–૫૮૫ (જી.એન.–૮) ને ગુજરાત રાજય માટે ચોમાસાની ઋતુમાં વાવેતર માટે ભલામણ કરવામાં આવે છે.
	The variety is approved for the recommendation with the following suggestions: 1. Follow proper system of calculating % increase over check in all the tables. ***(Action:*** *Associate Res. Scientist, Hill Millet Research Station, NAU, Waghai)*
14.1.1.20	**Fodder sorghum: SRF-347 (GFS-6)**
	The fodder sorghum variety GFS-6 (SRF-347) produced 34327 kg/ha green fodder and 11253 kg/ha dry fodder, which is 24.9, 13.8 and 12.3 % higher in green fodder and 25.8, 11.5 and 21.0 % in dry fodder as compared to the check varieties GFS-5, CSV-21F and GAFS-12, respectively. This variety also showed superiority over the checks in respect of insect infestation and fodder quality parameters with lower incidence of shoot fly and stem borer. The fodder sorghum variety GFS-6 (Gujarat Fodder Sorghum-6) is recommended for *kharif* season in Gujarat state.
	ઘાસચારા જુવારની જી.એફ.એસ.–૬ જાતે ૩૪૩૨૭ કિ/હે લીલા ઘાસચારાનું તથા ૧૧૨૫૩ કિ/હે સુકા ઘાસચારાનું ઉત્પાદન આપેલ છે. જે લીલા ઘાસચારામાં અંકુશ જાત જી.એફ.એસ.–૫, સી.એસ.વી.–૨૧ એફ અનેજી.એ.એફ.એસ.–૧૨ કરતાં અનુક્રમે ૨૪.૮, ૧૩.૮ અને ૧૨.૩ % અને સુકા ઘાસચારામાં ૨૫.૮, ૧૧.૫ અને ૨૧.૦ % વધારે જોવા મળેલ છે. આ જાતમાં સાંઠાની માખી તથા ગાભમારાની ઈયળનો ઉપદ્રવ ઓછો અને ઘાસચારની ગુણવત્તા સારી જોવા મળેલ છે. આ ઘાસચારાની જુવારની જાત જી.એફ.એસ.–૬ ને સમગ્ર ગુજરાત રાજયમાં ચોમાસુ ઋતુમાં વાવેતર માટે ભલામણ કરવામાં આવે છે.
	The variety is approved for the recommendation with the following suggestions: 1. Delete data of viramgam centre and surat dry fodder for the year *kharif* 2016. 2. Test weight should be added in ancillary observation. ***(Action:*** *Research Scientist, Main Sorghum Research Station, NAU, Surat)*
14.1.1.21	**Sorghum: Phule Revati (Endorsement)**
	The *rabi* sorghum variety Phule Revati is higher yielder as compared to state and national checks. It produced 2814 kg/ha grain yield and 8397 kg/ha dry fodder yield in South Gujarat under irrigated conditions with increment of 31.7, 22.3, 62.2, 25.9 and 49.0 % in grain yield and 28.4, 38.9, 29.8, 16.0 and 24.4 % in dry fodder yield over local checks Nizer Goti, BP-53 and National checks CSV-216 R, CSV-22

	and CSV-29 R, respectively. While under residual moisture condition, it produced 2362 kg/ha grain yield which is 33.4, 8.0, 32.7, 16.9 and 33.9 % higher over checks Nizer Goti, BP-53, CSV 216R¸ CSV 22 and CSV 29R, respectively. The variety produced 7977 kg/ha dry fodder yield with increment of 1.9, 11.0, 5.4 and 29.7% over checks Nizer Goti, CSV 216R, CSV-22 and CSV 29R, respectively. The Phule Revati also depicted superiority over checks in respect to pests and diseases. The *rabi* sorghum variety Phule Revati (RSV-1006) is recommended for endorsement in *rabi* season under irrigated and conserved moisture conditions in South Gujarat.
	શિયાળુ જુવારની જાત ફુલે રેવતી દક્ષિણ ગુજરાતમાં પિયત હેઠળ દાણાનું ઉત્પાદન ૨૮૧૪ કિગ્રા પ્રતિ હેકટર અને સુકા ઘાસચારાનું ઉત્પાદન ૮૩૯૭ કિલો પ્રતિ હેકટર મળેલ છે જે લોકલ અને રાષ્ટ્રીય અંકુશ જાતો નિઝર ગોટી, બી.પી.–૫૩, સી.એસ.વી.–૨૧૬ આર, સી.એસ.વી.–૨૨ અને સી.એસ.વી.–૨૯ આર. કરતાં અનુક્રમે ૩૧.૭, ૨૨.૩, ૬૨.૨, ૨૫.૯ અને ૪૯.૦ % દાણાનું તથા ૨૮.૪, ૩૮.૯, ૨૯.૮, ૧૬.૦ અને ૨૪.૪ % સુકા ઘાસચારાનો વધારો મળેલ છે. સંગ્રહીત ભેજમાં આ જાતનુ દાણાનું ઉત્પાદન ૨૩૬૨ કિગ્રા પ્રતિ હેકટર અને સુકા ઘાસચારાનું ઉત્પાદન ૭૯૭૭ કિલો પ્રતિ હેકટર મળેલ છે જે ૩૩.૪, ૮.૦, ૩૨.૭, ૧૬.૯ અને ૩૩.૯ % દાણાનું અંકુશ જાતો નિઝર ગોટી, બી.પી.–૫૩, સી.એસ.વી.–૨૧૬ આર,સી.એસ.વી.–૨૨ અને સી.એસ.વી.–૨૯ આર. કરતાં વધુ ઉત્પાદન મળેલ છે અને સુકા ઘાસચારામાં અંકુશ જાતો નિઝર ગોટી, સી.એસ.વી.–૨૧૬ આર અને સી.એસ.વી.–૨૯ આર. કરતાં અનુક્રમે ૧.૯, ૧૧.૦, ૫.૪ અને ૨૯.૭ % વધુ ઉત્પાદન મળેલ છે. આથી શિયાળુ જુવારની જાત ફુલે રેવતીને દક્ષિણ ગુજરાતમાં શિયાળુ ઋતુમાં પિયત તેમજ સંગ્રહીત ભેજમાં વાવેતર માટે ભલામણ કરવામાં આવે છે.
	The variety is approved for the recommendation with the following suggestions: 1. Add ancillary observations along with range for other traits in Table 7. 2. Give data of AICRIP trials in proposal. 3. The proposal was approved with the condition that all the suggetions made in house be incorporated in the proposal and the copy should sent to the Chairman, Director of Research, AAU, Anand, Convener and concerned scientist. ***(Action:** Research Scientist, Main Sorghum Research Station, NAU, Surat)*
14.1.1.22	**Tomato: NTL-12-01 (GT-7)**
	Tomato genotype NTL-12-01 (301.0 q/ha) performed well under South, Middle and North Gujarat regions where, it exhibited overall 28.47, 26.54 and 25.82 % higher fruit yield over standard checks JT-3, AT-3 and DVRT-2, respectively. The genotype showed less damage by fruit borer, whitefly as well as leaf miner as compared to checks. This variety GT-7 is recommended for cultivation of farmers of South, North and Middle Gujarat regions.
	ટામેટાની જાત એનટીએલ–૧૨–૧નું દક્ષિણ ગુજરાત, ઉત્તર ગુજરાત અને મધ્ય ગુજરાતમાં સરેરાશ ઉત્પાદન ૩૦૧ કિવન્ટલ પ્રતિ હેકટર મળેલ છે.જે જે.ટી.–૩, એ.ટી.૩ અને ડિ.વિ.આર.ટી.–૨ કરતાં અનુક્રમે ૨૮.૪૭, ૨૬.૫૪ અને ૨૫.૮૨ % વધુ છે. ટામેટાંની આ જાતમાં ફળ ખાનારી ઈયળ, સફેદ માખી તેમજ પાન કોરીયા જીવાતથી થતુ નુકશાન અંકુશ જાતો કરતાં ઓછું જોવા મળેલ છે. ટામેટાની આ જાત જીટી–૭ દક્ષિણ ગુજરાત, ઉત્તર ગુજરાત અને મધ્ય ગુજરાત માટે ભલામણ કરવામાં આવે છે.
	The variety is approved for the recommendation with the following suggestions: 1. Give range in disease and pest data and recast table No. 6. 2. Remove data of below state average. ***(Action:** Professor, Dept. of Vegetable Science, ACHF, Navsari)*
14.1.1.23	**Adenium: Gujarat Adenium-1 (GAd.- 1)**
	Adenium variety GAd.-1 is unique ornamental plant bearing attractive multi petalous red coloured flowers with 15 petals per flower with good flower longevity. It can be propagated by grafting on local pink root stock. This variety of adenium is recommended to grow as ornamental crop for higher commercial value in Gujarat.
	એડેનીયમ જાત જી.એડી.–૧ આકર્ષક લાલ રંગની વધુ પાંખડીઓ(૧૫) અને છોડ ઉપર વધુ સમય સુધી તાજા ફૂલ રહેવાનો ગુણધર્મ ધરાવતી જાત છે. આ જાતનો સ્થાનિક ગુલાબી ફૂલવાળા મુળકાંડ સાથે કલમ કરી વધુ છોડ ઉત્પન્ન કરી શકાય છે. જેથી સુશોભિત ફૂલ છોડ ઉગાડનાર માટે આ જાતની ભલામણ કરવામાં આવે છે.
	The variety is approved for the recommendation. ***(Action:** Associate Professor, Dept. of Floriculture, ACHF, NAU, Navsari)*
14.1.1.24	**Adenium: Gujarat Adenium-2 (GAd.-2)**
	Adenium variety GAd.-2 is unique ornamental plant bearing reddish purple coloured flowers having dual whorls each of 5 petals i.e. 10 petals in each flower

	along with good flower longevity. It can be propagated by grafting on local pink root stock. The nurserymen dealing with ornamental plants are advised to grow adenium GAd.-2 under polyhouse for higher commercial value.
	એડેનીયમની જાત ગુજરાત એડેનીયમ–૨ એ ૧૦ પાખડીઓવાળુ આકર્ષક લાલાશ પડતા જાંબુડી રંગના ફુલ ધરાવે છે અને છોડ ઉપર ફુલ લાંબા સમય સુધી ટકી રહે છે. તે સ્થાનિક ગુલાબી ફુલવાળા મુળકાંડ સાથે કલમ બાંધી (ગ્રાફટીંગ) તેનુ સંવર્ધન કરી શકાય છે. ગુજરાતમાં સુશોભિત છોડની નર્સરી ધરાવતા લોકો એડેનીયમ જાત જી.એડી.–૨ પોલી હાઉસમાં ઉગાડી આકર્ષક વળતર મેળવી શકે છે.
	The variety is approved for the recommendation. ***(Action:** Associate Professor, Dept. of Floriculture, ACHF, NAU, Navsari)*
14.1.1.25	**Malabar Neem: Gujarat Navsari Melia Dubia 1 (GNMD-1)**
	Malabar Neem (*Melia dubia* Cav.) tree variety GNMD-1 has performed very well in South Gujarat. After four years, the GNMD-1 has attained 10.90 m height with girth at breast height (GBH) of 49.50 cm. The volume at four years of age has been estimated 224.41 m^3/ha with good biomass of 103.23 tonnes/ha. It has clear bole up to 3.70 m free from knots. Its bole is round and clean. The GNMD-1 showed superiority of 9.0, 105.6and 47.3 % in height; 7.84, 35.6 and 17.9 % in girth at breast height, and 26.77, 278.24 and 104.60 % in volume and biomass, over checks Kshitiz (NC), Ritu (NC)and Bahumukhi (NC), respectively. No incidence of insect pest was observed in GNMD-1. The variety GNMD-1 is recommended for farmers of South Gujarat for plantation.
	દક્ષિણ ગુજરાતમાં (મીલીયા ડુબીયાના) પસંદ કરેલ જી.એન.એમ.ડી.–૧ વૃક્ષે સરેરાશ ઝડપી વિકાસ કર્યો છે. ચાર વર્ષમાં જી.એન.એમ.ડી. ૧ વૃક્ષની ૧૦.૯ મીટરની ઉચાઈ, છાતીની ઉચાઈએ ૪૯.૫ સેમી. ઘેરાવો, પ્રતિ હેકટર ૨૨૪.૪૧ ઘન મીટર સાથે ૧૦૩.૨૩ ટન પ્રતિ હેકટર લાકડાનું ઉત્પાદન આપે છે. જી.એન.એમ.ડી.–૧, ૩.૭ મીટર સુધી ગાંઠો વગરનું સીધુ થડ ધરાવે છે. વૃક્ષનું થડ ગોળ અને સાફ છે. જી.એન.એમ.ડી. ૧ અનુક્રમે રાષ્ટ્રીય જાતો ક્ષિતિજ, રીતુ અને બહુમુખી કરતા ઉચાઈમાં ૯.૦ ટકા, ૧૦૫.૬ ટકા અને ૪૭.૩ ટકા, છાતીની ઉચાઈએ ઘેરાવામાં ૭.૮૪ ટકા, ૩૫.૬ ટકા અને ૧૭.૯ ટકા અને ઘન મીટર ઘનમાપ પ્રતિ હેકટર લાકડાના ઉત્પાદનમાં ૨૬.૭૭ ટકા, ૨૭૩.૨૪ ટકા અને ૧૦૪.૬૦ ટકા વધુ છે. જી.એન.એમ.ડી. ૧ માં કોઈપણ જંતુ અને રોગનો ઉપદ્રવ નિરીક્ષણમાં આવ્યો નથી. મીલીયા ડુબીયા જાત જી.એન.એમ.ડી. ૧ ની સમગ્ર દક્ષિણ ગુજરાતમાં વાવેતર માટે ભલામણ કરવામાં આવે છે.
	The variety is approved for the recommendation with the following suggestions: 1. Provide details in point No. 5b, 5d, 7c, 9c, 9d and 12b of the proposal. 2. Objectives should be cleared. 3. Write cutting time / period for different purposes. ***(Action:** Principal, College of Fisheries Science, NAU, Navsari)*

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14.1.1.26	**Dual Sorghum Variety: Gujarat Jowar 43 (GJ 43)**
	The proposed variety GJ 43 exhibited 2753 kg/ha grain yield which was 46.85 % and 22.66 % higher than checks GJ 39 and CSV 20, respectively. The variety yielded 144 q/ha dry fodder yield, which was 32.13% and 14.90 % higher than checks in that order. It has good height with long and broad leaves. It is moderately resistant to ergot and grain mold diseases and lower incidence of shoot fly and stem borer. The proposed variety is recommended for release in Gujarat.
	ગુજરાત રાજયમાં જુવારનું વાવેતર કરતા ખેડૂતોને જુવાર જીજે ૪૩ જાત વાવેતર માટે ભલામણ કરવામાં આવે છે. આ જાતના દાણાનું ૨૭૫૩ કિ.ગ્રા./ હે. અને સુકી કડબનું ૧૪૪ કિવન્ટલ/હે. ઉત્પાદન મળેલ છે જે નિયંત્રિત જાતો જીજે–૩૯ અને સીએસવી–૨૦ કરતા દાણાનાં ઉત્પાદનમાં ૪૬.૮૫ ટકા અને ૨૨.૬૬ ટકા જયારે સુકી કડબનુ ઉત્પાદન ૩૨.૧૩ ટકા અને ૧૪.૯૦ ટકા વધારે છે. તેમજ આ જાત વધુ ઉચાઈ, લાંબા અને પહોળા પાન ધરાવે છે. આ જાત મધીયો અને દાણાની ફુગ સામે મધ્યમ પ્રતિકારક શકિત ધરાવે છે અને સાંઠાની માખી અને સાંઠાના વેધકનો ઓછો ઉપદ્રવ જોવા મળેલ છે.
	The variety is approved for the recommendation with the following suggestion: Confime the data of biochemical parameters of grain and dry fodder in Table 9. ***(Action:** Assoc. Res. Scientist (Potato), Sorghum Res. Station, SDAU, Deesa)*

14.1.2. RECOMMENDATION FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

14.1.2.1	**Effect of different seed materials, plant growth regulators and chemicals on germinability and vigour of cotton (*Gossypium hirsutum* L)**
	It is recommended that polymer coating treated seed or delinted seed material alongwith GA_3 20 mg/litre is beneficial for increasing the germination and other seed quality parameters under storage period (180 days) maintaining seed standard as compared to linted seed (120 days) in cotton.
	The recommendation is approved for the scientific community. ***[Action:** Research Scientist, Regional Research Station, AAU, Anand**]***
14.1.2.2	**Standardization of CGMS based hybrid seed production in chilli**
	In chilli crop, it is recommended to use the ratio of 1:1 or 2:1 A:R lines for CGMS based hybrid seed production for higher hybrid seed yield during *kharif-rabi* season in open field condition at Anand location.
	The recommendation is approved for the scientific community. ***(Action:** Research Scientist, Main Vegetable Research Station, AAU, Anand**)***

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

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NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

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14.1.2.3	**Potato Recommendation: Potato seed multiplication through micropropagation**
	The potato tissue culture plantlets Kufri Chipsona-3 and Kufri khyati recorded higher number of tubers 15.18 and 15.38 per plant, respectively. Plantation of tissue cultured tubers produced considerable high tuber yield 30307 kg/ha (Kufri Chipsona-3) and 30516 kg/ha (Kufri khyati). Therefore, it is recommended to scientific community and seed producers to use first generation tubers produced through tissue culture plantlets for multiplication of basic seed of potato.
	The recommendation is approved for the scientific community and seed producers. ***(Action:** Prof. & Head, Dept. of Genetics & Plant Br., CPCA, SDAU, SKNagar**)***

14.1.3 NEW TECHNICAL PROGRAMMES

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title	Suggestion/s and Action
14.1.3.1	Interspecific hybridization for transferring aphid resistance to cultivated Mustard (*Brassica juncea* (L.) Czern.) varieties.	**Approved.** ***[Action:** Prof. & Head, Dept. of Genetics & Plant Breeding, BACA, AAU, Anand**]***
14.1.3.2	Effect of growing methods on seed yield and quality in Bottle gourd [*Lagenaria siceraria* (Molina) Standl] GABGH-1.	**Approved with following suggestion/s:** The data should be analysed using two independent "sample t" test. ***[Action:** Prof. & Head, Dept. of Seed Science & Tech., BACA, AAU, Anand**]***
14.1.3.3	Differential expression studies of genes related to germinability and viability in artificially aged onion seeds.	**Approved with following suggestion/s:** Add variety GJRO-11 in the study. ***[Action:** Prof. & Head, Dept. of Seed Science & Tech., BACA, AAU, Anand**]***

14.1.3.4	Assessment of seed viability vigour and associated characters using genomic tools in wheat (*Triticum aestivum*) under salt stress condition.	**Approved with following suggestion/s:** 1. Remove *Triticum aestivum*. 2. Use three factor CRD with two repetitions. 3. Add varieties in treatment list as a factor. ***[Action:** Prof. & Head, Dept. of Seed Science & Tech., BACA, AAU, Anand**]***
14.1.3.5	Study on the effect of storage container, polymer film coating, fungicide and insecticides on storability of green gram.	**Approved with following suggestion/s:** Take 500 g seed quantity per sample per treatment ***[Action:** Prof. & Head, Dept. of Seed Science & Tech., BACA, AAU, Anand**]***
14.1.3.6	Evaluation of early maturing Isabgol genotypes	**Approved.** ***[Action:** Associate Res. Sci., Medicinal and Aromatic Plants Res. Station, AAU, Anand**]***
14.1.3.7	Induction of mutation through physical and chemical mutagens in cluster bean [*Cyamopsis tetragonoloba* (L.) Taub.] for vegetable purpose	**Approved with following suggestion/s:** Record frequency of morphological mutants/variants. ***[Action:** Research Scientist, Main Vegetable Research Station, AAU, Anand**]***
14.1.3.8	Induction of mutation through physical and chemical mutagens in garlic (*Allium sativum* L.)	**Approved with following suggestion/s:** Add TSS in observation. ***[Action:** Research Scientist, Main Vegetable Research Station, AAU, Anand**]***
14.1.3.9	Identification of suitable chickpea genotypes for dry seed as well as green pod yield purposes.	**Approved with following suggestion/s:** 1. For green pod, add 15th September as date of sowing. 2. Add variety PKV-2. ***[Action:** Research Scientist, Pulse Research Station, AAU, Model Farm, Vadodara**]***
14.1.3.10	Identification of desirable mutants in black gram	**Approved with following suggestion/s:** Add MYMV disease observation. ***[Action:** Research Scientist, Pulse Research Station, AAU, Model Farm, Vadodara**]***
14.1.3.11	Effect of Gamma rays induced mutation in castor (*Ricinus communis* L.)	**Approved with following suggestion/s:** Add wilt disease observation. ***[Action:** Research Scientist, Regional Research Station, AAU, Anand**]***
14.1.3.12	Creation of genetic variability through physical mutagen in GCr-2 and GCr-3 cultivars of coriander (*Coriandrum sativum* L.)	**Approved with following suggestion/s:** Add observation on diseases. ***[Action:** Assoc. Res. Scientist, Castor and Seed Spices Res. Station , AAU, Sanand**]***
14.1.3.13	Creation of genetic variability through physical mutagen in SC-5 and GC-4 cultivars of cumin (*Cuminum cyminum* L.).	**Approved with following suggestion/s:** 1. Add observation on diseases. 2. Add GC 2 in place of SC 5. ***[Action:** Assoc. Res. Scientist, Castor and Seed Spices Res. Station , AAU, Sanand**]***
14.1.3.14	Evaluation of banana genotypes for yield and quality traits	**Approved with following suggestion/s:** Reduce number of entries. ***[Action:** Principal, College of Agriculture AAU, Jabugam**]***
14.1.3.15	Induced Mutagenesis in banana for yield and quality traits.	**Approved with following suggestion/s:** Mutagenic treatments should be given to rhizomes. ***[Action:** Principal, College of Agriculture*

		AAU, Jabugam]
14.1.3.16	Induction of variability in peacock flower [*Caesalpinia pulcherrima* (L.) Suv.] by mutation	**Approved with following suggestion/s:** Add observations on earliness and number of flowers per raceme. ***[Action:*** *Professor & Head, Dept. of Horticulture, BACA, AAU, Anand]*
14.1.3.17	Mutagenesis in marigold (*Tagetes* sp.)	**Approved.** ***[Action:*** *Professor & Head, Dept. of Horticulture, BACA, AAU, Anand]*
14.1.3.18	Evaluation of different chrysanthemum varieties for growth, flowering and flower yield under middle Gujarat condition	**Approved with following suggestion/s:** The varieties should be grouped as cut flowers and other general uses. ***[Action:*** *Professor & Head, Dept. of Horticulture, BACA, AAU, Anand]*
14.1.3.19	Induction of mutation in rose and lily	**Approved with following suggestion/s:** The species of the crops should be mentioned. ***[Action:*** *Principal, College of Horticulture, AAU, Anand]*
14.1.3.20	Development of male sterile line in castor through intergeneric hybridization in castor and jatropha.	**Approved with following suggestion/s:** Add SI 8 (GAC 11) in crossing programme. ***[Action:*** *Assoc. Research Scientist, Distant Hybridization, Dept. of Agril. Biotechnology, AAU, Anand]*
14.1.3.21	Development of early maturing, short/medium stature high yielding mutants in aromatic rice	**Approved with following suggestion/s:** Add Raj Bangalio and Ambemore varieties. ***[Action:*** *Research Scientist (Rice), Main Rice Research Station, AAU, Nawagam]*

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

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NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Sr. No.	Title	Suggestion/s and Action
14.1.3.22	Development of fodder purpose sugarcane genotypes	**Approved.** ***(Action:*** *Research Scientist, Main Sugarcane Res. Station, NAU, Navsari)*

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

Sr. No.	Title	Suggestion/s and Action
14.1.3.23	Evaluation of wheat genotypes for late sown condition	**Approved with following suggestion/s:** 1. Add variety GW 173. 2. Take filler study and select suitable 20-25 entries for this study. After that final trial to be conducted. ***(Action:*** *Research Scientist (Wheat), Wheat Research Station, SDAU, Vijapur)*
14.1.3.24	Study of floral morphology and biology in cumin (*Cuminum cyminum* L.)	**Approved.** ***(Action:*** *Research Scientist, Seed Technology, SDAU, SKNagar)*
14.1.3.25	Creation of variability in China aster [*Callistephus chinensis* (L.) Nees]	**Approved.** ***(Action:*** *Principal, College of Horticulture SDAU, Jagudan)*
14.1.3.26	Evaluation of genetic variability	**Approved.**

	through gamma rays in marigold (*Tagetes erecta* L.)	***(Action:*** *Principal, College of Horticulture SDAU, Jagudan****)***
14.1.3.27	Screening of mustard genotypes for high temperature tolerance at seedling stage	**Approved with following suggestion/s:** 1. Add 15th September as date of sowing. 2. Take field experiment simultaneously at different date of sowing in field condition up to yield. 3. Take chlorophyll content, proline content, canopy temperature. ***(Action:*** *Res. Sci.t (Castor-Mustard), Main Castor Mustard Res. Stat., SDAU, SKNagar****)***
14.1.3.28	Study on effect of priming on seed germination of brinjal, celery, onion, cabbage, brussels.	**Approved with following suggestion/s:** 1. Keep three replications. 2. Remove celery and Brussels crops. 3. Take recent varieties of crops. 4. Take filler study to standardize/ finalize the treatments and then final trial to be conducted. ***(Action:*** *Prof. & Head, Dept. of Genetics & Plant Breeding, CPCA, SDAU, SKNagar****)***
14.1.3.29	Study on effect of priming on seed germination of baby corn, chilies, coriander, pea, cluster bean, okra.	**Approved with following suggestion/s:** 1. Take recent varieties of crops. 2. Take filler study to standardize/ finalize the treatments and then final trial to be conducted. ***(Action:*** *Prof. & Head, Dept. of Genetics & Plant Breeding, SDAU, SKNagar****)***
14.1.3.30	Evaluation of bread wheat genotypes for yield and biofortified traits	**Approved with following suggestion/s:** First evaluate the genotypes for biofortified traits and then conduct the final yield trials. ***(Action:*** *Research Scientist (Wheat), Wheat Research Station, SDAU, Vijapur****)***
14.1.3.31	Evaluation of drumstick (*Moringa oleifera Lam.*) genotypes in arid and semi-arid region of Gujarat	**Approved with following suggestion/s:** Mention name of genotypes to be evaluated along with checks and age of plantations. ***(Action:*** *Research Scientist, Agroforestry Research Station, SDAU, SKNagar****)***

General suggestions:

1. For all the crops, checks should be constant in the trials from the beginning.
2. Follow common pattern for nomenclature of variety/ hybrid.
3. Follow common format for varietal release proposal.
4. DNA fingerprinting data should be provided in the proposal.
5. The trials of summer groundnut should be allotted to Deesa centre.
6. All the programmes of departments of Seed Science and Technology as well as Genetics and Plant Breeding should be presented in Crop Improvement sub-committee AGRESCO from next year.
7. Name of concerned evaluators of each and every location is to be mentioned in release proposal even though particular location data are not included in the release proposal.
8. Once trial is started from PET it should be continued for succeeding year. If there is gap of any year it should be mentioned in the respective year with reason for not conducting the trial.
9. Experiment on mutagenic treatments should not put as new technical programme.

14.2. CROP PRODUCTION AND NATURAL RESOURCE MANAGEMENT

Chairman	Prof.(Dr.) Ashok Patel, Hon'ble Vice Chancellor, SDAU, SKNagar
Co-Chairmen	1. Dr. K. P. Patel, Principal & Dean, BACA, AAU, Anand 2. Dr. B. K. Sagarka, Principal, CoA, JAU, Junagadh
Rapporteurs	1. Dr. R. M. Solanki, Assoc. Professor, Dept. of Ag. Chem., JAU, Junagadh 2. Dr. M. V. Patel, Professor & Head, Dept. of Agronomy, AAU, Anand 3. Dr. V. P. Usdadiya, Research Scientist (Soil & Water), NAU, Navsari

Presentation of recommendations and technical programmes by Conveners of SAUs

SN	Name	Designation & University
1	Dr. B. D. Patel	Research Scientist, AICRP on Weed Management, AAU, Anand
2	Dr. K. B. Polara	Professor, Dept. of Agril. Chen & Soil Sci., CoA, JAU, Junagadh
3	Dr. V. P. Usadadia	Research Scientist, Soil & Water Mgmt. Res. Unit., NAU, Navsari
4	Dr. J. C. Patel	Professor & Head, Dept. of Agronomy, CPCA, SDAU, SKNagar

Summary

Name of University	No. of Recommendations				New Technical Programmes	
	Farming Community		Scientific Community			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU, Anand	15	15	-	-	34	33
JAU, Junagadh	14	15	07	07	25	25
NAU, Navsari	28	26	-	03	27	26
SDAU, SKNagar	12	11	01	04	44	41
Total	**69**	**67**	**08**	**14**	**130**	**125**

14.2.1 RECOMMENDATION FOR FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

14.2.1.1	**Effect of manures on efficiency of atrazine applied for weed management in summer pearl millet**
	The farmers of Middle Gujarat Agro-climatic Zone growing summer pearl millet are advised to carry out IC and HW at 20 and 40 DAS or apply recommended atrazine 500 g/ha as pre-emergence for weed management. For minimizing phytotoxic effect of atrazine, better yield and nutrient status of soil, apply 10 t FYM/ha at the time of sowing in furrows. મધ્ય ગુજરાત ખેતઆબોહવાકીય વિસ્તારમાં ઉનાળુ બાજરી ઉગાડતા ખેડૂતોને સલાહ આપવામાં આવે છે કે, વાવણી બાદ ૨૦ અને ૪૦ દિવસે આંતરખેડ અને હાથ નીંદામણ કરવું અથવા ભલામણ કરેલ એટ્રાજીન નીંદણ નાશક ૫૦૦ ગ્રામ પ્રતિ હેકટરે પ્રિ–ઈમરજન્સ છંટકાવ કરવો. એટ્રાજીનની પાક પર થતી વિપરીત અસર નિવારવા હેકટરે ૧૦ ટન છાણીયું ખાતર ચાસમાં વાવણી સમયે આપવું, જેથી ઉત્પાદનમાં વધારા સાથે જમીનના પોષક તત્વોની જાળવણી પણ થઈ શકે છે. **Approved.** **(Action:** *Professor & Head, Dept. of Soil Sci. & Ag. Chem., BACA, AAU, Anand***)**
14.2.1.2	**Efficacy of methylotrophic bacterial consortium on rice (*Oryza sativa* L.) *cv.* Gurjari in field**
	The farmers of Middle Gujarat Agro-climatic zone growing transplanted paddy *cv.* Gurjari in *kharif* are recommended to apply 80 kg N/ha, 20 kg P_2O_5/ha and give treatment of methylotrophic bacterial consortium 5 ml/L water through seedling dip for 15 minutes before transplanting and foliar spray at 30 DATP for obtaining higher yield and net return. The practice saves 20 % N, 20 % P and reduces methane gas emission from paddy field in atmosphere. મધ્ય ગુજરાત ખેતઆબોહવાકીય વિસ્તારમાં ચોમાસુ ડાંગરની ગુર્જરી જાતની ફેરરોપણી કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે પ્રતિ હેકટરે ૮૦ કિ.ગ્રા. નાઈટ્રોજન અને ૨૦ કિ.ગ્રા. ફોસ્ફરસ ઉપરાંત મિથાયલોટ્રોફીક

બેકટેરીયલ કન્સોર્શિયમની ૫ મિલિ/લિ. પાણીમાં રોપણી સમયે ધરૂને ૧૫ મિનિટ માટે માવજત આપવાની તથા ૩૦ દિવસ બાદ તેનો છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. તેનાથી ૨૦ ટકા નાઈટ્રોજન,૨૦ ટકા ફોસ્ફરસની બચત થાય અને ડાંગરમાંથી વાતાવરણમાં ઉત્સર્જિત થતા મિથેન વાયુનું પ્રમાણ ઘટે છે.

Approved.

(**Action:** *Research Scientist & Head, Dept. of Microbiology, BACA, AAU, Anand*)

14.2.1.3 Effect of boron and cutting management in seed production of lucerne

The farmers of Middle Gujarat Agro-climatic Zone growing lucerne(Anand 2) are advised to take last cut of green forage in 3rd or 4th week of February and leave it for seed production. Thereafter, foliar spray of 0.02 % boron is given at flower initiation stage and 2nd spray at 10 days after 1st spray along with all recommended practices to get higher seed yield and net return.

મધ્ય ગુજરાત ખેતઆબોહવાકીય વિસ્તારમાં રજકા (આણંદ ૨) નું બીજ ઉત્પાદન કરતા ખેડૂતોને સલાહ આપવામાં આવે છે કે વધુ ઉત્પાદન અને નફો મેળવવા માટે ભલામણ કરેલ ખેતી પધ્ધતિની સાથે રજકાના પાકને ફેબ્રુઆરી માસના ત્રીજા કે ચોથા અઠવાડીયામાં લીલાચારાની છેલ્લી કાપણી બાદ બીજ ઉત્પાદન માટે છોડી દેવો. ત્યારબાદ ફૂલ આવવાની શરૂઆત થાય ત્યારે ૦.૦૨ ટકા બોરોનના દ્રાવણનો પ્રથમ છંટકાવ કરવો તથા બીજો છંટકાવ પ્રથમ છંટકાવના ૧૦ દિવસ બાદ કરવો, અને તમામ ભલામણ કરેલ ખેત પધ્ધતિઓ અપનાવવાથી વધુ બીજ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

Approved with following suggestion/s:

Add seed yield.

(**Action:** *Research Scientist, Main Forage Research Station, AAU, Anand*)

14.2.1.4 Influence of nitrogen levels on yield and quality of guinea grass

The farmers of Middle Gujarat Agro-climatic Zone growing guinea grass are advised to grow variety Co (GG) 3 and apply 50 kg N/ha after each cut upto three years to obtain higher green forage yield, quality and net return. (Basal dose of FYM 10 t/ha, 50 kg N/ha and 40 kg P_2O_5/ha should also be applied).

મધ્ય ગુજરાત ખેતઆબોહવાકીય વિસ્તારના ખેડૂતોને સલાહ આપવામાં આવે છે કે ગીનીઘાસના લીલા ચારાનું, ગુણવત્તા સભર વધુ ઉત્પાદન અને વધુ નફો મેળવવા માટે સીઓ (જીજી) ૩ જાતનું વાવેતર કરી દરેક કાપણી બાદ પ્રતિ હેકટરે ૫૦ કિ.ગ્રા. નાઈટ્રોજન ત્રણ વર્ષ સુધી આપવો. (વધુમાં પાયામાં ૧૦ ટન છાણીયુ ખાતર, ૫૦ કિ.ગ્રા. નાઈટ્રોજન અને ૪૦ કિ.ગ્રા. ફોસ્ફરસ પ્રતિ હેકટરે આપવું.)

Approved with following suggestion/s:

Add quality word instead of DM, CP.

(**Action:** *Research Scientist, Main Forage Research Station, AAU, Anand*)

14.2.1.5 Effect of different levels of nitrogen and phosphorus on dry biomass yield of *dodi* [*Leptadenia reticulata* (Retz.) Wight & Arn.] under middle Gujarat condition

The farmers of Middle Gujarat Agro-climatic Zone growing *dodi* crop in *kharif* season are advised to apply 200 kg N/ha, of 50 kg N and 25 kg $P_2O_5$are to be applied as basal and apply 150 kg N in three equal splits each at 45 DAP, at 90 DAP (*i.e.*, 1st cutting) and at 180 DAP (*i.e.*, 2nd cutting) for securing higher dry biomass yield (dry plant excluding root) and net return.

મધ્ય ગુજરાત ખેતઆબોહવાકીય વિસ્તારમાં ચોમાસામાં ડોડી પાકનું વાવેતર કરતા ખેડૂતોને ડોડીના વધુ સુકા પંચાંગ (પાન વેલા સહિતનો સુકો છોડ) ના ઉત્પાદન અને નફો મેળવવા માટે હેકટરે ૨૦૦ કિ.ગ્રા. નાઈટ્રોજન આપવો. જે પૈકી ૫૦ કિ.ગ્રા. નાઈટ્રોજન અને ૨૫ કિ.ગ્રા. ફોસ્ફરસ પાયામાં તથા બાકીનો ૧૫૦ કિ.ગ્રા. નાઈટ્રોજન, ત્રણ સરખા હપ્તામા રોપણી બાદ ૪૫ દિવસે, ૯૦ દિવસે (પ્રથમ કાપણી) અને ૧૮૦ દિવસે (બીજી કાપણી બાદ) આપવો. તેનાથી સુકા પદાર્થોનું વધુ ઉત્પાદન (મૂળ સિવાયનો સૂકો છોડ) અને ચોખ્ખો નફો મેળવી શકાય છે.

Approved.

(**Action:** *Associate Research Scientist, Medicinal & Aromatics Plants, AAU, Anand*)

14.2.1.6 Effect of organic manures on yield and quality of *tulsi Ocimum tenuiflorum* L. (*Ocimum sanctum* L. *)* under middle Gujarat conditions

The farmers of Middle Gujarat Agro-climatic Zone interested in growing green *Tulsi* in *kharif* season only through organic manures are recommended to applyFYM15 t/ha for securing higher dry biomass yield and net return.

મધ્ય ગુજરાત ખેતઆબોહવાકીય વિસ્તારમાં સેન્દ્રિય ખાતર ધ્વારા ચોમાસું તુલસીનું વાવેતર કરવા ઈચ્છુક ખેડૂતોને સુકા પંચાંગ (પાન) નું વધુ ઉત્પાદન અને નફો મેળવવા માટે પ્રતિ હેકટરે ૧૫ ટન છાણીયું ખાતર આપવાની ભલામણ કરવામાં આવે છે.

	Approved. **(Action:** *Associate Research Scientist, Medicinal & Aromatics Plants, AAU, Anand)*
14.2.1.7	**Performance of hybrid maize under different levels of nitrogen and phosphorus in *rabi* season**
	The farmers of Panchmahal district of Middle Gujarat Agro-climatic Zone growing *rabi* hybrid maize GAYMH 1 and GAWMH 2 are advised to fertilize the crop with 150 kg N/ha and 40 kg P_2O_5/ha (soil having medium phosphorus status) for securing higher grain yield and higher net return. The farmers of Anand district of Middle Gujarat Agro-climate Zone growing maize hybrid GAYMH 1 are advised to fertilize the crop with 150 kg N/ha and 60 kg P_2O_5/ha (soil having low phosphorus status) for securing higher grain yield and higher net return. **Note:** The nitrogen should be applied in four equal splits i.e., at basal, 4 leaves, 8 leaves and tasseling stage, while P_2O_5 as basal. **મધ્ય ગુજરાત ખેતઆબોહવાકીય વિસ્તારના પંચમહાલ જીલ્લામાં શિયાળુ ઋતુમાં ગુજરાત આણંદ પીળી સંકર મકાઈ ૧ અથવા ગુજરાત આણંદ સફેદ સંકર મકાઈ ૨ નું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે હેકટરે ૧૫૦ કિ.ગ્રા. નાઈટ્રોજન અને ૪૦ કિ.ગ્રા. ફોસ્ફરસ પ્રતિ હેકટરે (ફોસ્ફરસનું મધ્યમ પ્રમાણ ધરાવતી જમીન માટે) આપવાની ભલામણ છે.** **મધ્ય ગુજરાત ખેતઆબોહવાકીય વિસ્તારના આણંદ જીલ્લામાં શિયાળું ઋતુમાં ગુજરાત આણંદ પીળી સંકર મકાઈ ૧ જાતનું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે હેકટરે ૧૫૦ કિ.ગ્રા. નાઈટ્રોજન અને ૬૦ કિ.ગ્રા. ફોસ્ફરસ પ્રતિ હેકટરે (ફોસ્ફરસની ઉણપ ધરાવતી જમીન માટે) આપવાની ભલામણ કરવામાં આવે છે.** **નોંધ : નાઈટ્રોજનને ચાર સરખા તબકકામાં, વાવણી સમયે, ૪ પાન અવસ્થાએ, ૮ પાન અવસ્થાએ તથા ચમરી અવસ્થાએ તથા ફોસ્ફરસને પાયામાં આપવો.** **Approved with following suggestion/s:** Delete GAWMH 2 form Anand. **(Action:** *Associate Research Scientist, Main Maize Research Station, AAU, Godhra***)**
14.2.1.8	**Effect of topping and nitrogen levels on growth, yield attributes and yield of *Bt* cotton under drip irrigation**
	The farmers of Middle Gujarat Agro-climatic Zone growing *Bt* cotton in heavy black soil under drip irrigation system are recommended to practice detopping of cotton plant (removal of apex) at 100 days after sowing and fertilize the crop with 240 kg N/ha in four equal splits *i.e.* 60 kg N/ha in basal and remaining 180 kg N/ha in three equal splits at one-month interval through fertigation to get higher yield at minimum cost. **મધ્ય ગુજરાત ખેતઆબોહવાકીય વિસ્તારના ભારે કાળી જમીનમાં બીટી કપાસનું ટપક સિંચાઈ પધ્ધતિ અપનાવીને વાવેતર કરતા ખેડૂતોને ઓછા ખર્ચે વધુ ઉત્પાદન મેળવવા માટે કપાસના પાકને ૧૦૦ દિવસે છોડની ટોચ કાપવાની તથા પ્રતિ હેકટરે ૨૪૦ કિ.ગ્રા. નાઈટ્રોજન ચાર સરખા હપ્તામાં એટલે કે ૬૦ કિ.ગ્રા. નાઈટ્રોજન પાયામાં અને બાકીનો ૧૮૦ કિ.ગ્રા. નાઈટ્રોજન ૩ સરખા હપ્તામાં એક માસના અંતરે ટપક પધ્ધતિ ધ્વારા આપવા ભલામણ કરવામાં આવે છે.** **Approved.** **(Action:** *Asstt. Research Scientist, Narmada Irrigation Res. Station, AAU, Khandha***)**
14.2.1.9	**Effect of sowing dates and spacing on semi-*rabi* green gram (*Vigna radiata* L.)**
	The farmers of Middle Gujarat Agro-climatic Zone growing semi-*rabi* green gram are recommended to sow the crop during 3rd week of September at 30 cm spacing for obtaining higher yield and net return. **મધ્ય ગુજરાત ખેતઆબોહવાકીય વિસ્તારના અર્ધ શિયાળુ મગની ખેતી કરતા ખેડૂતોને મગનું વધુ ઉત્પાદન અને નફો મેળવવા માટે સપ્ટેમ્બરના ત્રીજા અઠવાડીયામાં ૩૦ સેમીના અંતરે હારમાં વાવેતર કરવાની ભલામણ કરવામાં આવે છે.** **Approved.** **(Action:** *Research Scientist, Pulse Research Station, AAU, Vadodara***)**
14.2.1.10	**Response of seed rates on different soybean varieties in *kharif* season**
	The farmers of Middle Gujarat Agro-climatic Zone growing soybean in *kharif* season are recommended to grow either NRC 37 or JS 335 variety keeping 80 kg/ha seed rate to get higher yield and net return. **મધ્ય ગુજરાત ખેતઆબોહવાકીય વિસ્તારના સોયાબીનની ખેતી કરતા ખેડૂતોને વધારે ઉત્પાદન અને નફો**

	મેળવવા માટે સોયાબીનની એનઆરસી ૩૭ અથવા જેએસ ૩૩૫ જાતના બિયારણનો દર ૮૦ કિ.ગ્રા. પ્રતિ હેકટર રાખી વાવેતર કરવાની ભલામણ કરવામાં આવે છે. **Approved.** **(Action:** *Res. Scientist, Tribal Res. cum Training Centre, AAU, DevgadhBaria***)**
14.2.1.11	**Response of spacing on different soybean varieties in *kharif* season**
	The farmers of Middle Gujarat Agro-climatic Zone growing soybean in *kharif* season are recommended to grow either NRC 37 or JS 335 variety at the spacing of 45 cm to get higher yield and net return. મધ્ય ગુજરાત ખેતઆબોહવાકીય વિસ્તારના સોયાબીનની ખેતી કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે સોયાબીનની એનઆરસી ૩૭ અથવા જેએસ ૩૩૫ જાત ૪૫ સે.મી. ના અંતરે વાવેતર કરવાની ભલામણ કરવામાં આવે છે. **Approved.** **(Action:** *Res. Scientist, Tribal Res. cum Training Centre, AAU, DevgadhBaria***)**
14.2.1.12	**Effect of sowing time and spacing on growth and yield of chickpea for green pod**
	The farmers of Middle Gujarat Agro-climatic Zone growing chickpea (*cv.* GG 2) for green pod are recommended to sow the crop during first week of October keeping 45 x 10 cm spacing for securing higher yield and net return. મધ્ય ગુજરાત ખેતઆબોહવાકીય વિસ્તારમાં લીલા પોપટા માટે ચણા (જાત : જીજી ૨) ની વાવણી કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે ચણાની વાવણી ઓકટોબર મહિનાનાં પ્રથમ અઠવાડિયામાં ૪૫ × ૧૦ સે.મી.નાં અતરે કરવાની ભલામણ કરવામાં આવે છે. **Approved.** **(Action:** *Associate Research Scientist, Agricultural Research Station, AAU, Derol***)**
14.2.1.13	**Standardization of crop geometry and its effect on yield and fibre quality of *desi* cotton under rainfed conditions**
	The farmers of *Bhal* and Coastal Agro-climatic Zone growing rainfed *desi* cotton are recommended to sow cotton variety Gujarat Cotton21 at 60 x 30 cm spacing to get higher seed cotton yield. ભાલ અને દરિયાકાંઠા ખેત આબોહવાકીય વિસ્તારમાં બિનપિયત દેશી કપાસ ઉગાડતા ખેડૂતોને કપાસનું વધુ ઉત્પાદન અને નફો મેળવવા માટે ગુજરાત કપાસ ૨૧ જાતનું વાવેતર ૬૦ × ૩૦ સે.મી. ના અંતરે કરવાની ભલામણ કરવામાં આવે છે. **Approved.** **(Action:** *Assoc. Research Scientist, Regional Cotton Res. Station, AAU, Viramgam***)**
14.2.1.14	**Nitrogen management through need based application by using Leaf Colour Chart (LCC) in rice varieties with different maturity groups**
	The farmers of Middle Gujarat Agro-climatic Zone growing mid-late maturing rice variety (GAR 13) are recommended to apply P_2O_5 and $ZnSO_4$ as per soil test along with N fertilizer schedule through leaf colour chart so as to apply 100 kg N/ha in equal split of 20 kg N when leaf colour chart (LCC), score reaches at 4 or less than 4 to get higher yield and net return. મધ્ય ગુજરાત ખેતઆબોહવાકીય વિસ્તારમાં મધ્યમ મોડી પાકતી ડાંગરની જાતનું (જીએઆર ૧૩) વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ફોસ્ફરસ અને ઝીંક જમીન ચકાસણી મુજબ આપવો ઉપરાંત નાઈટ્રોજન વ્યવસ્થાપન લીફ કલર ચાર્ટ ધ્વારા જયારે જયારે લીફ કલર ચાર્ટનો ક્રિટીકલ સ્કોર "૪" અથવા "૪" થી ઓછો આવે ત્યારે પ્રતિ હેકટરે ૧૦૦ કિ.ગ્રા. નાઈટ્રોજન ૨૦ કિ.ગ્રા. ના સરખા હપ્તે આપવાથી વધુ ઉત્પાદન અને નફો મેળવી શકાય છે. **Approved.** **(Action:** *Research Scientist, Main Rice Research Station, AAU, Nawagam***)**
14.2.1.15	**Effect of nutrient management in *Bt* cotton to break the yield stagnation**
	The farmers of Middle Gujarat Agro-climatic Zone growing *Bt* cotton (*cv.* GCH 6) crop are recommended to apply 240 kg N/ha, of which 60 kg as basal and remaining 180 kg as top dressing in three equal splits at monthly interval for securing higher yield and net return. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં બીટી કપાસ (જાત : જીસીએચ ૬) નું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે કપાસનું વધુ ઉત્પાદન અને નફો મેળવવા માટે ૨૪૦ કિ.ગ્રા. નાઈટ્રોજન પ્રતિ હેકટર આપવો. તે પૈકી ૬૦ કિ.ગ્રા. પાયામાં અને બાકીનો ૧૮૦ કિ.ગ્રા. ત્રણ સરખા ભાગમાં એક માસના અંતરે પૂર્તિ ખાતર તરીકે આપવો.

<table>
<tr><td></td><td>Approved.
(Action: Associate Research Scientist, ARS for Irrigated Crops, AAU, Thasra)</td></tr>
</table>

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<table>
<tr><th>Sr. No.</th><th>RECOMMENDATIONS FOR FARMING COMMUNITY</th></tr>
<tr><td>14.2.1.16</td><td>Integrated weed management in okra</td></tr>
<tr><td></td><td>The farmers of South Saurashtra Agro-climatic Zone growing okra in kharif season are recommended to carry out hand weeding at 15, 30 and 45 DAS for effective weed management and achieving higher fruit yield and net realization.
દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસુ ભીંડાનું વાવેતર કરતાં ખેડૂતોને સલાહ આપવામાં આવે છે કે અસરકારક નીંદણ નિયંત્રણ તથા ભીંડાનું વધુ ઉત્પાદન અને ચોખ્ખુ વળતર મેળવવા માટે વાવણી બાદ ૧૫, ૩૦ અને ૪૫ દિવસે હાથ નિંદામણ કરવું.
Approved with following suggestion/s:
Recast the recommendation para.
(Action: Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)</td></tr>
<tr><td>14.2.1.17</td><td>Tillage practices for residue management in groundnut-wheat cropping sequence</td></tr>
<tr><td></td><td>The farmers of South Saurashtra Agro-climatic Zone who are adopting wheat (rabi) - fallow - groundnut (kharif) crop sequence are advised to harvest the wheat crop by combined harvester and incorporate the wheat straw in the soil with rotavator and blade harrowing + application of 12 kg N/ha (26 kg urea/ha) + Madhyam culture @ 5 kg/ha and give a light irrigation to the soil through sprinkler irrigation system to secure higher production and profitability of kharif groundnut as well as to sustain the soil health.
દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં શિયાળું ૠતુમાં ઘઉ – ઉનાળુ ૠતુમાં પડતર – ચોમાસું ૠતુમા મગફળી પાક પધ્ધતિ અપનાવતા ખેડૂતોને સલાહ આપવામાં આવે છે કે ચોમાસું મગફળીનું વધુ ઉત્પાદન તેમજ વધુ ચોખ્ખો નફો મેળવવા માટે અને જમીનની ફળદ્રુપતા જાળવી રાખવા માટે રવી ૠતુમાં વાવેતર કરેલ ઘઉના પાકની કાપણી કમ્બાઈન્ડ હાર્વેસ્ટરથી કરી ઘઉના પાકના અવશેષો રોટાવેટર અને રાંપથી જમીનમાં ભેળવવા તેમજ જમીનમાં ૧૨ કિ.ગ્રા. નાઈટ્રોજન પ્રતિ હેકટર (૨૬ કિ.ગ્રા. યુરીયા પ્રતિ હેકટર) અને ૫ કિ.ગ્રા.માધ્યમ કલ્ચર પ્રતિ હેકટર આપવું. ત્યારબાદ ફુવારા પિયત પધ્ધતિ ધ્વારા જમીનને હલકુ પિયત આપવું.
Approved with following suggestion/s:
Keep wheat (rabi)-fallow-groundnut (kharif) instead of groundnut (kharif)-wheat (rabi) cropping sequence.
(Action: Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)</td></tr>
<tr><td>14.2.1.18</td><td>Evaluation of precision land levelling in wheat</td></tr>
<tr><td></td><td>The farmers of South Saurashtra Agro-climatic Zone growing wheat in rabi season are recommended to apply 10 irrigations, first immediately after sowing and remaining 9 irrigations at 8-10 days interval (at 0.9 IW/CPE ratio) for securing higher yield and 10 per cent water saving.
દક્ષિણ સૌરાષ્ટ્ર ખેત–આબોહવાકીય વિસ્તારમાં શિયાળુ ૠતુમાં ઘઉ પકવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ઘઉના પાકમાં વધુ ઉત્પાદન અને ૧૦ ટકા પિયત પાણીની બચત કરવા માટે ઘઉના પાકને કુલ ૧૦ પિયત આપવા, પ્રથમ પિયત વાવેતર બાદ તુરંત અને બાકીના ૯ પિયત ૮ થી ૧૦ દિવસના ગાળે (૦.૯ બાષ્પીભવનાંકે) આપવા.
Approved with following suggestion/s:
Recast recommendation para.
(Action: Professor & Head, Department of Agronomy, JAU, Junagadh)</td></tr>
<tr><td>14.2.1.19</td><td>Cropping system diversification and/or intensification</td></tr>
<tr><td></td><td>The farmers of South Saurashtra Agro-climatic Zone adopting groundnut (kharif) - wheat (rabi) cropping system are recommended to replace the system with any one of the following intensified cropping systems to secure higher yield and net profit.
<table>
<tr><th>Kharif</th><th>Rabi</th><th>Summer</th></tr>
<tr><td>Two rows of groundnut (semi spreading) at 60 cm + one row of sweet corn</td><td>Two rows of coriander (seed) at 45 cm + one row of vegetable pea</td><td>Two rows of sesame at 45 cm + one row of vegetable cowpea</td></tr>
</table></td></tr>
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OR		
Clusterbean (seed) at 45 cm	Paired row of fennel at 60 cm + eight rows of garlic at 15 cm	Two rows of sesame at 45 cm + two rows of fodder sorghum at 22.5 cm

દક્ષિણ સૌરાષ્ટ્ર ખેત–આબોહવાકીય વિસ્તારના મગફળી (ચોમાસુ) – ઘઉં (શિયાળું) પાક પધ્ધતિ અપનાવતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે મગફળી – ઘઉં પાક પધ્ધતિની જગ્યાએ નીચેના માંથી કોઈ એક ઘનિષ્ઠ પાક પધ્ધતિ અપનાવવાની ભલામણ કરવામાં આવે છે.

ચોમાસુ	શિયાળું	ઉનાળું
૬૦ સે.મી.ના અંતરે બે હાર મગફળી (અર્ધ વેલડી) અને એક હાર સ્વીટકોર્ન	૪૫ સે.મી.ના અંતરે બે હાર ધાણાં અને એક હાર વટાણા (શાકભાજી)	૪૫ સે.મી.ના અંતરે બે હાર તલ અને એક હાર ચોળી (શાકભાજી)
અથવા		
૪૫ સે.મી.ના અંતરે ગમ ગુવાર	૬૦ સે.મી.ના અંતરે બે હાર વરીયાળી અને ૧૫ સે.મી.ના અંતરે આઠ હાર લસણ	૪૫ સે.મી.ના અંતરે બે હાર તલ અને ૨૨.૫ સે.મી.ના અંતરે બે હાર ચારાની જુવાર

Approved with following suggestion/s:
Add intensified in recommendation para.

*(**Action:** Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*

14.2.1.20 Comparative efficacy of PSB and bio-phos on the performance of castor

The farmers of South Saurashtra Agro-climatic Zone growing irrigated castor are recommended to apply PSB in soil @ 2.0 L/ha and 40 kg P_2O_5 along with recommended dose of N and K (120-50 kg/ha) for obtaining higher seed yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત–આબોહવાકીય વિસ્તારમાં પિયત દિવેલા ઉગાડતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે દિવેલાના પાકમાં ૪૦ કિ.ગ્રા. ફોસ્ફરસ પ્રતિ હેકટર અને ફોસ્ફરસ સોલ્યુબલાઈઝીંગ બેકટેરીયા કલ્ચર જમીનમાં ૨ લીટર પ્રતિ હેકટર મુજબ તેમજ ભલામણ કરેલ રાસાયણીક ખાતર નાઈટ્રોજન અને પોટેશ્યમ (૧૨૦–૫૦ કિ.ગ્રા./હેકટર) આપવાથી ઉત્પાદનમાં અને ચોખી આવકમાં વધારો મેળવી શકાય છે.

Approved with following suggestion/s:
Recast recommendation para.

*(**Action:** Res. Scientist (Groundnut), Main Oilseeds Res. Station, JAU, Junagadh)*

14.2.1.21 Groundnut based cropping system under rainfed condition

The farmers of North Saurashtra Agro-climatic Zone adopting bunch groundnut based intercrop system under rainfed condition are recommended to grow groundnut with cotton in 2:1 row ratio for getting higher yield and net return.

ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં વરસાદ આધારીત ઉભડી મગફળીના પાકમાં આંતર પાક પધ્ધતિથી વાવેતર કરતા ખેડુતોને ભલામણ કરવામાં આવે છે કે મગફળીની બે હાર સાથે આંતરપાક કપાસની એક હાર વાવવાથી વધારે ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

Approved.

*(**Action:** Res. Sci. (Dry Farming), Main Dry Farming Res. Station, JAU, Targhadia)*

14.2.1.22 Moisture stress management in sugarcane

The farmers of South Saurashtra Agro-climatic Zone interested to grow spring–planted sugarcane under water deficit condition during formative stage are recommended to apply trash mulch @ 5 t/ha at 4-6 days after planting and foliar spray of urea + muriate of potash both @ 2.5 % (2.5 kg urea + 2.5 kg KCl in 100 litres of water) at 60, 80 and 100 days after planting for securing higher cane yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં વસંતકાલીન શેરડીનું વાવેતર કરવા ઈચ્છતા ખેડુતોને શેરડીની વિકાસક્ષમ અવસ્થા દરમ્યાન પાણીની અછતની પરિસ્થિતિમાં વધારે ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે શેરડીની વાવણી પછી હેકટર દીઠ ૫ ટન પતરી ૪ થી ૬ દિવસે મલ્ચ તરીકે પાથરી તેમજ ૬૦,૮૦ અને ૧૦૦ દિવસે યુરિયા + મ્યુરેટ ઓફ પોટાશ બન્નેની ૨.૫ ટકા પ્રમાણે (૨.૫ કિગ્રા યુરિયા અને ૨.૫ કિગ્રા મ્યુરેટ ઓફ પોટાશ પ્રતિ ૧૦૦ લીટર પાણીમાં) છંટકાવ કરવાની ભલામણ કરવામાં આવે છે.

Approved.

*(**Action:** Research Scientist (Sugarcane), Sugarcane Research Station, JAU, Kodinar)*

14.2.1.23 Effect of different irrigation scheduling and irrigation interval through drip on chickpea

The farmers of South Saurashtra Agro-climatic Zone growing chickpea under drip irrigation system are recommended to irrigate the crop with drip system at 0.8 ETc at 5 days interval through drip after two flood irrigations for getting higher yield, net return and 27 % saving of irrigation water. The system details are as under:

System details	Operating time	
	Month	Minutes
Lateral spacing: 90 cm Dripper spacing: 45 cm Dripper discharge rate: 4 LPH Operating pressure: 1.2 kg/cm^2 Operating frequency: every 5th day irrigation	December January February	57 104 65

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારનાં ચણા ઉગાડતા ખેડુતોને ભલામણ કરવામાં આવે છે કે પાકનું વધુ ઉત્પાદન, વધુ ચોખ્ખો નફો મેળવવા તેમજ પિયત પાણીના ૨૭% બચાવ માટે બે પિયત રેલાવીને આપ્યા બાદ ટપક સિંચાઈ પધ્ધતિથી પાકનો ૦.૮ બાસ્પોત્સર્જન આંક હોય ત્યારે દર પાંચમાં દિવસે પિયત આપવાની ભલામણ કરવામાં આવે છે. ટપક પધ્ધતિ ને લગતી વિગતો નીચે મુજબ છે.

ટપક પધ્ધતિની વિગત	પરીચલનનો સમય	
	મહીનો	મીનીટ
પાણીની નળીઓનું અંતરઃ– ૯૦ સેમી. ટપકણીયાનું અંતર :– ૪૫ સેમી. ટપકણીયાનો સ્ત્રાવક્ષમતાઃ– ૪લીટર પ્રતિ કલાક પટી ચલણનું દબાણઃ– ૧.૨ કિગ્રા પ્રતિ ચો. સેમી. પટી ચલણનું પુનરાવૃતિઃ– ૫માં દિવસે	ડીસેમ્બર જાન્યુઆરી ફેબ્રુઆરી	૫૭ ૧૦૪ ૬૫

Approved.

*(**Action:** Research Scientist (Chickpea), Pulses Research Station, JAU, Junagadh)*

14.2.1.24 Irrigation management through critical stages of chickpea

The farmers of South Saurashtra Agro-climatic Zone interested to grow chickpea under water crisis condition are recommended to irrigate the chickpea crop at four critical stages like branching, flowering, pod initiation and grain filling apart from two common irrigations, first immediately after sowing and second at 6-7 days after sowing for getting higher yield and for saving 17 per cent of irrigation water.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ઓછા પાણીથી ચણાની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, પ્રથમ પિયત વાવેતર બાદ તુરંત અને બીજુ પિયત ૬ થી ૭ દિવસે આપ્યા બાદ ચાર પિયત પાકની કટોકટીની અવસ્થાઓ જેવી કે ડાળીઓ ફુટવી, ફુલ આવવા, પોપટા આવવા અને દાણા ભરાવા વખતે પિયત આપવાથી વધારે ઉત્પાદન મેળવી શકાય છે અને ૧૭ % પિયત પાણીની બચત કરી શકાય છે.

Approved with following suggestion/s:

Mention two common irrigations in recommendation para.

*(**Action:** Research Scientist (Chickpea), Pulses Research Station, JAU, Junagadh)*

14.2.1.25 Effect of multi-micronutrient formulations on brinjal

The farmers of South Saurashtra Agro-climatic Zone growing late *kharif* brinjal in medium black calcareous soil are recommended to apply micronutrients as per soil test value as basal **OR** apply foliar spray of multi-micronutrient formulation Grade IV (Fe-Mn-Zn-Cu-B, 4.0-1.0-6.0-0.5-0.5 %) @ 1% at 45, 60 and 75 DATP in addition to recommended dose of fertilizers (100 - 37.5 - 37.5 N-P_2O_5-K_2O kg/ha) to brinjal for getting higher yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં મધ્યમ કાળી ચુનાયુકત જમીનમાં મોડી ચોમાસુ ઋતુમાં રીંગણાનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, રીંગણાના પાકમાં ભલામણ કરેલ રાસાયણિક ખાતર (૧૦૦–૩૭.૫–૩૭.૫ ના–ફો–પો કિ.ગ્રા./હે.) ઉપરાંત જમીન ચકાસણી મુજબ સૂક્ષ્મતત્વોને પાયામાં આપવાથી **અથવા** મલ્ટી–માઈક્રોન્યુટ્રીઅન્ટ ગ્રેડ–૪ (લોહ–મેન્ગેનીઝ–ઝીંક– કોપર– બોરોન, ૪.૦ – ૧.૦ – ૬.૦ – ૦.૫ – ૦.૫ ટકા) ના ૧ ટકા દ્રાવણનો ફેર રોપણી બાદ ૪૫, ૬૦ અને ૭૫ દિવસે છંટકાવ કરવાથી રીંગણાનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

Approved.

*(**Action:** Professor & Head, Dept. of Agril. Chem. & Soil Sci. and Research Scientist (G&O), Vegetable Research Station, JAU, Junagadh)*

14.2.1.26 Nitrogen management in wheat crop

The farmers of South Saurashtra Agro-climatic Zone growing wheat in medium black calcareous soil are recommended to apply nitrogen @ 120 kg/ha in three splits (¼ as basal + ½ at 20 to 25 DAS + ¼ at 35 to 40 DAS) instead of two splits in addition to recommended dose of P_2O_5- K_2O (60 - 60 kg ha^{-1}) for getting higher yield, net return and improve nutrient use efficiency.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં મધ્યમ કાળી ચુનાયુકત જમીનમાં ઘઉંનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ઘઉંના પાકમાં નાઈટ્રોજન ૧૨૦ કિ.ગ્રા./હેકટર બે હપ્તાને બદલે ત્રણ હપ્તામાં (૧/૪ ભાગ પાયામાં + ૧/૨ ભાગ વાવણી બાદ ૨૦ થી ૨૫ દિવસે + ૧/૪ ભાગ વાવણી બાદ ૩૫ થી ૪૦ દિવસે) મુજબ તેમજ ભલામણ કરેલ ફોસ્ફરસ અને પોટાશ (૬૦–૬૦ કિ.ગ્રા./હેકટર) પાયામાં આપવાથી વધુ ઉત્પાદન, ચોખ્ખો નફો અને ખાતરની કાર્યક્ષમતા વધારી શકાય છે.

Approved.

*(**Action:** Professor & Head, Dept. of Agril. Chem. & Soil Sci. and Research Scientist (Wheat), Wheat Research Station. JAU, Junagadh)*

14.2.1.27 Effect of soil amendments on different varieties of soybean (*Glycine max* L.) under sodic soil

The farmers of South Saurashtra Agro-climate Zone growing soybean in sodic soil during *kharif* season are recommended to grow soybean variety NRC-37 and apply FYM @ 10 t ha^{-1} + Gypsum @ 50 % GR along with recommended dose of 30:60:00 kg $N:P_2O_5:K_2O$ ha^{-1} for obtaining higher yield and net realization.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તાર કે જયાં ભાસ્મીક જમીનમાં ખરીફ ઋતુમાં સોયાબીન ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે સોયાબીનની એન.આર.સી.–૩૭ જાત ભલામણ મુજબ રાસાયણીક ખાતર ૩૦–૬૦–૦૦ ના–ફો–પો કિગ્રા/હે. તેમજ છાણિયુ ખાતર ૧૦ ટન/હે સાથે જીપ્સમ જરૂરીયાતના ૫૦ % મુજબ આપવાથી વધારે ઉત્પાદન અને ચોખ્ખુ વળતર મળે છે.

Approved.

*(**Action:** Professor & Head, Dept. of Agril. Chem. & Soil Sci. and Research Scientist (Horti.), Agril. Research Station (FC), JAU, Mahuva)*

14.2.1.28 Effect of nutrients management modules for minimizing drought impact and groundnut yield maximization in rainfed region

The farmers of North Saurashtra Agro-climatic Zone growing semi spreading groundnut crop are recommended to spray urea @ 2% at 30 to 35 DAS along with recommended dose of 12.5-25 N-P kg/ha for obtaining higher yield and maximum net return.

ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં વરસાદ આધારીત અર્ધવેલડી મગફળીનું વાવેતર કરતા ખેડુતોને ભલામણ કરવામા આવે છે કે મગફળીના પાકને ભલામણ કરેલ ૧૨.૫-૨૫ કિ.ગ્રા. નાઈટ્રોજન અને ફોસ્ફરસ પ્રતિ હેકટરની સાથે ૨ ટકા યુરિયાના દ્રાવણનો છંટકાવ વાવેતરબાદ ૩૦ થી ૩૫ દિવસે કરવાથી વધારે ઉત્પાદન અને ચોખ્ખી આવક મેળવી શકાય છે.

Approved.

*(**Action :**Res. Sci. (Dry Farming), Main Dry Farming Res. Station, JAU, Targhadia)*

14.2.1.29 Effect of zinc fertilization on wheat yield in sandy loam

The farmers of North Saurashtra Agro-climatic Zone (AES - 10) growing wheat are recommended to apply $ZnSO_4$ @ 20 kg ha^{-1} as basal along with two foliar sprays of $ZnSO_4$ @ 0.5 % (50 g/10 lit. water) at heading and milking stages with recommended dose of fertilizer (120-60-60 NPK kg/ha) for obtaining higher yield and net realization.

ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તાર(ખેત હવામાન પરિસ્થિતિ–૧૦)માં ઘઉંનું વાવેતર કરતા ખેડુતોને ભલામણ કરવામાં આવે છે કે ઘઉંના પાકને ભલામણ કરેલ રાસાયણિક ખાતર ના.ફો.પો.૧૨૦:૬૦:૬૦ કિ.ગ્રા. પ્રતિ હેકટરની સાથે ઝીંક સલ્ફેટ ૨૦ કિ.ગ્રા. પ્રતિ હેકટરે વાવેતર સમયે જમીનમાં આપવાની સાથે ૦.૫ ટકા(૫૦ ગ્રામ/૧૦ લીટર પાણીમા) ઝીંક સલ્ફેટના બે છંટકાવ નિંઘલ અને દુધિયા દાણાની અવસ્થાએ કરવાથી વધુ ઉત્પાદન અને આર્થિક વળતર મેળવી શકાય છે.

Approved with following suggestion/s:

Delete Zn content in grain from recommendation para

*(**Action :**Res. Sci. (Dry Farming), Main Dry Farming Res. Station, JAU, Targhadia)*

14.2.1.30	**Integrated weed management in *rabi* fennel**
	The farmers of South Saurashtra Agro-climatic Zone growing fennel in *rabi* season are recommended to carry out two hand weeding and inter culturing at 20 and 40 DAS for effective weed management and achieving higher seed yield and net realization. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં શિયાળુ વરીયાળીનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે અસરકારક નીંદણ નિયંત્રણ તથા વરીયાળીનું વધુ ઉત્પાદન અને ચોખ્ખુ વળતર મેળવવા માટે વાવણી બાદ ૨૦ અને ૪૦ દિવસે હાથ નિંદામણ અને આંતર ખેડ કરવી. **Approved with following suggestion/s:** House decided to split the recommendation for farmer and scientific community. ***(Action:*** *Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

14.2.1.31	**Effect of water application in different layers of soil on growth and yield of drip irrigated young mango plantation**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone having 8 to 9 years old mango plantation at a spacing of 5 m x 5 m are recommended to apply irrigation water after initiation of flowering directly in vertically inserting HDPE/PVC pipe (75 mm diameter) into the soil at 40 cm depth below ground level in four side 1.5 m away from mango trunk through spaghetti tube (4 mm diameter) fitted on online dripper through drip system for getting good quality mango fruit with higher yield, net profit and water use efficiency as compared to water applied through surface drip system. **System details** Lateral spacing : 5 m Dripper discharge : 8 lph No. of drippers per tree : 4 Operating pressure : 1.2 kg/cm^2 Operating frequency : Alternate day Operating time : Oct. – Nov. : 120 to 202 min March – May : 206 to 330 min દક્ષિણ ગુજરાતનાં ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં ૮ થી ૯ વર્ષના ૫ મી. × ૫ મી.નાં અંતરે રોપેલા આંબાના ઝાડ ધરાવતા ખેડૂતોને ભલામણ કરવામા આવે છે કે આંબાના ઝાડને પિયત આપવા માટે ઝાડના થડની ચાર બાજુ ૧.૫ મીટરના અંતરે એચડીપીઈ/પીવીસી પાઈપ (૭૫ મીમી વ્યાસ) જમીનમાં ૪૦ સેમી. ઉંડાઈએ ઉભી ઉતારીને ટપકણીયા પર પ્લાસ્ટીકની પાતળી નળી (૪ મીમી વ્યાસ) મારફતે આંબામાં ફૂલ આવ્યા બાદ ટપક પધ્ધતિ દ્વારા પિયત આપવાથી સારી ગુણવત્તાવાળા ફળોનું વધારે ઉત્પાદન, ચોખ્ખો નફો તેમજ પિયત પાણીની કાર્યક્ષમતા જમીન પરની ટપક પધ્ધતિની સરખામણીએ વધારે મેળવી શકાય છે. **ટપક પધ્ધતિની વિગત :** લેટરલ અંતર : ૫ મીટર ટપકણીયાનો દર : ૮ લી/કલાક ઝાડ દીઠ ટપકણીયાની સંખ્યા : ૪ નંગ પધ્ધતિ ચલાવવા માટેનું દબાણ : ૧.૨ કિ.ગ્રા/સેમી^{૨} પધ્ધતિ ચલાવવાનો સમયગાળો : એકાંતર દિવસે પધ્ધતિ ચલાવવાનો સમયઃ ઓકટોમ્બર થી નવેમ્બર : ૧૨૦ થી ૨૦૨ મીનીટ માર્ચ થી મે : ૨૦૬ થી ૩૩૦ મીનીટ **Approved with following suggestion/s:** 1. Keep 40 cm depth only. 2. Present in Horticulture subcommittee. ***(Action:*** *Research Scientist, Soil & Water Mgmt. Research Unit, NAU, Navsari)*
14.2.1.32	**Feasibility of drip irrigation in summer rice**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing summer rice are recommended that the surface irrigation is more economical than drip irrigation as it gives higher yield with less cost. However, in scarcity of water and availability of drip irrigation system, they can adopt the drip system at 60 cm

lateral spacing for getting higher water productivity and 41% saving of water with 4 to 5 irrigations of 80 mm depth to be given by surface method during initial establishment of the crop.

The system details are as under:

Crop spacing: 20 x 20:40 cm (Paired row)
Lateral spacing: 60 cm
Dripper spacing: 60 cm
Dripper discharge: 8 lph
Operating pressure: 1.20 kg/cm^2
System operating period: twice in week
Operating time: March to May: 110 to 125 minutes (1.2 PEF)

દક્ષિણ ગુજરાતનાં ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં ઉનાળું ડાંગરની રોપણી કરતાં ખેડુતોને ભલામણ કરવામાં આવે છે કે, ટપક પિયત પધ્ધતિની સરખામણીએ પૃષ્ઠ પિયત પધ્ધતિ આર્થીક રીતે વધુ ઉત્પાદન આપતી અને સસ્તી પડે છે. તેમ છતાં પાણીની અછત હોય અને ટપક પિયત પધ્ધતિ ઉપલબ્ધ હોય તો શરૂઆતના ૮૦ મીમી ઉડાઈના ૪ થી ૫ પિયત પૃષ્ઠ પિયત પધ્ધતિથી આપવા અને ટપક પધ્ધતિનો ઉપયોગ કરવો. આ પધ્ધતિથી પ્રતિ લિટરે ડાંગરનું વધુ ઉત્પાદન મેળવી શકાય અને ૪૧ % પાણીની બચત થઈ શકે છે.

ટપક પધ્ધતિની વિગત:

વાવેતર અંતર : ૨૦ × ૨૦ : ૪૦ સેમી (જોડીયા હાર)
લેટરલ અંતર : ૬૦ સેમી
ટપકણીયાનો દર : ૮ લી/કલાક
ટપકણીયાની અંતર : ૬૦ સેમી
પધ્ધતિ ચલાવવા માટેનું દબાણ : ૧.૨ કિ.ગ્રા/સેમી^{૨}
પધ્ધતિ ચલાવવાનો સમયગાળો : અઠવાડીયામાં બે વાર
પધ્ધતિ ચલાવવાનો સમય : માર્ચથી મે : ૧૧૦ થી ૧૨૫ મીનીટ (1.2 PEF)

Approved with following suggestion/s:

Verify pooled yield analysis CD value.

*(**Action:** Research Scientist, Soil & Water Management Res. Unit, NAU, Navsari)*

14.2.1.33 Study on combined effect of irrigation, fertigation and mulching levels on fruit yield and quality of watermelon

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing summer water melon are recommended to apply irrigation through drip system at 0.6 PEF, fertilize the crop @ 150:75:75 kg NPK/ha and mulch with silver black plastic sheet (25 micron and 50 % covering) for achieving higher yield and net return. The adoption of the practice saves 38 % water, gives 80 % weed control and produces good quality fruits.

Drip detail:

Lateral spacing: 2 m
Dripper spacing: 1 m
Dripper discharge: 8 lph
Operating pressure: 1.20 kg/cm^2
System operating schedule: Alternate day
Stages wise water application and system operating time:

Plant growth stage	Water application (l/ plant)	System operating time (minute)
Vegetative	2.25	20
Flowering	2.25 - 8.25	20 – 60
Fruit setting	8.25 - 18.00	60 - 135
Maturity	18.00 - 15.50	135 - 115

Fertigation schedule:

Full dose of P_2O_5 and 10 % of N and K_2O applied as basal and remaining N and K through drip system in eight equal splits at weekly interval starting from 15 days after germination.

દક્ષિણ ગુજરાતના વધુ વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં ઉનાળું તરબૂચનું વાવેતર કરતાં ખેડૂતોને ટપક પધ્ધતિથી ૦.૬ PEF પ્રમાણે પિયત આપવાની ભલામણ કરવામાં આવે છે તેમજ પ્રતિ હેકટરે ૧૫૦:૭૫:૭૫ કિ.ગ્રા. ના:ફો:પો ખાતર અને પાકને સિલ્વર – બ્લેક પ્લાસ્ટિક સીટ (૨૫ માઈક્રોન – ૫૦ ટકા વિસ્તાર) નું આવરણ

કરવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે. વધુમાં આ પધ્ધતિ અપનાવવાથી ૩૮ % પાણીની બચત, ૮૦ % નિંદણ નિયંત્રણ અને સારી ગુણવતાવાળા ફળો મેળવી શકાય છે.

ટપક પધ્ધતિની વિગત:

લેટરલ અંતર : ૨ મી.

ટપકણીયાની અંતર : ૧ મી.

ટપકણીયાનો દર : ૮ લી/કલાક

પધ્ધતિ ચલાવવા માટેનું દબાણ : ૧.૨ કિ.ગ્રા./સેમી^{2}

પધ્ધતિ ચલાવવાનો સમયગાળો : એકાંતરા દિવસે

અવસ્થા પ્રમાણે પાણી આપવાનો અને પધ્ધતિ ચલાવવાનો સમય :

પાક વૃધ્ધિની અવસ્થા	આપવામા આવેલ પાણી (લી/છોડ)	પધ્ધતિ ચલાવવાનો સમય (મીનીટ)
વાનસ્પતિક	૨.૨૫	૨૦
ફુલ અવસ્થા	૨.૨૫ – ૮.૨૫	૨૦ – ૬૦
ફળ બેસવા	૮.૨૫ – ૧૮.૦૦	૬૦ – ૧૩૫
પરીપકવતા	૧૫.૫૦ – ૧૮.૦૦	૧૩૫ – ૧૧૫

ફર્ટીગેશન સમય પત્રક :

બધોજ ફોસ્ફરસ અને ૧૦ ટકા નાઈટ્રોજન અને પોટેશીયમ પાયામાં આપવાં તથા બાકીનો નાઈટ્રોજન અને પોટેશીયમ એક સરખા ૮ હપ્તામાં ૮ દિવસના અંતરે પાક ઉગ્યાના ૧૫ દિવસ પછીથી ટપક પધ્ધતિ દ્વારા આપવાં.

Approved with following suggestion/s:

Present in Horticulture subcommittee.

***(Action:** Research Scientist, Soil & Water Management Res. Unit, NAU, Navsari)*

14.2.1.34 Study on pit method of planting in sugarcane under drip irrigation

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone to planting sugarcane through pit method are recommended to dig out pit of 60 cm diameter with a spacing of 1.75 m x 1.75 m with a depth of 40 cm by using post hole pit digger. Sixteen sugarcane sets of two budded are to be put in pit with filling of soil and FYM/bio-compost to a depth of 25 cm below and 15 cm upper side of sets. By adopting of this method, three ratoon can be taken with higher yield and net profit as compared to two ratoon with paired row planting (0.6 m x1.2 m) under drip irrigation.

The system details are:

Lateral spacing : 3.5 m
Dripper spacing : 1.75 m
Size of micro tube fitted on dripper: 4 mm
Dripper discharge : 8 lph
Operating pressure : 1.2 kg/cm^{2}
Operating frequency : Alternate day
Operating time : October- December: 110-157 min.
March- June: 186-248 min.

દક્ષિણ ગુજરાતનાં ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં શેરડીની રોપણી ખાડા પધ્ધતિથી કરવા માંગતા ખેડૂતોએ ૬૦ સેમી વ્યાસના ૪૦ સેમી ઉડા ખાડા, ૧.૭૫ મી × ૧.૭૫ મીનાં અંતરે કરવા. ખાડામાં માટી અને છાણીયું ખાતર/બાર્યો કમ્પોસ્ટનુ મિશ્રણ ૨૫ સેમી. સુધી ભર્યા બાદ શેરડીના બે આંખવાળા ૧૬ ટૂકડા ગોઠવી તેની ઉપર ૧૫ સેમી માટીનું મિશ્રણ નાખી ખાડા પુરવાં. જોડીયા હાર પધ્ધતિથી બે લામની સરખામણીએ આ પધ્ધતિ અપનાવાથી શેરડીનાં ત્રણ લામ લઈને વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

ટપક પધ્ધતિની વિગત:

લેટરલ અંતર : ૩.૫ મીટર

ટપકણીયાનું અંતર : ૧.૭૫ મીટર

ટપકણીયાનો દર : ૮ લી/કલાક

પધ્ધતિ ચલાવવા માટેનું દબાણ : ૧.૨ કિ.ગ્રા/સેમી^{2}

પધ્ધતિ ચલાવવાનો સમયગાળો : એકાંતર દિવસે

પધ્ધતિ ચલાવવાનો સમય : ઓકટોમ્બર થી ડિસેમ્બર : ૧૧૦ થી ૧૫૭ મીનીટ

માર્ચ થી જૂન : ૧૮૬ થી ૨૪૮ મીનીટ

Approved.

***(Action:** Research Scientist, Soil & Water Management Res. Unit, NAU, Navsari)*

14.2.1.35 Effect of rate and frequency of micronutrient application on production of banana under drip irrigation

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing drip irrigated banana are recommended to apply 50 g micronutrient mixture (Grade-V)/plant as soil application in two equal splits at 10 and 40 days after planting along with Precision Farming Development Centre (PFDC) package of fertilization for getting higher yield, net return, better quality of fruits and sustain the soil fertility.

Schedule of fertilization as per PFDC package:

Method of application	Days after planting	Urea (g/plant)	DAP (g/plant)	MOP (g/plant)
Soil application	30th	63	40	40
	60th	63	40	40
Fertigation	90th	32	--	20
	105th	32	--	20
	120th	32	--	20
	135th	32	--	20
	150th	32	--	20
	165th	32	--	20

System details:
Lateral spacing: 2.4 m, Dripper distance: 0.6 m, Dripper discharge: 4 lph,
Operating pressure: 1.2 kg/cm^2 and Operating frequency: Alternate day (0.6 PEF).

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં ટપક સિંચાઈ પધ્ધતિ અપનાવી કેળની ખેતી કરતાં ખેડૂતોને સુક્ષ્મ તત્વોનુ મિશ્રણ (ગ્રેડ–૫) ૫૦ ગ્રામ પ્રતિ છોડ દીઠ બે સરખા હપ્તામાં રોપણી બાદ ૧૦ અને ૪૦ દિવસે જમીનમાં આપવું અને સાથે રાસાયણિક ખાતરો પીએફડીસી પેકેજ મુજબ આપવાની ભલામણ કરવામા આવે છે. આમ કરવાથી ગુણવતાયુકત કેળાનું વધુ ઉત્પાદન, ચોખ્ખો નફો તેમજ જમીનની ફળદ્રુપતા જળવાઈ રહે છે.

પધ્ધતિ	રોપણી પછીના દિવસ	યુરીયા (ગ્રામ/છોડ)	ડીએપી (ગ્રામ/છોડ)	મ્યુરેટ ઓફ પોટાશ (ગ્રામ/છોડ)
જમીનમા	૩૦	૬૩	૪૦	૪૦
	૬૦	૬૩	૪૦	૪૦
ફર્ટીગેશન	૯૦	૩૨	–	૨૦
	૧૦૫	૩૨	–	૨૦
	૧૨૦	૩૨	–	૨૦
	૧૩૫	૩૨	–	૨૦
	૧૫૦	૩૨	–	૨૦
	૧૬૫	૩૨	–	૨૦

ટપક પધ્ધતિની વિગતઃ

લેટરલ અંતરઃ ૨.૪ મીટર, ટપકણીયાનો દર : ૪ લી/કલાક, ટપકણીયાની અંતર : ૬૦ સેમી, પધ્ધતિ ચલાવવા માટેનું દબાણ : ૧.૨ કિ.ગ્રા./ સેમી^{2} પધ્ધતિ ચલાવવાનો સમયગાળો : એકાંતર દિવસે (0.6 PEF મુજબ)

Approved with following suggestion/s:
Present in Horticulture subcommittee.

***(Action:** Research Scientist, Soil & Water Management Res. Unit, NAU, Navsari)*

14.2.1.36 Study the N and K requirement of beet root grown on coastal soils of South Gujarat

The farmers of coastal areas of South Gujarat Heavy Rainfall Agro-climatic Zone growing beet root (paired row: 20 cm x 45 cm x 75 cm, bed width: 75 cm, furrow top width: 45 cm) during *rabi* season are recommended to apply 150 kg N and 60 kg K_2O/ha in addition to common application of 60 kg P_2O_5 and 10 t bio compost/ha for getting higher yield and net return.

દક્ષિણ ગુજરાતનાં દરીયાકાંઠાના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં રવી ઋતુમાં બીટરૂટને (જોડીયાહાર પધ્ધતિ) ૨૦ સેમી × ૪૫ સેમી બે હાર વચ્ચેનું અંતર રાખી અને ગાદી કયારાની પહોળાઈ ૭૫ સેમી તથા ચાસની પહોળાઈ – ૪૫ સેમીએ ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે પાકને પ્રતિ હેકટર ૧૫૦ કિ.ગ્રા. નાઈટ્રોજન અને૬૦ કિ.ગ્રા. પોટેશીયમ ઉપરાંત ૬૦ કિ.ગ્રા. ફોસ્ફરસ અને ૧૦ ટન બાયોકમ્પોસ્ટ ખાતર આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

	Approved. ***(Action:** Research Scientist, Soil & Water Management Res. Unit, NAU, Navsari)*
14.2.1.37	**Response of *Bt.* cotton hybrids to integrated nutrient management under coastal salt affected soil**
	The *Bt* .cotton (GCH-8 (BG-II)) growing farmers of coastal areas of South Gujarat Heavy Rainfall Agro-climatic Zone are recommended to apply 10 t bio compost/ha and 300 kg N/ha in five equal splits at 30, 60, 75, 90 and 105 DAS for getting higher seed cotton yield and net return. દક્ષિણ ગુજરાતના દરિયાકાંઠાનાં ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં બીટી કપાસ (GCH-8 (BG-II)) ઉગાડતા ખેડૂતોને ભલામણ કરવામા આવે છે કે પાકને પ્રતિ હેકટર ૧૦ ટન બાયોકમ્પોસ્ટ અને ૩૦૦ કિ.ગ્રા. નાઈટ્રોજન પાંચ સરખા હપ્તામાં, ૩૦, ૬૦, ૭૫, ૯૦ અને ૧૦૫ દિવસે આપવાથી કપાસનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે. **Approved with following suggestion/s:** 1. Give splits schedule of N application. 2. Give var. GCH-8 (BG-II). 3. Recast the recommendation. ***(Action:** Research Scientist, Soil & Water Management Res. Unit, NAU, Navsari)*
14.2.1.38	**Comparative performance of hybrid and variety of rice under different spacing and age of seedling under South Gujarat conditions**
	The *kharif* hybrid rice growing farmers of South Gujarat Heavy Rainfall Agro-climatic Zone are recommended to apply 10 t FYM/ha and transplant 18 days old seedling at 25 cm x 25 cm spacing. The crop is to be fertilized with 40,000 brickets/ha (60 Urea: 40 DAP) at 4 days after transplanting for getting higher yield and net return. દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં ચોમાસું હાઈબ્રીડ ડાંગરની રોપણી કરતાં ખેડૂતોએ ૧૦ ટન છાણીયુ ખાતર/હે. આપીને ૧૮ દિવસના ધરૂની ફેરરોપણી ૨૫ સેમી × ૨૫ સેમીનાં અંતરે કરવી. તેમજ રોપણી બાદ ચાર દિવસે ખાતરની ૪૦,૦૦૦ ટીકડીઓ (૬૦ યુરિયા : ૪૦ ડીએપી) પ્રતિ હેકટરે આપવાની ભલામણ કરવામાં આવે છે. આમ કરવાથી ડાંગરનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે. **Approved.** ***(Action:** Research Scientist, Soil & Water Management Res. Unit, NAU, Navsari)*
14.2.1.39	**Production potential of rice hybrid under different fertility levels in South Gujarat conditions**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing *kharif* hybrid rice are recommended to apply 10 t FYM/ha and fertilize the crop @ 125:37.5:00 kg NPK for getting higher yield and net return. દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં ચોમાસુ હાઈબ્રીડ ડાંગરની રોપણી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે પ્રતિ હેકટરે ૧૦ ટન છાણીયુ ખાતર આપવું અને પાકને ૧૨૫ કિ.ગ્રા. નાઈટ્રોજન અને ૩૭.૫ કિ.ગ્રા. ફોસ્ફરસ ખાતર આપવાની ભલામણ કરવામાં આવે છે. આમ કરવાથી ડાંગરનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે. **Approved.** ***(Action:** Research Scientist, Soil & Water Management Res. Unit, NAU, Navsari)*
14.2.1.40	**Use of plant growth regulators for enhanced yield and quality of sugarcane**
	Sugarcane growers of South Gujarat Heavy Rainfall Agro-climatic Zone are recommended to plant sugarcane sets after overnight soaking in water and apply foliar spray of GA_3 (35 ppm) at 90, 120 and 150 DAP for getting higher remunerative production. દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમા શેરડી ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે શેરડીના ટુકડાને પાણીમાં એક રાત્રી બોળી રોપણી કરવી અને ત્યારબાદ GA_3 (35 ppm)ના ૯૦, ૧૨૦ અને ૧૫૦ દિવસે છંટકાવ કરવાથી વધુ ઉત્પાદન અને આર્થિક વળતર મેળવી શકાય છે. **Approved with following suggestion/s:** 1. Keep ethrel for scientific information and GA_3 for recommendation for famers ***(Action:** Research Scientist, Main Sugarcane Research Station, NAU, Navsari)*

14.2.1.41	**Impact of integrated application of organic and inorganic in improving soil health and sugarcane productivity**

Sugarcane growers of South Gujarat Heavy Rainfall Agro-climatic Zone are recommended to apply 10 t FYM ha^{-1} with biofertilizer (*Acetobacter* + PSB @ 12.5 lit ha^{-1}) and inorganic fertilizers as per soil test based values as well as zinc sulphate 25 kg ha^{-1} before planting of sugarcane for getting higher cane yield, net return and sustaining soil fertility.

As per soil test analysis based N,P_2O_5 and K_2O fertilizes to be applied as below:

Available soil N (kg/ha)	Recommended dose of N (kg/ha)
0-140	375
141-280	312.50
281-420	250
421-560	250
561-700	187.50
>700	125

Available soil P_2O_5 (kg/ha)	Recommended dose of P_2O_5 (kg/ha)
0-10	187.50
11-20	156.25
21-30	125
31-40	125
41-55	93.75
>55	62.5

Available soil K_2O (kg/ha)	Recommended dose of K_2O (kg/ha)
0-100	187.50
101-150	131.25
151-200	125
201-250	125
251-300	93.75
>300	62.5

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં શેરડી ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે શેરડીનાં રોપાણ અને લામ પાકમાં છાણિયું ખાતર ૧૦ ટન પ્રતિ હે. ની સાથે જૈવિક ખાતર (એસીટોબેકટર અને પીએસબી ૧૨.૫ લી. પ્રતિ હે.) આપવું તથા રોપણી પહેલાં જમીનની ચકાસણી મુજબના ખાતરો અને ૨૫ કિ.ગ્રા. ઝીંક સલ્ફેટ પ્રતિ હેકટરે આપવાથી વધુ ઉત્પાદન, આવક અને જમીનની ફળદ્રુપતા જાળવી શકાય છે.

જમીન ચકાસણીના અહેવાલ મુજબ નાઈટ્રોજન, ફોસ્ફરસ, પોટાશિયમ અને ખાતર નીચે જણાવ્યા મુજબ આપવું.

જમીનમાં લભ્ય નાઈટ્રોજન (કિ.ગ્રા./હે.)	નાઈટ્રોજન આપવાની ભલામણ (કિ.ગ્રા./હે.)
૦–૧૪૦	૩૭૫
૧૪૧–૨૮૦	૩૧૨.૫૦
૨૮૧–૪૨૦	૨૫૦
૪૨૧–૫૬૦	૨૫૦
૫૬૧–૭૦૦	૧૮૭.૫૦
૭૦૦ થી વધુ	૧૨૫

જમીનમાં લભ્ય ફોસ્ફરસ (કિ.ગ્રા./હે.)	ફોસ્ફરસ આપવાની ભલામણ (કિ.ગ્રા./હે.)
૦–૧૦	૧૮૭.૫૦
૧૧–૨૦	૧૫૬.૨૫
૨૧–૩૦	૧૨૫
૩૧–૪૦	૧૨૫
૪૧–૫૫	૯૩.૭૫
૫૫ થી વધુ	૬૨.૫

જમીનમાં લભ્ય પોટાશ (કિ.ગ્રા./હે.)	પોટાશ આપવાની ભલામણ (કિ.ગ્રા./હે.)
૦–૧૦૦	૧૮૭.૫
૧૦૧–૧૫૦	૧૩૧.૨૫
૧૫૧–૨૦૦	૧૨૫
૨૦૧–૨૫૦	૧૨૫
૨૫૧–૩૦૦	૯૩.૭૫
૩૦૦ થી વધુ	૬૨.૫

Approved with following suggestion/s:
Prepare recommended dose for different STV in tabular form
***(Action:** Research Scientist, Main Sugarcane Research Station, NAU, Navsari)*

14.2.1.42 Intercropping and plant geometry in relation to mechanization in sugarcane

Sugarcane growers of South Gujarat Heavy Rainfall Agro-climatic Zone are recommended to plant sugarcane in twin row (30-120-30 cm) with intercropping of four rows of onion in 120 cm spacing to fetch higher remunerative production. The practice is suitable for mechanization in sugarcane cultivation.

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં શેરડી ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે શેરડીની રોપણી જોડીયા હાર અપનાવી (૩૦–૧૨૦–૩૦ સેમી) કરવી અને સાથે ૧૨૦ સે.મી. માં આંતરપાક તરીકે ડુંગળીની ચાર હાર લેવાથી આર્થિક રીતે વધુ ઉત્પાદન મેળવી શકાય અને યાંત્રીકરણમાં અનુકૂળતા રહે છે.

Approved.
***(Action:** Research Scientist, Main Sugarcane Research Station, NAU, Navsari)*

14.2.1.43 Irrigation and fertilizer requirement of Indian bean variety GNIB 21

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone, growing *rabi* vegetable Indian bean (GNIB 21) are recommended to apply 4 irrigations of 50 mm depth at sowing, branching, flowering and after first picking. The crop is to be fertilized with 40 kg N/ha as basal dose for achieving profitable yield.

દક્ષિણ ગુજરાતનાં ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં શિયાળુ શાકભાજી માટેની પાપડીનું વાવેતર કરતાં ખેડૂતોને પાપડી (ગુજરાત નવસારી પાપડી ૨૧) નું નફાકારક ઉત્પાદન મેળવવા પાકને ૫૦ મી.મી. ઉંડાઈના ચાર પિયત વાવણી સમયે, ડાળી અવસ્થાએ ફૂલ અવસ્થાએ અને પ્રથમ વીણી બાદ આપવાની તથા વાવણી સમયે પાયામાં પ્રતિ હેકટરે ૪૦ કિ.ગ્રા. નાઈટ્રોજન ખાતર આપવાની ભલામણ કરવામાં આવે છે.

Approved.
***(Action:** Asstt. Res. Scientist, Pulse & Castor Research Station, NAU, Navsari)*

14.2.1.44 Effect of row spacing and seed rate on growth and seed yield of sunnhemp seed crop during *rabi* season

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing sunnhemp seed crop under conserved moisture in *K*yari land after *kharif* rice are recommended to sow the crop at 45 to 60 cm row spacing using 30 kg/ha seed rate.

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં ડાંગર પછી કયારીમાં સંગ્રહીત ભેજમાં બીજ ઉત્પાદન માટે શણ ઉગાડતાં ખેડૂતોને બે હાર વચ્ચે ૪૫ થી ૬૦ સેમી. અંતર અને ૩૦ કિ.ગ્રા./હેકટર બીજનો દર રાખી શણનું વાવેતર કરવાની ભલામણ કરવામાં આવે છે.

Approved.
***(Action:** Professor & Head, Department of Agronomy, NMCA, NAU, Navsari)*

14.2.1.45 Integrated nutrient management in lucerne (*Medicago sativa* L.) under south Gujarat condition

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing lucerne are recommended to apply FYM 10 t/ha or biocompost 7 t/ha and fertilized the crop with 20:50:50 kg NPK/ha as basal and seed treatment of biofertilizers (*Rhizobium* + PSB each @ 10 ml/kg seed) for getting higher yield and net return.

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં રજકાનું વાવેતર કરતાં ખેડૂતોને વધુ ઉત્પાદન અને આર્થિક વળતર મેળવવા માટે વાવણી વખતે ૧૦ ટન છાણીયુ ખાતર અથવા ૭.૦ ટન બાયોકમ્પોસ્ટ અને ૨૦:૫૦:૫૦ ના:ફો:પો પ્રતિ હેકટર મુજબ તથા બાયોફર્ટીલાઈઝર (રાઈઝોબીયમ + પીએસબીની બીજ માવજત ૧૦ મીલી/કિગ્રા બીજ પ્રમાણે) આપવાની ભલામણ કરવામાં આવે છે.

Approved with following suggestion/s:
Include FYM dose in recommendation

	***(Action:** Professor & Head, Department of Agronomy, NMCA, NAU, Navsari)*
14.2.1.46	**Nutrient management in guinea grass (*Panicum maximum* Jacq) under South Gujarat condition**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing guinea grass are recommended to apply 10 t/ha FYM and fertilized the crop with 62.5-37.5-37.5 kg NPK/ha as basal as well as 37.5 kg N/ha after each cut and 50 kg P_2O_5/ha each year for getting higher yield and net return. દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં ગીનીઘાસનું વધુ ઉત્પાદન તેમજ નફો મેળવવા માટે વાવણી સમયે હેકટરે ૧૦.૦ ટન છાણીયું ખાતર અને રાસાયણીક ખાતર ૬૨.૫:૩૭.૫:૩૭.૫ ના:ફો:પો કિગ્રા/હે. તથા ૩૭.૫ કિગ્રા નાઈટ્રોજન/હે. દરેક કાપણી પછી અને ૫૦ કિગ્રા ફોસ્ફરસ/હે. પ્રતિ વર્ષ પ્રમાણે આપવાની ભલામણ કરવામાં આવે છે. **Approved.** ***(Action:** Professor & Head, Department of Agronomy, NMCA, NAU, Navsari)*
14.2.1.47	**Cropping system diversification and/or intensification**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone are recommended to adopt the rice-cabbage-greengram crop sequence for securing higher production, net profit and improving soil fertility. દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારના વધુ વરસાદવાળા વિસ્તારનાં ખેડૂતોને હેકટરે વધુ ઉત્પાદન, ચોખ્ખો નફો અને જમીનની ફળદ્રુપતા વધારવા માટે ડાંગર–કોબીજ–મગ પાક પધ્ધતિ અપનાવવાની ભલામણ કરવામાં આવે છે. **Approved.** ***(Action:** Professor & Head, Department of Agronomy, NMCA, NAU, Navsari)*
14.2.1.48	**Response of pigeonpea to nutrient management**
	The farmers of South Gujarat Agro-climatic Zone growing pigeonpea under rainfed condition during *kharif* season are recommended to apply RDF (25-50-0 kg NPK/ha as basal dose) along with three sprays of 1% water soluble 19:19:19 NPK at branching, flowering and pod development stage for achieving higher yield and net return. દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં ચોમાસું બિનપિયત તુવેર ઉગાડતાં ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા ભલામણ મુજબનું રાસાયણીક ખાતર (૨૫–૫૦–૫૦૦ કિ.ગ્રા. ના:ફો:પો/હે.) સાથે ૧ % પાણીમાં દ્રવ્ય ખાતર ૧૯:૧૯:૧૯ ના:ફો:પો ના ત્રણ છંટકાવ ડાળી, ફૂલ તથા શીંગોનાં વિકાસની અવસ્થાએ કરવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s:** Add word 'RDF' in recommendation. ***(Action:** Professor & Head, Department of Agronomy, COA, NAU, Bharuch)*
14.2.1.49	**Effect of Zinc on growth and yield of finger millet**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing finger millet are recommended to apply 25 kg $ZnSO_4$ /ha in soil as basal dose OR give seed treatment with 30% ZnO at 10 ml/ kg seed and root dipping in 0.5% $ZnSO_4$ with recommended dose of fertilizer (40-20-20 kg NPK/ha) to get higher yield and net return. દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે ભલામણ મુજબના રાસાયણીક ખાતર (૪૦–૨૦–૨૦ ના:ફો:પો કિ.ગ્રા./હે.) સાથે ૨૫ કિ.ગ્રા. ઝીંક સલ્ફેટ/હે. અથવા નાગલીના બીજને ૩૦ ટકા ઝીંક ઓકસાઈડ (૧૦ મીલી/કિ.ગ્રા.) નો પટ આપવો અને ૦.૫ ટકા ઝીંક સલ્ફેટના દ્રાવણમાં મૂળને બોળીને ફેરરોપણી કરવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે. **Approved with following suggestion/s:** Recast the recommendation. ***(Action:** Professor & Head, Department of Agronomy, COA, NAU, Waghai)*
14.2.1.50	**Effect of different organics on finger millet**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing finger millet (GN 4) during *kharif* season are recommended to fertilize the crop with 50 % N through FYM (4 t/ha) + 25 % N through biocompost (660 kg/ha) + 25 % N through castor cake (250 kg/ha) + Azotobacter, 2 l/ha + PSB, 2 l/ha for getting higher yield and net return.

	દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં નાગલી (જી.એન. ૪) ની ખેતી કરતાં ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા ૫૦% નાઈટ્રોજન છાણિયું ખાતર (૪ ટન/હે.) ધ્વારા + ૨૫% નાઈટ્રોજન બાયોકમ્પોસ્ટ (૬૬૦ કિ.ગ્રા./હે.) ધ્વારા + ૨૫% નાઈટ્રોજન દિવેલીની ખોળ (૨૫૦ કિ.ગ્રા./હે.) ધ્વારા + એઝેટોબેકટર ૨ લિ./હેકટર અને પી.એસ.બી. ૨ લિ./હેકટર આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s:** Give FYM, Bio compost and Castor cake dose. ***(Action:** Professor & Head, Department of Agronomy, COA, NAU, Waghai)*
14.2.1.51	**Response of vegetable Indian bean to land configuration and irrigation schedules**
	The farmers of South Gujarat Agro-climatic Zone growing Indian bean during *rabi* season are recommended to grow the crop on broad bed and furrow (top width of bed 90 cm, height 10 cm, distance between two beds 45 cm with distance between two rows 30 cm and within row 15 cm) and apply 6 irrigations of 40 mm depth in which 1st irrigation just after sowing and remaining 5 irrigations at an interval of 12 to 15 days. By adopting these practices, it gives higher green pod yield and net return. દક્ષિણ ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં રવી ઋતુમાં પાપડી વાવતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે પહોળા ગાદી કયારા ઉપર ચાસમાં પાપડીનું વાવેતર કરવું (ગાદી કયારાની ઉપરની પહોળાઈ ૯૦ સેમી, ઉંચાઈ૧૦ સેમી, બે ગાદી કયારા વચ્ચેનું અંતર ૪૫ સેમી તથા બે હાર અને હારમાં બે છોડ વચ્ચેનું અંતર અનુક્રમે ૩૦ સેમી અને ૧૫ સેમી) અને પાપડીના પાકને ૪૦ મીમી નાં ૬ પિયત આપવા જે પૈકી પ્રથમ પિયત વાવણી બાદ તુરંત જ અને બાકીનાં ૫ પિયત ૧૨ થી ૧૫ દિવસનાં ગાળે આપવાં; આમ કરવાથી લીલી પાપડીનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે. **Approved.** ***(Action:** Asstt. Res. Scientist, Agricultural Research Station, NAU, Achhalia)*
14.2.1.52	**Effect of spacing and fertilizer management practices on *rabi* pigeonpea under conserved soil moisture condition**
	The farmers of Bara track of South Gujarat region growing pigeonpea *cv.* GT 102 during *rabi* season under conserved soil moisture are recommended to sow the crop at 60 x 30 cm spacing and apply recommended dose of fertilizers (20:40:00 kg N:P_2O_5:K_2O/ha) along with 1 t vermi compost/ha + seed treatment with *Rhizobium* and PSB @ 10 ml/kg seed for getting higher yield and net return. દક્ષિણ ગુજરાત વિસ્તારના બારા પટ્ટી વિસ્તારમાં રવિ ઋતુમાં સંગ્રહિત ભેજમાં તુવેર જાત જી.ટી. ૧૦૨ નું વાવેતર કરતાં ખેડૂતોને વધુ ઉત્પાદન તેમજ ચોખ્ખો નફો મેળવવા ૬૦ × ૩૦ સે.મી. અંતરે ભલામણ કરેલ ખાતર (૨૦:૪૦:૦૦ કિ.ગ્રા. ના:ફો:પો/હે.) ઉપરાંત ૧ ટન વર્મીકમ્પોસ્ટ/હેકટર તથા જૈવિક ખાતર રાઈઝોબિયમ તથા પી.એસ.બી. નો પટ્ટ ૧૦ મીલી/કિ.ગ્રા. બીજ આપી વાવેતર કરવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s:** Give bio-fertilizer dose. ***(Action:** Asstt. Res. Scientist, Agricultural Research Station, NAU, Tanchha)*
14.2.1.53	**Studies on different package of practices in finger millet under rainfed conditions**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone and South Gujarat Zone growing finger millet are recommended to adopt integrated nutrient management system for getting higher yield and net return. **Components of Integrated Nutrient Management are:** • Treat the seed with thirum @ 3-4 g/kg seeds + seedling dipping in bio-fertilizer (*Azotobacter*) for 30 minutes. • Hand weeding. • 30 kg N, 20 kg P_2O_5 and bio compost 2 t/ha. • Apply *Azotobacter* 2 kg/ha. + PSB 2 kg/ha as soil application. • Use recommended chemical pesticides for controlling stem borer and blast. દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમા તથા દક્ષિણ ગુજરાત ખેત આબોહવાકિય વિસ્તારમાં નાગલીની ખેતી કરતાં ખેડૂતોને વધુ ઉત્પાદન મેળવવા અને નફાકારક ખેતી કરવા માટે નીચે દર્શાવેલ સંકલિત ખાતર વ્યવસ્થાપન અપનાવવાની ભલામણ કરવામાં આવે છે. • ૧ કિલોગ્રામ બીજ દીઠ ૩ ગ્રામ થાયરમનો પટ આપવો તથા ધરૂને ૩૦ મિનિટ બાયોફર્ટીલાઈઝર (એઝેટોબેકટર)

માં બોળીને ફેરરોપણી કરવી.

- હાથથી નિંદામણ કરવું.
- હેકટરે ૩૦ કિ.ગ્રા. નાઈટ્રોજન, ૨૦ કિ.ગ્રા. ફોસ્ફરસ અને ૨ ટન બાયોકમ્પોસ્ટ આપવું.
- એઝેટોબેકટર અને પી.એસ.બી. ૨ કિ.ગ્રા./હે. પ્રમાણે જમીનમાં આપવું.
- જરૂરીયાત મુજબ ગાભમારાના અને કરમોડીના નિયંત્રણ માટે ભલામણ કરેલ રાસાયણીક જંતુનાશક/રોગનાશક દવાઓનો છંટકાવ કરવો.

Approved.

(Action: *Asstt. Res. Scientist, Hill Millet Research Station, NAU, Waghai)*

14.2.1.54 Influence of preceding summer crops and integrated nutrient management on cotton

The Bt cotton hybrid growing farmers of South Gujarat Agro-climatic Zone are recommended to grow summer green gram as preceding crop with recommended package of practices. They are also recommended to apply 2 % banana pseudostem enriched sap as foliar spray at flowering stage with recommended dose of fertilizers (240 kg N + 40 kg P_2O_5 per ha) to *Bt* cotton hybrid in *kharif* season to achieve higher seed cotton equivalent yield and net realization.

Fertilizer schedule for Bt **cotton hybrid**
• 40 kg P_2O_5 as basal and 240 kg N applied in 5 equal splits at 30,60, 75, 90 and 105 days after sowing as top dressing

દક્ષિણ ગુજરાત ખેત આબોહવાકિય વિસ્તારનાં સંકર બી.ટી. કપાસ ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે પૂર્વ પાક તરીકે ભલામણ કરેલ ખેતી પધ્ધતિ અપનાવી ઉનાળુ મગનું વાવેતર કરવું. ત્યારબાદ ખરીફ ઋતુમાં લેવામાં આવનાર બીટી સંકર કપાસને ભલામણ કરેલ પોષક તત્વો (૨૪૦ કિલો નાઈટ્રોજન અને ૪૦ કિલો ફોસ્ફરસ પ્રતિ હેકટર) આપવા અને કેળના થડમાંથી બનાવેલ સેન્દ્રિય પ્રવાહી ખાતરનું ૨ % દ્રાવણનો ફૂલ અવસ્થાએ છંટકાવ કરવો. આ પધ્ધતિ અપનાવવાથી કપાસનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

બીટી સંકર કપાસને નીચે મુજબ ખાતરો આપવા :
૪૦ કિલો ફોસ્ફરસ પાયામાં અને ૨૪૦ કિલો નાઈટ્રોજન વાવણી બાદ ૩૦, ૬૦, ૭૫, ૯૦ અને ૧૦૫ દિવસે પાંચ સરખા હપ્તામાં પુર્તિ ખાતર તરીકે આપવો.

Approved.

(A***ction:*** *Research Scientist, Main Cotton Research Station, NAU, Surat)*

14.2.1.55 Agronomic requirements of pre released *G. hirsutum* variety in respect of plant density and fertilizer requirement under rainfed conditions

The farmers of South Gujarat Agro-climatic Zone growing rainfed *hirsutum* cotton (GN Cot. 26) are recommended to follow spacing of 120 cm x 45 cm with application of 150 kg N/ha for getting higher seed cotton yield and net profit. Nitrogen should be applied in two equal splits i.e., 50 % as basal and 50 % at 30-40 days after sowing.

દક્ષિણ ગુજરાત ખેત આબોહવાકીય વિસ્તારનાં બિનપિયત વિસ્તારમાં અમેરીકન કપાસ (ગુ.ન. કપાસ–૨૬)વાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે કપાસનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે કપાસનું વાવેતર ૧૨૦ સેમી × ૪૫ સેમી ના અંતરે કરી પ્રતિ હેકટરે ૧૫૦ કિ.ગ્રા. નાઈટ્રોજન આપવો. નાઈટ્રોજન તત્વ બે સરખા હપ્તામાં એટલે કે ૫૦ % જથ્થો વાવણી વખતે અને બાકીનો ૫૦ % જથ્થો વાવણી પછી ૩૦ થી ૪૦ દિવસે આપવો.

Approved.

(Action: *Research Scientist, Main Cotton Research Station, NAU, Surat)*

14.2.1.56 Effect of spacing and nitrogen levels on yield in aerobic rice

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing aerobic rice (GNR 3)are recommended to sow crop at spacing of 20 cm between rows and apply recommended dose of fertilizers (100- 30 NP kg/ha) for achieving profitable yield.

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તારમાં ઓરાણ ડાંગર (ગુજરાત નવસારી ડાંગર–૩) ની ખેતી કરતાં ખેડૂતોને ડાંગરનું નફાકારક ઉત્પાદન મેળવવા માટે બે હાર વચ્ચે ૨૦ સેમી. નું અંતર રાખી વાવણી કરીને ૧૦૦–૩૦ નાઈટ્રોજન–ફોસ્ફરસ કિ.ગ્રા./હે. મુજબ ખાતર આપવાની ભલામણ કરવામાં આવે છે.

Approved with following suggestion/s:

Give RDF in recommendation.

	***(Action:** Associate Research Scientist, Regional Rice Res. Station, NAU, Vyara**)**
14.2.1.57	**Soil resource information for land capability classification and fertility capability classification of six villages situated at hilly undulating terrain of Dang district** **Approved as a scientific recommendation.** (***Action***: *Research Scientist, Soil Science Department, NAU, Navsari)*
14.2.1.58	**Soil and land restoration planning of six villages of Dang district situated at hilly undulating terrain** **Not approved.** **Suggested as a scientific recommendation.** (***Action***: *Research Scientist, Soil Science Department, NAU, Navsari)*

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Sr. No.	**Particulars**
14.2.1.59	**Intercropping study in *Bt.* cotton (*Gossypium hirsutum*)**
	The farmers of North West Gujarat Agro-climatic Zone growing *Bt* cotton under rainfed condition are recommended to grow either as sole mothbean (45 cm) OR inter cropping of mothbean (45 cm) in *Bt.* cotton (120 cm) (1:2) for obtaining higher cotton equivalent yield and net return. ઉત્તર પશ્ચિમ ગુજરાત ખેત આબોહવાકિય વિભાગના વરસાદ આધારીત બીટી કપાસની ની ખેતી કરતા ખેડુતોને કપાસ સમકક્ષ વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે એકલા બીટી કપાસને બદલે મઠના પાકનુ વાવેતર કરવાની (૪૫ સે.મી.) અથવા બીટી કપાસની (૧૨૦ સે.મી.) બે લાઈન વચ્ચે આંતરપાક તરીકે મઠની બે લાઈનનુ (૪૫ સે.મી.) વાવેતર કરવાની ભલામણ કરવામાં આવે છે **Approved.** **(Action:** *Res. Scientist, Centre for Natural Resource Management, SDAU, SKNagar***)**
4.2.1.60	**Effect of soil application of $MgSO_4$, foliar application of KNO_3, $FeSO_4$ and $ZnSO_4$ on yield of cotton under dryland condition**
	The farmers of North Gujarat Agro-climatic Zone growing *Bt* cotton (BG II) under dryland condition on medium black soils are recommended to apply 15 kg $MgSO_4$/ha as basal and three foliar sprays of KNO_3 3.0 % at square formation, flowering and boll development stages with recommended dose of fertilizers (120 + 40 kg N, K_2O/ha) for obtaining higher seed cotton yield and monetary return. ઉત્તર ગુજરાત ખેત આબોહવાકિય વિભાગની મધ્યમ કાળી જમીનમાં સુકી ખેતી હેઠળ બીટી કપાસ (બીજી ૨) ની ખેતી કરતા ખેડૂતોને કપાસનુ વધારે ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે ભલામણ કરેલ રાસાયણીક ખાતર (૧૨૦ + ૪૦ કિ.ગ્રા. ના, પો/હે.) ઉપરાંત વાવણી સમયે ૧૫ કિ.ગ્રા. મેગ્નેશીયમ સલ્ફેટ/હે. જમીનમાં આપવાની સાથે ફુલ ભમરી, ફૂલ બેસવાની તથા જિંડવા અવસ્થાએ ૩ ટકા પોટેશીયમ નાઈટ્રેટના દ્રાવણનો છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. **Approved.** **(Action:** *Res. Scientist, Centre for Natural Resource Management, SDAU, SKNagar***)**
14.2.1.61	**Nitrogen management in forage oat (*Avena sativa* L.) crop under North Gujarat Agro-climatic conditions**
	The farmers of North Gujarat Agro-climatic Zone growing forage oat crop are recommended to fertilize the crop with 140 kg N /ha with two splits *i.e.*, 50 % N as basal + 50 % N after first cut and 60 kg P_2O_5/ha as basal for obtaining higher green and dry fodder yield as well as net return. ઉતર ગુજરાત ખેત આબોહવાકિય વિભાગમાં ઘાસચારા માટે ઓટ ઉગાડતા ખેડૂતોને ઓટના ઘાસનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે પાકને ૧૪૦ કિ.ગ્રા. નાઈટ્રોજન પ્રતિ હેકટર (૫૦ ટકા પાયામાં અને બાકીનો ૫૦ ટકા પહેલી કાપણી પછી) તથા ૬૦ કિ.ગ્રા. ફોસ્ફરસ પાયામાં આપવાની ભલામણ કરવામાં આવે છે. **Approved.** **(Action:** *Research Scientist, Agroforestry Research Station, SDAU, SKNagar***)**
14.2.1.62	**Effect of weed management practices in ajwain and their residual effect on green gram**
	The farmers of North Gujarat Agro-climatic Zone growing ajwain are

	recommended to carry out two interculturing *fb* hand weeding at 25 and 40 DAS for obtaining higher seed yield and net return. ઉત્તર ગુજરાત ખેત આબોહવાકિય વિભાગના અજમો ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે અજમાનું વધારે ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે પાકની વાવણી પછી ૨૫ અને ૪૦ દિવસે આંતરખેડ કર્યા બાદ હાથ નિંદામણ કરવું. **Approved.** **(Action:** *Research Scientist (Spices),Centre of Res. on Seed Spices, SDAU, Jagudan***)**
14.2.1.63	**Effect of weed management practices in dillseed and their residual effect on green gram**
	The farmers of North Gujarat Agro-climatic Zone growing dillseed under irrigated condition are recommended to carry out two interculturing *fb* hand weeding at 25 and 40 DAS for obtaining higher seed yield and net return. ઉત્તર ગુજરાત ખેત આબોહવાકિય વિભાગના સુવા ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ૨૫ અને ૪૦ દિવસે બે આંતરખેડ કર્યા બાદ હાથ નિંદામણ કરવાથી વધારે ઉત્પાદન અને ચોખ્ખા નફો મેળવી શકાય છે. **Approved.** **(Action:** *Research Scientist (Spices), Centre of Res. on Seed Spices, SDAU, Jagudan***)**
14.2.1.64	**Feasibility of wheat-lucerne mix cropping**
	The farmers of North Gujarat Agro-climatic Zone growing irrigated wheat are recommended to grow wheat and lucerne as mix crop by broadcasting the seed @ 120 and 12 kg/ha, respectively. Wheat and lucerne are to be harvested at the same time and give four irrigations to lucerne at 7, 22, 42 and 60 days after harvest of wheat crop. This mix cropping practice increases the total yield of crops and net return as well as improves soil fertility and wheat fodder quality. ઉત્તર ગુજરાત ખેત આબોહવાકિય વિભાગમાં પિયત ઘઉનુ વાવેતર કરતા ખેડુતોને ભલામણ કરવામાં આવે છે કે એકલા ઘઉની વાવણીની સરખામણીમાં ઘઉ અને રજકાની પૂંખીને મિશ્ર પાક પધ્ધતિ (ઘઉ ૧૨૦ કિ.ગ્રા./હે.) + રજકો (૧૨ કિ.ગ્રા./હે.) અપનાવવાથી વધારે ઘઉ સમતુલ્ય કુલ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. ઘઉ અને રજકાની એકી સાથે કાપણી કરવી અને રજકાના પાકને ૭, ૨૨, ૪૨ અને ૬૦ દિવસે પિયત આપવું. આ પધ્ધતિથી ઘઉના ઘાસની ગુણવત્તામાં સુધારો થવા ઉપરાંત જમીનની ફળદ્રુપતામાં પણ વધારો થાય છે. **Approved with following suggestion/s:** Mention number of irrigations given to lucerne crop. **(Action:** *Research Scientist (Wheat), Wheat Research Station, SDAU, Vijapur***)**
14.2.1.65	**Nutrient management in rainfed dillseed**
	The farmers of North West Gujarat Agro-climatic Zone growing rainfed dillseed under saline sodic soil are recommended to apply 40:20 kg N:P_2O_5/ha and 10 kg S/ha through gypsum (62.5 kg) as basal for obtaining higher seed yield and net return.
	ઉત્તર પશ્ચિમ ગુજરાતના ખેત આબોહવાકિય વિભાગની ક્ષારીય ભાસ્મીક જમીનમાં વરસાદ આધારીત સુવાની ખેતી કરતા ખેડુતોને વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે ૪૦ : ૨૦ કિ.ગ્રા. નાઈટ્રોજન : ફોસ્ફરસ પ્રતિ હેકટર અને ૧૦ કિ.ગ્રા. સલ્ફર પ્રતિ હેકટર જીપ્સમ (૬૨.૫ કિ.ગ્રા.) રૂપે પાયામાં આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s** Mention soil type and quantity of gypsum. **(Action:** *Asstt. Res. Scientist, Agricultural Research Station, SDAU, Adiya***)**
14.2.1.66	**Efficiency of nutrient with different amendments under salt affected soil for dill seed**
	The farmers of North West Gujarat Agro-climatic Zone growing dillseed under saline sodic soil are recommended to apply 5 t FYM/ha and 50 per cent of gypsum requirement (4 t/ha) of soil with 60 kg N + 30 kg P_2O_5 /ha for obtaining higher yield and net return. ઉત્તર પશ્ચિમ ગુજરાતના ખેત આબોહવાકિય વિભાગની ક્ષારીય ભાસ્મીક જમીનમાં સુવાની ખેતી કરતા ખેડુતોને વધુ ઉત્પાદન તથા ચોખ્ખો નફો મેળવવા માટે પ્રતિ હેકટરે ૫ ટન છાણીયું ખાતર અને જીપ્સમની કુલ જરૂરીયાતના ૫૦ ટકા (૪ ટન/હે.) સાથે ૬૦ કિલો ગ્રામ નાઈટ્રોજન + ૩૦ કિલો ગ્રામ ફોસ્ફરસ આપવાની ભલામણ કરવામાં આવે છે. **Approved with following suggestion/s:** Mention soil type and quantity of gypsum.

	(Action: *Asstt. Res. Scientist, Agricultural Research Station, SDAU, Adiya***)**
14.2.1.67	**Nutrient requirements of newly developed Bt cotton hybrid GTHH 49 BGII**
	The farmers of North Gujarat Agro-climatic Zone growing *Bt* cotton (BG II) are recommended to apply 320 kg N and 120 kg K_2O/ha for obtaining higher yield and net return. ઉત્તર ગુજરાત ખેત આબોહવાકિય વિભાગમાં બીટી કપાસ (BG II) વાવતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે કપાસને ૩૨૦ કિ.ગ્રા. નાઈટ્રોજન અને ૧૨૦ કિ.ગ્રા. પોટાશ પ્રતિ હેકટરે આપવાની ભલામણ કરવામાં આવે છે. **Approved.** **(Action:** *Assoc. Res. Scientist, Agricultural Research Station, SDAU, Talod***)**
14.2.1.68	**Response of *kharif* hybrid maize to spacing and fertility management**
	The farmers of North Gujarat Agro-climatic Zone are recommended to grow *kharif* hybrid maize at 60 cm x 20 cm spacing and fertilize with 180:90:00 kg NPK/ha for obtaining higher yield and net return. Nitrogen should be applied in four splits *i.e.*, at basal (20 %), four leaf stage (30 %), eight leaf stage (40 %), tasseling stage (10 %) and P_2O_5 as basal.
	ઉત્તર ગુજરાત ખેત આબોહવાકિય વિભાગના ચોમાસુ સંકર મકાઈ ઉગાડતા ખેડૂતોને વધુ ઉત્પાદન તથા ચોખ્ખો નફો મેળવવા માટે બે હાર વચ્ચે ૬૦ સે.મી. અને બે છોડ વચ્ચે ૨૦ સે.મી. અંતર રાખી વાવણી કરવી અને હેકટર દીઠ ૧૮૦ કિ.ગ્રા નાઈટ્રોજન અને ૯૦ કિ.ગ્રા ફોસ્ફરસ આપવાની ભલામણ કરવામાં આવે છે. જે પૈકી નાઈટ્રોજન ચાર હપ્તામાં એટલે કે ૨૦ % વાવણી વખતે પાયામા, ૩૦ % ચાર પાન અવસ્થાએ, ૪૦ % આઠ પાન અવસ્થાએ તથા ૧૦ % ચમરી અવસ્થાએ આપવો અને ફોસ્ફરસ ખાતર પાયામાં આપવું. **Approved with following suggestion/s:** Remove the variety CO 6. **(Action:** *Asstt. Res. Scientist, Maize Research Station, SDAU, Bhiloda***)**
14.2.1.69	**Effect of sowing time and fertilizer management on isabgul**
	The farmers of North Gujarat Agro-climatic Zone are recommended to grow the isabgul crop on 2nd or 3rd week of November with application of 150 % RDN (30 kg /ha) + 30 kg P_2O_5/ha as basal and remaining nitrogen (30 kg/ha) should be applied at 30 and 50 DAS in equal splits for obtaining higher yield and net return. ઉત્તર ગુજરાત ખેત આબોહવાકિય વિભાગના ઈસબગુલ ઉગાડતા ખેડૂતોને વધારે ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે પાકની વાવણી નવેમ્બર માસના બીજા કે ત્રીજા અઠવાડિયે હેકટર દીઠ ૧૫૦ ટકા નાઈટ્રોજન (૩૦ કિ.ગ્રા./હે.) તથા ૩૦ કિ. ગ્રા. ફોસ્ફરસ પાયામાં અને બાકીનો ૫૦ ટકા નાઈટ્રોજન (૩૦ કિ.ગ્રા./હે.) વાવણી બાદ ૩૦ અને ૫૦ મા દિવસે બે સરખા હપ્તામાં આપવાની ભલામણ કરવામાં આવે છે . **Approved.** **(Action:** *Asstt. Res. Scientist, Agricultural Research Station, SDAU, Kholwad***)**
14.2.1.70	**Yield maximization in pigeonpea** **Approved as a scientific recommendation.** **(Action:** *Pulses Research Station, SDAU, SKNagar***)**

14.2.2. RECOMMENDATION FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

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JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

14.2.2.1	**Integrated weed management in okra**
	Under South Saurashtra Agro-climatic Zone, effective weed management along with higher yield and net return in *kharif* okra can be achieved by pre-emergence application of pendimethalin 900 g/ha followed by hand weeding at 40 DAS. **Approved.** ***(Action:** Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*
14.2.2.2	**Weed management in *kharif* groundnut**
	Under South Saurashtra Agro-climatic Zone, effective weed management along with higher yield and net return in *kharif* groundnut can be achieved by

	application of pre-mix pendimethalin + imazethapyr 800 g/ha as pre-emergence *fb* HW and IC at 40 DAS or tank-mix pendimethalin 450 g/ha + oxyfluorfen 120 g/ha as pre-emergence *fb* HW and IC at 40 DAS. **Approved.** ***(Action:** Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*
14.2.2.3	**Integrated weed management in *rabi* fennel**
	Under South Saurashtra Agro-climatic Zone, effective weed management along with higher yield and net return in *rabi* direct seeded fennel can be achieved by pre-emergence application of pendimethalin 30 EC 900 g/ha followed by interculturing and hand weeding at 40 DAS. **Approved with following suggestion/s:** House decided to split the recommendation for farmer and scientific community. ***(Action:** Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*
14.2.2.4	**Soil test based fertilizers application for targeted yield of summer groundnut in Saurashtra region of Gujarat**
	The nutrients requirement for production of one quintal summer groundnut pod was estimated as 4.90, 0.90 and 1.73 kg; N, P_2O_5 and K_2O, respectively. The fertilizer prescription equations are as: for FN (4.14 T - 0.37 SN - 0.17 FYM), FP_2O_5 (3.04 T - 1.48 SP - 0.17 FYM) and FK_2O (6.53 T - 0.43 SK - 0.38 FYM) with FYM and for FN (5.10 T - 0.44 SN), FP_2O_5 (3.61 T - 1.70 SP) and FK_2O (7.70 T - 0.48 SK) without FYM. Targeted yield concept could be effectively adopted to bring in site specificity in fertilizer use and achieve high yields of summer groundnut in medium black calcareous soils of Saurashtra region of Gujarat. **Approved.** ***(Action:** Prof. & Head, Dept. of Agril. Chem. & Soil Sci. CoA & Res. Sci. (Groundnut), Main Oilseed Research Station, JAU, Junagadh)*
14.2.2.5	**Establishment of critical limit of sulphur for soybean crop in medium black calcareous soils**
	For sulphur application to soybean grown on calcareous soils of Saurashtra, critical limit 11.0 ppm in soil and 0.31 per cent in soybean plant at 60 DAS could be considered. **Approved.** ***(Action:** Professor & Head, Dept. of Agril. Chem. & Soil Sci., CoA, JAU, Junagadh)*
14.2.2.6	**Relative salinity tolerance of different castor varieties**
	It is the information for scientific community, especially for plant breeder that castor variety GCH-7 and GC-3 recorded different salt tolerance criteria *viz.*, higher mean salinity index (82.7 and 84.6), higher mean seed yield (275 and 260 g/plant), minimum yield decline (35.0 and 33.8 %) at 8.0 dSm^{-1} and 50 % yield reduction at EC 10.79 and 10.77 dSm^{-1}, respectively, as well as lower Na/K ratio in seed and stalk. Castor variety GCH-7 and GC-3 were found more salt tolerant as compared to GAUCH-1, GCH-2, GCH-4 and GCH-6 on the basis of salinity indices. **Approved.** ***(Action:** Professor & Head, Dept. of Agril. Chem. & Soil Sci., CoA, JAU, Junagadh)*
14.2.2.7	**To study micronutrients and sulphur status in soils of Saurashtra region**
	The soils of Saurashra region were found in 'High' categories for available Mn and Cu, while it was 'Low' to 'Medium' status for S, Fe and Zn. Available Fe, Zn, and S were deficient and deficiency was observed in 18, 22 and 36 per cent soils of the Saurashra region. **Approved.** ***(Action:** Professor & Head, Dept. of Agril. Chem. & Soil Sci., CoA, JAU, Junagadh)*

14.2.2.8 Use of plant growth regulators for enhanced yield and quality of Sugarcane

Overnight soaking of sugarcane sets in 50 ppm etheral could be done before planting for getting higher cane yield of sugarcane in South Gujarat heavy rainfall zone.

Approved

***(Action:** Research Scientist, Main Sorghum Research Station, NAU, Navsari)*

14.2.2.9 Soil resource information for land capability classification and fertility capability classification of six villages situated at hilly undulating terrain of Dang district

Under Heavy Rainfall Agro- climatic Zone of Dang following measures are suggested for possible improvement in yield of paddy, gram, groundnut, finger millet, pigeon pea, sorghum and vegetables grown on 0 to 5 % sloppy land and mango, cashew nut and other horticultural fruit crops grown up to 8 % slope:

1. Erosion must be controlled through making bunds / field bunds to restore nutrient rich surface soil considering slope of land and improve soil moisture.
2. Planting / sowing should be done at onset of rains with small flush of N to avoid limiting factor of moisture during dry spell. Further, N must be added in split to increase its efficiency under heavy rainfall situation.
3. Care must be taken in regard to source and method of P fertilizer application to combat medium to high P- fixation capacity of soils.
4. Organic carbon content of soil regularly be assessed and in certain cases low organic carbon containing soil must be replenished by locally available organic materials/manure. Further, available K in soil should be assessed frequently and in case of soils with low ability to supply soil K due to poor retention should be improved by frequent application of K fertilizer.

Approved with following suggestion/s:

Converted the draft as scientific information.

***(Action:** Research Scientist, Soil Science Department, NAU, Navsari)*

14.2.2.10 Soil and land restoration planning of six villages of Dang district situated at hilly undulating terrain

In order to minimize erosion, washing out of nutrients in upper soil and also to increase moisture conservation for improving yield of different crops grown in Sarvar, Sodmal, Kalamkhet, Motidabdar, Daguniya and Chikhalda villages of the Dang district of heavy rainfall zone, following different soil conservation measures are suggested:

Soil conservation measures	Length (m) or No. required					
	Villages					
	Sarvar	Sodmal	Kalamkhet	Motidabdar	Daguniya	Chikhalda
Stone Bunding	4472 m	1010 m	1237 m	258 m	18969 m	1751 m
Soil + Stone Bunding	30213 m	21739 m	12092 m	167 m	28778 m	735 m
Field Bunding (by soil)	21184 m	19546 m	4646 m	21 m	5295 m	7479 m
Making outlet through wire waste	87 no.	23 no.	2 no.	-	1 no.	-
Gully Plugging	44 no.	10 no.	7 no.	-	1 no.	-
Gabion structure	8 no.	1 no.	31 no.	-	-	-
Masonry Foundation Outlet	142 no.	99 no.	10307 no.	90 no.	145 no.	-
Horticultural fruit plant	12784 no.	9784 no.	11250 no.	868 no.	6434 no.	2367 no.
Forest tree	25910 no.	14080 no.	1237 m	1390 no.	13986 no.	1751 m

Approved with following suggestion/s:

Converted the draft as scientific information

*(**Action**: Research Scientist, Soil Science Department, NAU, Navsari)*

SARDAR KRUSHI NAGAR DANTIVADA AGRICULTURAL UNIVERSITY, SKNAGAR

14.2.2.11	**Yield maximization in pigeonpea**
	Following package is found effective for obtaining maximum yield of pigeonpea 1. Apply vermi-compost @ 2.5 t/ha + RDF *i.e.*20:40:20:5 kg N P S Zn/ha as basal dose. 2. Apply Pendimethalin 0.75 kg/ha on 3 DAS + Imazethapyr 100 g/ha on 10-15 DAE of weeds + 1 intercultivation on 50 DAS. **Approved with following suggestion/s:** Consider as a Scientific Information as per Treatment T_4. **(Action:** *Pulses Research Station, SDAU, SKNagar***)**
14.2.2.12	**Effect of weed management practices on ajwain and their residual effect on green gram**
	Aapplication of pendimethalin 1.0 kg/ha as pre emergence were found effective for weed control in ajwain. **Approved with following suggestion/s:** Make separate recommendation for Farmers and Scientific community. **(Action:** *Research Scientist (Spices),Centre of Res. on Seed Spices, SDAU, Jagudan***)**
14.2.2.13	**Effect of weed management practices on dilseed and their residual effect on green gram**
	Pendimethalin 30 EC 1.0 kg/ha or oxyfluorfen 50 g/ha application as pre emergence was found effective for weed control in dillseed. **Approved with following suggestion/s:** Make separate recommendation for Farmers and Scientific community. **(Action:** *Research Scientist (Spices),Centre of Res. on Seed Spices, SDAU, Jagudan***)**
14.2.2.14	**Delineation of nutrient status of soils of Sabarkantha district and their relationship with soil properties**
	The soils of Sabarkantha district are loamy sand (24.70 %), sandy loam (31.93 %) and sandy clay loam (34.64 %) in texture, neutral (31.93 %) to alkaline (68.07 %) in reaction which contains soluble salt content within safe limit (97.29 %). These soils are low to medium in organic carbon (70.18 %) and available sulphur (68.07 %); whereas medium to high in available phosphorus (90.97 %), potassium (93.37 %), DTPA–extractable iron (83.43 %) and zinc (78.92 %) status. The DTPA–extractable manganese (75.60 %) copper (92.47 %), status of these soils is categorized as 'High'. The deficiency of DTPA–extractable zinc (21.08 %) and iron (16.57 %) was noticed. **Approved.** **(Action:** *Central Instrumentation Laboratory, SDAU, SKNagar***)**

14.2.3 NEW TECHNICAL PROGRAMMES

Chairman:	Prof. (Dr.) Ashok Patel, Hon'ble Vice Chancellor, SDAU, SKNagar
Co-Chairmen:	1. Dr. M. K. Aravadiya, Dean, NAU, Navsari 2. Dr. B. K. Sagarka, Principal, JAU, Junagadh
Rapporteurs:	1. Dr. K. G. Patel, Assoc. Prof., NAU, Navsari 2. Dr. D. M. Patel, Assoc. Prof., SDAU, SKNagar 3. Dr. R. K. Mathukia, Assoc. Prof., JAU, Junagadh

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title	Suggestion/s/ and Action
14.2.3.1	Nutrient management through organic sources in amaranth (Rajgira)	**Approved with following suggestion/s:** 1. T_1 should be equivalent to 15 kg N/ha. 2. Change the treatment sequence keep T_6 as T_1 and T_1 as T_6. 3. Add observation WHC and total microbial

		count. (**Action:** *Professor and Head, Department of Agronomy, BACA, AAU, Anand*)
14.2.3.2	Nutrient management through organic sources in chickpea	**Approved with following suggestion/s:** 1. T_1 should be equivalent to 15 kg N/ha. 2. Change the treatment sequence keep T_6 as T_1 and T_1 as T_6. 3. Add observation WHC and total microbial count. (**Action:** *Professor and Head, Department of Agronomy, BACA, AAU, Anand*)
14.2.3.3	Evaluation of nutrient composition of bacterial biodegraded crop residues	**Approved with following suggestion/s:** Take sample at 30, 45, 60, 75 and 90 days after filling pit for microbial population, C:N ratio and N, P, K and moisture content. **(Action:** *Professor and Head, Department of Agronomy, BACA, AAU, Anand*)
14.2.3.4	Nutrient management in sweet corn-onion-green gram cropping sequence by sequential application of liquid biofertilizer and natural minerals	**Approved with following suggestion/s:** 1. Add treatment T_5 as Rock phosphate 50. kg/ha + feldspar 25 kg/ha. 2. FYM should be applied @ 15 t/ha in sweet corn and onion crops. 3. Apply incubated rock phosphate before 30 days of sowing. **(Action:** *Research Scientist & Head, Dept of Microbiology & Biofertilizer, BACA, Anand*)
14.2.3.5	Field performance of promising *Rhizobium* cultures on green gram *cv.* GAM 5	**Approved with following suggestion/s:** 1. Remove name of variety from title. 2. In title, use word 'isolate' instead of 'cultures' 3. Add FYM 2 t/ha in treatment T_3 to T_5. **(Action:** *Research Sci.& Head, Dept of Microbiology & Biofertilizer, BACA, Anand*)
14.2.3.6	Field performance of promising *Rhizobium* cultures on pigeon pea *cv.* AGT 2	**Approved with following suggestion/s:** 1. Remove name of variety from title. 2. In title use word 'isolate' instead of 'cultures'. 3. Add FYM 2 t/ha in treatment T_3 to T_5. **(Action:** *Research Scientist & Head, Dept of Microbiology & Biofertilizer, BACA, Anand*)
14.2.3.7	Response of nitrogen application by different varieties of marvel grass	**Approved with following suggestion/s:** Add quality parameters of forage in observations. **(Action:** *Research Scientist, Main Forage Research Station, AAU, Anand*)
14.2.3.8	Performance of dual purpose barley under different nitrogen levels and cutting management	**Approved with following suggestion/s:** Keep spacing 22.5 cm instead of 30 cm. **(Action:** *Research Scientist, Main Forage Research Station, AAU, Anand*)
14.2.3.9	Isolation, characterization and *in vitro* efficacy of native weed biomass degrading microorganisms	**Not Approved.** (**Action:** *Agronomist & PI, AICRP-Weed Management, BACA, AAU, Anand*)

14.2.3.10	Feasibility of zero tillage in rice-wheat cropping system under middle Gujarat conditions	**Approved with following suggestion/s:** 1. Define the conventional tillage in T_1. 2. Change "zero tillage" with "conservation tillage". **(Action:** *Research Scientist, Regional Research Station, AAU, Anand***)**
14.2.3.11	Effect of transplanting date on yield and insect-pest incidence in calcutti tobacco (*Nicotiana rustica* L.) varieties	**Approved with following suggestion/s:** Verify the observations in PPSC. **(Action:** *Research Scientist, Bidi Tobacco Research Station, AAU, Anand***)**
14.2.3.12	Effect of different organic manures and Bio NPK consortium on yield and quality of *Asalio* (*Lepidium sativum* L.)	**Approved.** **(Action:** *Associate Research Scientist, Medicinal and Aromatic Plants Research Station, AAU, Anand***)**
14.2.3.13	Effect of organic manure, Bio NPK consortium and chemical fertilizer on yield of hybrid maize (*Zea mays* L.) in *kharif* season	**Approved.** **(Action:** *Associate Research Scientist, Main Maize Research Station, AAU, Godhra***)**
14.2.3.14	Effect of nitrogen levels and seed rate on growth and yield of durum wheat (GADW 3) under *Bhal* region	**Approved with following suggestion/s:** Apply 25 kg P_2O_5 as common basal dose. **(Action:** *Asstt. Res. Sci., Agril. Res. Station, AAU, Dhandhuka and Assoc. Res. Scientist, Agricultural Research Station, AAU, Arnej***)**
14.2.3.15	Effects of macro and micronutrients on *Bt* cotton grown on heavy black soil of middle Gujarat	**Approved.** **(Action:** *Asstt. Research Scientist, Narmada Irrigation Res. Project, AAU, Khandha***)**
14.2.3.16	Assessment of organically managed pigeon pea based cropping sequence	**Approved.** **(Action:** *Research Scientist, Pulse Research Station, Model Farm, AAU, Anand***)**
14.2.3.17	Nutrient management through organic sources in summer black gram	**Approved.** **(Action:** *Research Scientist, Pulse Research Station, Model Farm, AAU, Anand***)**
14.2.3.18	Integrated nutrient management in summer green gram (*Vigna radiata* L.)	**Approved.** **(Action:** *Research Scientist, Tribal Research cum Training Centre, AAU, Devgadh Baria***)**
14.2.3.19	Effect of dates of sowing and irrigation scheduling at critical growth stages on sesamum	**Approved with following suggestion/s:** 1. Give irrigation/s for crop establishment. 2. Take meteorological observations for working out heat indices. (**Action:** *Principal, College of Agriculture, AAU, Jabugam***)**
14.2.3.20	Economic feasibility of cotton based cropping sequences (summer) under middle Gujarat conditions (Tribal area)	**Approved with following suggestion/s:** Add observations on cropping system parameters. **(Action:** *Principal, College of Agriculture, AAU, Jabugam***)**
14.2.3.21	Effect of varieties, seed soaking and sowing dates for late sown wheat crop	**Approved with following suggestion/s:** 1. Remove dates from the treatments and keep only week. 2. In T_2: add soaking in normal water. 3. Take meteorological observations for

		working out heat indices. **(Action:** *Senior Scientist & Head, Krushi Vigyan Kendra, AAU, Devataj***)**
14.2.3.22	Nutrient management through organic sources in chickpea in *Bhal* region	**Approved.** **(Action:** *Associate Research Scientist, ARS, AAU, Arnej***)**
14.2.3.23	Effect of different multi-micronutrient mixture grade application on growth, yield and quality of chickpea under unirrigated conditions in *Bhal* region	**Approved.** **(Action:** *Associate Research Scientist, ARS, AAU, Arnej***)**
14.2.3.24	Effect of different sources and levels of sulphur on growth, yield and quality of dillseed under restricted irrigation in *Bhal* region	**Approved with following suggestion/s:** In observation, take volatile oil content in place of oil content. **(Action:** *Associate Research Scientist, Agricultural Research Station, AAU, Arnej***)**
14.2.3.25	Effect of nitrogen, phosphorus and Bio fertilizer on growth and yield of chickpea under restricted irrigation in *Bhal* region	**Approved.** **(Action:** *Associate Research Scientist, Agricultural Research Station, AAU, Arnej***)**
14.2.3.26	Effect of foliar application of organic and inorganic nutrient sources on growth, yield and quality of green gram (*Vigna radiate* L.)	**Approved with following suggestion/s:** 1. In T_7: use cow urine 3 % instead of 5 %. 2. Add sea weed extract @ 3.0% foliar spray treatment. 3. Add Banana pseudostem sap @1% spray treatment. **(Action:** *Associate Research Scientist, Agricultural Research Station, AAU, Derol***)**
14.2.3.27	Effect of foliar application of organic and inorganic nutrient sources on growth, yield and quality of black gram (*Vigna mungo* L.)	**Approved with following suggestion/s:** 1. In T_7: use cow urine 3 % instead of 5 %. 2. Add sea weed extract @ 3.0% foliar spray treatment. 3. Add Banana pseudostem sap @1% spray treatment. **(Action:** *Associate Research Scientist, Agricultural Research Station, AAU, Derol***)**
14.2.3.28	Effect of transplanting time and nitrogen levels on different varieties of paddy (*Oryza sativa L.*)	**Approved.** **(Action:** *Associate Research Scientist, Agril. Res. Station for Irrigated Crops, AAU, Thasra***)**
14.2.3.29	Nursery management in summer rice	**Approved.** **(Action** *Research Scientist, Main Rice Research Station, AAU, Nawagam***)**
14.2.3.30	Integrated nutrient management in rice under middle Gujarat	**Approved.** **(Action:** *Research Scientist, Main Rice Research Station, AAU, Nawagam***)**
14.2.3.31	Integrated nutrient management for rice and residual wheat crop sequence	**Approved.** **(Action:** *Research Scientist, Main Rice Research Station, AAU, Nawagam***)**
14.2.3.32	Feasibility of wheat intensification system in middle Gujarat agro-climatic conditions	**Approved.** **(Action:** *Senior Scientist & Head, Krushi Vigyan Kendra, AAU, Dahod***)**

14.2.3.33	Feasibility of chickpea intensification system in middle Gujarat agro-climatic conditions	**Approved with following suggestion/s:** Change the title as "Effect of spacing and nipping on yield of chickpea". **(Action:** *Senior Scientist & Head, Krushi Vigyan Kendra, AAU, Dahod***)**
14.2.3.34	Effect of organic manure, Bio NPK consortium and chemical fertilizer on yield of hybrid maize (*Zea mays* L.) in *rabi* season	**Approved.** **(Action:** *Associate Research Scientist, Main Maize Research Station, AAU, Godhra***)**

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

Sr. No	Title of the experiment	Suggestion/s and Action
14.2.3.35	Evaluation of cow-based bio-enhancers and botanicals for organic cultivation of *kharif* onion	**Approved.** (**Action:** *Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*
14.2.3.36	Integrated nutrient management in soybean	**Approved with suggestion/s:** Add microbial count in observation. (**Action:** *Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*
14.2.3.37	Response of *rabi* castor based intercropping systems to drip irrigation	**Approved with suggestion/s:** Replace variety Guj. Coriander-2 with Guj. Coriander-3 (**Action:** *Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*
14.2.3.38	Evaluation of land configuration and intercropping system in Bt. Cotton	**Approved.** (**Action:** *Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*
14.2.3.39	Effect of tillage and post-emergence herbicides on growth and yield of soybean	**Approved.** (**Action:** *Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)*
14.2.3.40	Effect of foliar application of water soluble fertilizer on growth, yield and nutrient uptake of summer groundnut (AICRP)	**Approved.** (**Action:** *Research Scientist (Groundnut), Main Oilseed Res. Station, JAU, Junagadh)*
14.2.3.41	Standardization of potash levels and apportioning time in summer groundnut under drip irrigation (AICRP)	**Approved.** (**Action:** *Research Scientist (Groundnut), Main Oilseed Res. Station, JAU, Junagadh)*
14.2.3.42	Effect of bio-formulation on productivity and quality of summer groundnut (AICRP)	**Approved.** ((**Action:** *Research Scientist (Groundnut), Main Oilseed Res. Station, JAU, Junagadh)*
14.2.3.43	Yield maximization of castor through best management practices (AICRP)	**Approved.** (**Action:** *Research Scientist (Groundnut), Main Oilseed Res. Station, JAU, Junagadh)*
14.2.3.44	Influence of conservation tillage on carbon sequestration in castor based intercropping systems (AICRP)	**Approved.** (**Action:** *Research Scientist (Groundnut), Main Oilseed Res. Station, JAU, Junagadh)*
14.2.3.45	Effect of bio-formulation on productivity and quality of *kharif* groundnut (AICRP)	**Approved.** (**Action:** *Research Scientist (Groundnut), Main Oilseed Res. Station, JAU, Junagadh)*

14.2.3.46	Identification of remunerative groundnut based cropping systems under rainfed situation in India	**Approved with suggestion/s:** Replace variety Guj. Coriander-2 with Guj. Coriander-3. (**Action:** *Research Scientist (Groundnut), Main Oilseed Res. Station, JAU, Junagadh)*
14.2.3.47	Effect of mulching and hydrogel on productivity of pearl millet in rainfed condition	**Approved.** (**Action:** *Res. Scientist (Pearl millet), Main Pearl Millet Res. Station, JAU, Jamnagar)*
14.2.3.48	Productivity of medium duration pigeonpea varieties under different row spacing	**Approved.** (**Action:** *Res. Scientist (Chickpea), Pulses Research Station, JAU, Junagadh)*
14.2.3.49	Guava based alternate land use system under rainfed condition	**Approved.** (**Action:** *Res. Scientist (Dry Farming), Main Dry Farming Res. Station JAU, Targhadia)*
14.2.3.50	Feasibility of seed spices intercropping with autumn-planted sugarcane (*Saccharum officinarum* L.)	**Approved.** (**Action:** *Research Scientist (Sugarcane), Sugarcane Res. Station, JAU, Kodinar)*
14.2.3.51	Response of sugarcane (*Saccharum officinarum* L.) to N, P and K nano-fertilizers	**Approved.** (**Action:** *Research Scientist (Sugarcane), Sugarcane Res. Station, JAU, Kodinar)*
14.2.3.52	Reduction of chemical fertilizer by using biofertilizers and enriched compost in cotton crop	**Approved.** (**Action:** *Research Scientist (Cotton), Cotton Res. Station, JAU, Junagadh)*
14.2.3.53	Response of NPK nano fertilizer in Bt cotton under irrigated condition	**Approved.** (**Action:** *Research Scientist (Cotton), Cotton Res. Station, JAU, Junagadh)*
14.2.3.54	Soil test based fertilizer recommendation for targeted yields of wheat	**Approved.** (**Action:** *Professor & Head, Dept. of Agril. Chem. & Soil Science, CoA, JAU, Junagadh)*
14.2.3.55	Effect of nano boron on yield and nutrient uptake by summer groundnut	**Approved with suggestion/s:** Check boron concentration after consulting Dr. B. A. Golakiya. (**Action:** *Prof. & Head, Dept. of Agril. Chem. & Soil Science, CoA, and Res. Scientist (G'nut), Main Oilseed Res. Station, JAU, Junagadh)*
14.2.3.56	Effect of foliar application of various fertilizer on growth, yield and nutrient uptake by onion	**Approved.** (**Action:** *Prof. & Head, Dept. of Agril. Chem. & Soil Science, CoA and Res. Scientist (G & O), Vegetable Res. Station, JAU, Junagadh)*
14.2.3.57	Establishment of critical limit of zinc for pigeonpea crop in medium black calcareous soils.	**Approved.** (**Action:** *Professor & Head, Dept. of Agril. Chem. & Soil Science, CoA, JAU, Junagadh)*
14.2.3.58	Relative salinity tolerance of different pigeonpea varieties	**Approved.** **Action:** *Professor & Head, Dept. of Agril. Chem. & Soil Science, CoA, JAU, Junagadh)*
14.2.3.59	Nutrient management in groundnut - Bt. cotton cropping sequence under rainfed condition.	**Approved.** (**Action:** *Res. Scientist (Dry Farming), Main Dry Farming Res. Station JAU, Targhadia)*

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Sr. No.	Title of the experiment	Suggestion/s and action to be taken
14.2.3.60	Effect of water application through vertical inserted pipe in clay soil with different levels of irrigation and fertigation on growth and yield of sapota	**Approved with following suggestion/s:** Use Large plot technique design. **(Action:** *Research Scientist, Soil and Water Management Research Unit, NAU, Navsari***)**
14.2.3.61	Effect of land levelling on crop water requirement and growth of sugarcane	**Approved with following suggestion/s:** 1. Used Large plot technique design. 2. In T_1 add levelling by lesser leveller. 3. Recast treatment as 0.1, 0.3 & 0.5% slope. **(Action:** *Research Scientist, Soil and Water Management Research Unit, NAU, Navsari***)**
14.2.3.62	Performance of rose in coloured shade net houses with different netting under South Gujarat	**Approved with following suggestion/s:** Endorsed in Horticulture subcommittee. **(Action:** *Research Scientist, Soil and Water Management Research Unit, NAU, Navsari***)**
14.2.3.63	Study of inline subsurface drip system in respect to different discharge rate, spacing and lateral depth in sugarcane	**Approved with following suggestion/s:** Used Large plot technique design. **(Action:** *Research Scientist, Soil and Water Management Research Unit, NAU, Navsari***)**
14.2.3.64	Fertigation study in cauliflower on clay soil of South Gujarat (AICRP)	**Approved.** **(Action:** *Research Scientist, Soil and Water Management Research Unit, NAU, Navsari***)**
14.2.3.65	Response of different forage grasses to gypsum application under coastal salt affected soils	**Approved with following suggestion/s:** In title use saline-sodic soil instead of salt affected soils. **(Action:** *CSSRS, NAU, Danti/Umbharat***)**
14.2.366	Response of brinjal to integrated nutrient management under coastal salt affected soils of south Gujarat	**Approved with following suggestion/s:** Add observation on microbial count. **(Action:** *CSSRS, NAU, Danti/Umbharat***)**
14.2.3.67	Effect of integrated nutrient management on *rabi*-vegetable crops in rice based crop sequence in clay soils of South Gujarat	**Approved with following suggestion/s:** 1. Remove control treatment. 2. Correct title as in report. **(Action:** *Associate Research Scientist, Main Rice Research Centre, NAU, Navsari***)**
14.2.3.68	Evaluation of rice cultivars for weed competitiveness under aerobic condition (AICRP trial)	**Approved.** **(Action :** *Associate Research Scientist, Main Rice Research Centre, NAU, Navsari***)**
14.2.3.69	Evaluation of cultivars for weed competitiveness under puddled direct wet seeding condition (AICRP)	**Approved.** **Action :** *Associate Research Scientist, Main Rice Research Centre, NAU, Navsari***)**
14.2.3.70	Optimization of time of sowing and row spacing for Indian bean var. GNIB 22	**Approved.** **(Action:** *Assoc. Research Scientist, Pulses & Castor Research Station, NAU, Navsari***)**

14.2.3.71	Study on effect of irrigation scheduling based on IW/CPE ratio and integrated nutrient management on growth and yield of summer sesame in hilly region	**Approved with following suggestion/s:** 1. Mention main plot and sub plot treatment. 2. Correct the title "Study on effect of irrigation scheduling based on IW/CPE ratio, organic and inorganic nutrient management on growth and yield of summer sesame in hilly region". **(Action:** *Assoc. Research Scientist, Hill Millet Research Station, NAU, Waghai***)**
14.2.3.72	Yield performance of rice varieties in direct seeded condition under organic farming	**Approved.** **(Action:** *Assoc. Research Scientist, Regional Rice Research Station, NAU, Vyara***)**
14.2.3.73	Raising fodder maize in soil less culture through foliar application of soluble fertilizers	**Approved with following suggestion/s:** In treatment T_2 use multi micronutrient Grade-IV. **(Action:** *Assoc. Research Scientist, Regional Rice Research Station, NAU, Vyara***)**
14.2.3.74	Effect of different sulphur levels in presence and absence of organic on yield and quality of *Bt* cotton, G.Cot. Hy. 10 (BGII)	**Approved with following suggestion/s:** Remove name of variety from title of experiment. **(Action:** *Research Scientist, Main Cotton Research Station, NAU, Surat***)**
14.2.3.75	Integrated nitrogen management in *kharif* grain sorghum	**Approved.** **(Action:** *Research Scientist, Main Sorghum Research Station, NAU, Surat***)**
14.2.3.76	Studies on intercropping of grain legumes in Sorghum	**Approved.** **(Action:** *Assistant Research Scientist, Agricultural Research Station, NAU, Achhalia***)**
14.2.3.77	Effect of seed priming and irrigation on seed production of *rabi* sun hemp under *kyari* land of south Gujarat	**Approved.** **(Action:** *Professor & Head, Dept. of Agronomy, NMCA, NAU, Navsari***)**
14.2.3.78	Weed management with pre and post emergence herbicides in linseed	**Approved with following suggestion/s:** 1. Keep for treatment T_2 as IC *fb* HW at 20 & 40 DAS instead of weed free. 2. In treatment T_6 use oxadiargyl 75 g/ha as PE instead of Isoproturon. 3. Replace T_5 with following pre-mix Pendimethalin+Imazethapyr 800 g/ha as PE. **(Action:** *Professor & Head, Dept. of Agronomy, NMCA, NAU, Navsari***)**
14.2.3.79	Nutrient management in fodder cowpea-maize sequence under south Gujarat condition	**Approved.** **(Action :** *Professor & Head, Dept. of Agronomy, NMCA, NAU, Navsari***)**
14.2.3.80	Identification of cropping systems module for different farming systems	**Approved.** **(Action :** *Professor & Head, Dept. of Agronomy, NMCA, NAU, Navsari***)**
14.2.3.81	Carbon crediting and GHG emission in IFS models	**Approved.** **(Action :** *Professor & Head, Dept. of Agronomy, NMCA, NAU, Navsari***)**
14.2.3.82	Agronomical evaluation of different paddy varieties under organic farming	**Approved with following suggestion/s:** Give the common treatment of root dipping of seedling with Azospirillum and PSB. **(Action:** *Dept. of SSAC, ACHF, NAU, Navsari***)**

14.2.3.83	Effect of age of seedling and nutrient management in ragi	**Approved with following suggestion/s:** 1. Add observation on quality parameters and bulk density. 2. Recast treatment B as: (a) FM1-100% RDN through Biocompost + *Azotobactor*. (b) FM1-75% RDN through Biocompost + *Azotobactor*. (c) FM1-50% RDN through Biocompost + *Azotobactor*. (d) FM1-25% RDN through Biocompost + *Azotobactor*. **(Action:** *Principal, College of Agriculture, NAU, Waghai***)**
14.2.3.84	Weed management in pigeonpea under rainfed condition	**Not Approved.** **(Action:** *Principal, College of Agriculture, NAU, Bharuch***)**
14.2.3.85	Weed management in cotton	**Approved with following suggestion/s:** 1. Mention time in W_4 treatment 20 and 40 DAS. 2. W_2 Pendimethalin 0.9 kg/ha as PE *fb* quizalofop ethyl 50 g/ha + pyrithiobac sodium 75 g/ha as PoE (tank mix). **(Action:** *Principal, College of Agriculture, NAU, Bharuch***)**
14.2.3.86	Effect of row and plant spacing on pigeonpea	**Approved.** **(Action:** *Principal, College of Agriculture, NAU, Bharuch***)**

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

Sr. No.	Title of Experiment	Suggestions & Action to be taken
14.2.3.87	Efficiency of different incubating material for PROM in wheat	**Approved with following suggestion/s:** Specify the procedure for incubation of PROM. **(Action:** *Centre for Integrated Farming Systems, SDAU, SKNagar***)**
14.2.3.88	Nitrogen management in fodder oat-pearl millet under organic farming	**Approved with following suggestion/s:** 1. Take 100 % through inorganic fertilizer treatment in another plot. 2. Add observation on "Crude fibre content'. **(Action:** *Centre for Integrated Farming Systems, SDAU, SKNagar***)**
14.2.3.89	Estimation of green house gases (CO_2, CH_4, N_2O) flux from soil under different cropping systems of IFS Models	**Approved with following suggestion/s:** 1. Take 5 samples from each unit i.e. from each IFS system. 2. Specify the standard methodology for green house gas emission estimation. **(Action:** *Centre for Integrated Farming Systems, SDAU, SKNagar***)**
14.2.3.90	Integrated weed management in isabgol	**Approved with following suggestion/s:** 1. In treatment T_6 and T_7 take Oxadiargyl 60 and 90 g/ha instead of 100 and 120 g/ha, respectively.

		2. Delete treatment T_{11}: Pendimethalin 0.75 kg/ha as PE. 3. Carry out bioassey test with three crops. 4. Record observation on residue analysis of soil and finished product. **(Action:** *Professor & Head, Dept. of Agronomy, CPCA, SDAU, SKNagar***)**
14.2.3.91	Effect of phosphorus and sulphur on growth and yield of soybean	**Approved with following suggestion/s:** 1. Take S level 20, 30 and 40 kg/ha from gypsum. **(Action:** *Professor & Head, Dept. of Ag. Chem. and Soil Sci., CPCA, SDAU, SKNagar***)**
14.2.3.92	Effect of foliar spray of nutrients on pearl millet under dryland condition	**Approved with following suggestion/s:** 1. Replace urea 1.0 and 1.5 % with Urea 2.0 %. 2. Take separate treatment of 100 % RDF (Part C). **(Action:** *Res. Scientist, Centre for Natural Resources Mgmt., SDAU, SKNagar***)**
14.2.3.93	Evaluation of cow-based bio-enhancers for organic cultivation of chickpea	**Approved with following suggestion/s:** Modify treatments as per the expt. entitled "Evaluation of some cow-based bio-enhncers and botanicals for organic cultivation of *rabi* onion", Dept. of Agronomy, JAU, Junagadh **(Action:** *Res. Scientist, Centre for Natural Resources Mgmt., SDAU, SKNagar***)**
14.2.3.94	Evaluation of different cow-based bio-enhancers for organic cultivation of fenugreek	**Approved with following suggestion/s:** Modify treatments as per the expt. entitled "Evaluation of some cow-based bio-enhncers and botanicals for organic cultivation of *rabi* onion", Dept. of Agronomy, JAU, Junagadh **(Action:** *Res. Scientist, Centre for Natural Resources Mgmt., SDAU, SKNagar***)**
14.2.3.95	Irrigation scheduling for drip and sprinkler irrigated potato using tensiometer	**Approved with following suggestion/s:** Conduct the experiment using Large plot techniques with 6 sample size. **(Action:** *Res. Scientist, Centre for Natural Resources Mgmt., SDAU, SKNagar***)**
14.2.3.96	Response of summer pearl millet to split application of nitrogen	**Approved with following suggestion/s:** Carry out experiment in RBD and accordingly prepare treatment combinations (13 treat. combinations). **(Action:** *Center for Crop Improvement, SDAU, SKNagar)*
14.2.3.97	Nutrient management in napier grass under different fodder tree species (Silvi-pasture system)	**Approved with following suggestion/s:** 1. Delete word 'Fodder' from title. 2. Carry out experiment in Strip plot design with 4 replications. 3. Delete 150-50-40 kg NPK/ha from note. **(Action:** *Research Scientist, Agroforestry Research Station, SDAU, SKNagar)*
14.2.3.98	Nutrient management in lucerne under *Melia dubia* based	**Approved with following suggestion/s:** 1. Keep FYM dose 5.0 t/ha instead of 12.5 t/ha.

	silvipasture system	2. Conduct experiment with 4 replications. **(Action:** *Research Scientist, Agroforestry Research Station, SDAU, SKNagar)*
14.2.3.99	Studies on system of mustard intensification (SMI) in rapeseed-mustard through transplanting (AICRP)	**Approved.** **(Action:** *Research Scientist, Castor - Mustard Research Station, SDAU, SKNagar***)**
14.2.3.100	Response of castor hybrid GCH-8 to spacing and date of sowing under drip system	**Approved with following suggestion/s:** 1. Conduct experiment in split plot design with 4 replications. 2. Mention plot size and drip system detail. 3. Add observation on pest and disease incidence. **(Action:** *Research Scientist, Castor - Mustard Research Station, SDAU, SKNagar***)**
14.2.3.101	Split application of nitrogen in castor under drip irrigation	**Approved with following suggestion/s:** 1. Carry out experiment in RBD and accordingly prepare treatment combinations (total 11 treatments). 2. Add one treatment as" Seven splits of nitrogen 30,45,60,75,90,105 and 120 DAS" 3. Mention drip system detail. **(Action:** *Research Scientist, Castor - Mustard Research Station, SDAU, SKNagar***)**
14.2.3.102	Response of split application of nitrogen in mustard	**Approved with following suggestion/s:** 1. Carry out experiment in RBD and accordingly prepare treatment combinations (total 9 treatments). 2. Change title as "Response of mustard to split application of nitrogen". **(Action:** *Research Scientist, Castor - Mustard Research Station, SDAU, SKNagar***)**
14.2.3.103	Pigeonpea based intercropping system	**Approved with following suggestion/s:** 1. Change title as "Evaluation of pigeonpea based intercropping systems". 2. Fertilizer given to different intercrops on the basis of area occupied by the respective crop. 3. Mention seed rate of different intercrops. **(Action:** *Pulses Research Station, SDAU, SKNagar***)**
14.2.3.104	Response of pigeonpea to split application of nitrogen	**Not Approved.** To be conducted as filler trial. **(Action:** *Pulses Research Station, SDAU, SKNagar***)**
14.2.3.105	Response of rajmash to split application of nitrogen	**Approved with following suggestion/s:** 1. Carry out experiment in RBD and accordingly prepare treatment combinations (total 7 treatments). 2. Conduct experiment with 4 replications. **(Action:** *Pulses Research Station, SDAU, SKNagar***)**

14.2.3.106	Integrated nutrient management in Castor seed production (GCH 7) programme	**Not Approved.** **(Action:** *Seed Technology Department, SDAU, SKNagar***)**
14.2.3.107	Response of forage oat to time of sowing and cutting	**Approved with following suggestion/s:** Change title as "Response of forage oat to sowing time and cutting management". **(Action:** *Seed Technology Department, SDAU, SKNagar***)**
14.2.3.108	Effect of Zinc and Plant Growth Promoting *Rhizobacteria* on growth, yield and quality of summer pearl millet in loamy sand	**Approved with following suggestion/s:** 1. Change title as "Effect of zinc and bio NPK on growth, yield and quality of summer pearl millet in loamy sand". 2. Add observation on microbial count at initial and at harvest. **(Action:** *Central Instrumentation Lab, Directorate of Research, SDAU, SKNagar***)**
14.2.3.109	Delineation of nutrient status of soils of Aravalli district and their relationship with soil properties	**Approved.** **(Action:** *Central Instrumentation Lab, Directorate of Research, SDAU, SKNagar***)**
14.2.3.110	Effect of potassium and sulphur on yield and quality of cumin	**Approved with following suggestion/s:** Mention source of Sulphur. **(Action:** *Research Scientist (Spices), Seed Spices Research Station, SDAU, Jagudan***)**
14.2.3.111	Effect of split application of nitrogen on wheat	**Approved with following suggestion/s:** Carry out experiment in RBD and accordingly prepare treatment combinations (total 16 treatments). **(Action:** *Research Scientist (Wheat), Wheat Research Station, SDAU, Vijapur***)**
14.2.3.112	Varietal evaluation of soybean under different fertility levels	**Approved with following suggestion/s:** 1. Delete treatments F_4 and F_5. 2. Take 50 % RDF with *Rhizobium* and PSB in treatment F3. 3. Apply 5.0 t FYM/ha as common treatment. **(Action:** *Research Scientist (Wheat), Wheat Research Station, SDAU, Vijapur***)**
14.2.3.113	Delineation of nutrient status of soils of Mehsana district and their relationship with soil properties	**Approved.** **Action:** *Research Scientist (Wheat), Wheat Research Station, SDAU, Vijapur***)**
14.2.3.114	Response of processing potato varieties to sources of fertilizers and spacing under drip fertigation	**Approved with following suggestion/s:** 1. Conduct experiment with split plot design with Main plot treatment: Variety and spacing and source of fertilizer as Sub plot treatment. 2. Mention Drip system lay out. **(Action:** *Potato Res. Station, SDAU, Deesa***)**
14.2.3.115	Response of potato to split application of nitrogen under sprinkler system	**Approved with following suggestion/s:** 1. Carry out experiment in RBD and accordingly prepare treatment combinations (total 16 treatments). 2. Mention sprinkler system lay out. **(Action:** *Potato Res. Station, SDAU, Deesa***)**

14.2.3.116	Effect of split application of nitrogen to dual sorghum	**Approved with following suggestion/s:** 1. Carry out experiment in RBD and accordingly prepare treatment combinations (total 13 treatments). 2. Change title as " Effect of split application of nitrogen to dual purpose sorghum" **(Action:** *Potato Res. Station, SDAU, Deesa***)**
14.2.3.117	Response of sunnhemp seed production to sowing time and topping	**Approved with following suggestion/s:** Delete treatment T_2 (Topping at 20 DAS). **(Action:** *Agril. Res. Station, SDAU, Ladol***)**
14.2.3.118	Integrated weed management in soybean	**Approved with following suggestion/s:** 1. In treatment T_5: IC *fb* HW at 20 DAS instead of 30 DAS. 2. In treatment T_6: IC *fb* HW at 20 and 40 DAS instead of 30 and 45 DAS. 3.Conduct experiment in RBD 4. Take variety 'NRC 37' instead of 'GJ soybean 3'. **(Action:** *Agril. Res. Station, SDAU, Ladol***)**
14.2.3.119	Response of Bt. cotton to foliar application of nutrients	**Approved with following suggestion/s:** 1. Delete treatments T_4 and T_6. 2. Add treatment as "T_2 + 19-19-19 @1.5 %" **(Action:** *Cotton Res. Station, SDAU, Talod)*
14.2.3.120	Response of Bt cotton to split application of nitrogen	**Approved with following suggestion/s:** 1. Carry out experiment in RBD and accordingly prepare treatment combinations (total 11 treatments). 2. Mention drip system lay out. **(Action:** *Cotton Res. Station, SDAU, Talod***)**
14.2.3.121	Intercropping in rainfed castor	**Approved with following suggestion/s:** 1. Change title as "Studies on intercropping in rain fed castor". **(Action:** *Dry Farming Research Station, SDAU, Radhanpur***)**
14.2.3.122	Soil moisture conservation techniques in pearlmillet under rainfed conditions	**Approved with following suggestion/s:** 1. In treatment T_4: Use hydrogel @ 5.0 kg/ha instead of plastic mulch. 2. Delete treatment T_2 (Compartmental bunding 4.5 m x 6.0 m). **(Action:** *RRS, SDAU, Kothara***)**
14.2.3.123	Intercropping of *kharif* crops in olive plantation	**Approved.** **(Action:** *RRS, SDAU, Kothara***)**
14.2.3.124	Response of *kharif* maize to split application of nitrogen	**Approved with following suggestion/s:** Carry out experiment in RBD and accordingly prepare treatment combinations (total 13 treatments). **(Action:** *Asstt. Research Scientist, Maize Research station, SDAU, Bhiloda***)**
14.2.3.125	Relay cropping of castor in *kharif* Groundnut	**Approved.** **(Action:** *Krushi Vigyan Kendra, SDAU, Tharad***)**

14.2.3.126	Effect of split application of nitrogen on yield and quality of isabgul	**Approved with following suggestion/s:** Carry out experiment in RBD and accordingly prepare treatment combinations (total 10 treatments). **(Action:** *Principal, College of Horticulture, SDAU, Jagudan***)**
14.2.3.127	Integrated nitrogen management in Summer Okra	**Approved with following suggestion/s:** Arrange treatments in descending order of 100, 75 and 50 % RDN **(Action:** *Principal, College of Horticulture, SDAU, Jagudan***)**
14.2.3.128	Response of mustard to different sources of sulphur	**Approved with following suggestion/s:** Take sources of sulphur: Gypsum, Bentonite, Elemental S, Cossavet and Ammonium sulphate as treaments with control (RDF). **(Action:** *Directorate of Research, SDAU, SKNagar***)**
14.2.3.129	Effect of sources of nutrients through foliar spray on growth and yield of summer pearl millet	**Approved with following suggestion/s:** 1. Modify treatment as Cow urine: 3.0 %, Urea: 2.0 %, Jivamrut @ 4.0 %. 2. Use multi micro nutrient Grade IV instead of micro mix in treatment T_6. **(Action:** *Krushi Vigyan Kendra, SDAU, Deesa***)**
14.2.3.130	Monitoring of AWS Data to Serving Farming Community	**Not Approved.** **(Action:** *Professor & Head, Dept. of Agril. Meteorology, CPCA, SDAU, SKNagar***)**

General suggestions made by the house are:

1. Maintain Experiment Register by the Director of Research Office as per Anand Agricultural University.
2. Take Irrigation experiments on moisture sensor based.
3. Use DMRT test in weed control experiments in individual year as well as in pooled.

14.3. PLANT PROTECTION

Chairman	: Dr. A. M. Patel, DR, SDAU
Co-Chairmen	: Dr. I. U. Dhruj, ADR, JAU
	: Dr. K. A. Patel, ADR, NAU
Rapporteurs	: Dr. P. G. Shah, RS, AAU
	: Dr. L. F. Akbari, Prof. & Head, JAU
	: Dr. C. C. Patel, Prof., AAU
Statistician	: Dr. A. D. Kalola, Asso. Prof., AAU

Presentation of recommendations and technical programmes by Conveners of SAUs

Sr. No.	Name	Designation & University
1	Dr. B. A. Patel	Professor & Head, Dept. of Nematology, AAU., Anand
2	Dr. V. V. Rajani	Research Scientist (Pl. Path.), Cotton Research Station, JAU, Junagadh
3	Dr. S. P. Saxena	Professor & Head, Dept. of Agril. Entomology, ACHF, NAU, Navsari
4	Dr. D. S. Patel	Professor & Head, Dept. of Plant Pathology, CPCA, SDAU, SKnagar

Summary

Name of University	No. of Recommendations				NewTechnical Programmes	
	Farming Community		Scientific Community			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU, Anand	07	07	32	32+0*	28	28
JAU, Junagadh	14	12	08	08+2*	23	23
NAU, Navsari	07	06	16	16+1*	17	17
SDAU,SKNagar	04	02	02	02+2*	37	37
Total	**32**	**27**	**58**	**58+5*=63**	**105**	**105**

*** Converted from farmers recommendation to information for scientific community**

14.3.1 RECOMMENDATION FOR FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

14.3.1.1	**Standardization of pheromone traps required for mass trapping of pink bollworm in *Bt* cotton**
	The farmers of Middle Gujarat Agro-climatic Zone III are recommended to set up 40 pheromone traps/ha, 30 cm above crop height at equidistantly one week prior to flowering and change the lure at one month interval till last picking of *Bt* cotton for effective and economical management of pink bollworm in *Bt* cotton. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૩માં બીટી કપાસની ખેતી કરતા ખેડૂતોને ગુલાબી ઇયળના અસરકારક અને અર્થક્ષમ વ્યવસ્થાપન માટે ફૂલ અવસ્થાના એક અઠવાડીયા પહેલા ૪૦ ફેરોમોન ટ્રેપ પ્રતિ હેક્ટર છોડની ઉંચાઇથી ૩૦સે.મી. ઉપર રહે તે રીતે સરખા અંતરે ગોઠવવા તથા તેની લ્યુર એક મહીનાના આતરે છેલ્લી વીણી સુધી બદલવાની સલાહ આપવામાં આવે છે . **Suggestion/s: Approved.** (**Action:** Prof.and Head, Dept. of Entomology, BACA, AAU, Anand**)**
14.3.1.2	**Integrated pest management in okra**
	The farmers of Middle Gujarat Agro-climatic Zone III are recommended to follow below mentioned module for effective and economical management of shoot and fruit borer of okra 1. Seed treatment with imidacloprid 600 FS, 9.0 ml/ kg seeds using equal quantity of water before 12 hours of sowing. 2. Removal and destruction of the shoot and fruit borer affected shoots and fruits along with larvae at weekly interval.

3. Installation of pheromone traps of *Earias vittella* @ 60/ha at three week after germination and replace the lures every 21 days interval.
4. Spraying of chlorantraniliprole 18.5 SC, 0.006% (3 ml in 10 litre of water) at 25 DAS (30 g a.i./ha).
5. Spraying of NSKE 5% at 35 DAS.
6. Spraying of emamectin benzoate 5 SG 0.0025% (5 g in 10 litre of water) at 45 DAS (12.5 g a.i./ha).
7. Spraying of *Bacillus thuringiensis* var. *kurstaki* 5 WP(10 g in 10 litre of water) at 55 DAS
8. Spraying of NSKE 5% at 65 DAS.

Year	**Crop**	**Pest**	**Pesticides with formulation**	**Dosage**				**Appl. Schedule at DAS**	**Waiting period /PHI (Days)**	**Remarks**
				g.a. i./ ha	**Quantity of formulation per ha**	**Conc. (%)**	**Dilution in water (10 lit)**			
2018	Okra	Shoot & fruit borer	Imidacloprid 600 FS	54	9 ml/ kg seeds	--	--	Seed treatment with imidacloprid 600 FS, 9 ml/kg seeds with equal water quantity	--	--
			Chlorantraniliprole 18.5 SC	30	150 g	0.006	3 ml	25	5	
			NSKE	--	25 kg	5	500 g	35	--	
			Emamectin benzoate 5 SG	12.5	250 g	0.0025	5 g	45	5	
			Bacillus thuringiensisvar. Kurstaki 5 WP	--	500 g	--	10 g	55	--	
			NSKE	--	25 kg	5	500 g	35	--	

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૩ના ભીંડાની ખેતી કરતા ખેડૂતોને ભીંડાની ડૂંખ અને ફળ કોરી ખાનાર ઇયળના અર્થક્ષમ અને અસરકારક નિયંત્રણ માટે નીચે મુજબના મોડ્યુલને અનુસરવાની સલાહ આપવામાં આવે છે.

૧. ભીંડાના બીજને ઇમીડાક્લોપ્રીડ ૬૦૦ એફ .એસ .૯મિ.લિ.કિ.ગ્રા પ્રમાણે સપ્રમાણ પાણી ભેળવી વાવણીના ૧૨ કલાક પહેલા બીજ માવજત આપવી.

૨. ડૂંખ અને ફળ કોરી ખાનાર ઇયળ દ્વારા નુકસાન પામેલ ડૂંખ અને ફળ ઇયળ સહિત તોડીને તેનો નાશ કરવો.

૩. ભીંડાની વાવણીના ત્રણ અઠવાડીયા બાદ ડૂંખ અને ફળ કોરી ખાનાર ઇયળના નર ફૂદાને આકર્ષવા ૬૦ ફેરોમોન ટ્રેપ/હેક્ટરે ગોઠવવા અને તેની લ્યુર દર ૨૧ દિવસે બદલવી .

૪. ક્લોરાન્ટ્રાનિલિપ્રોલ ૧૮.૫ એસ.સી., ૦.૦૦૬ % (૩ મિ.લિ./૧૦ લિટર પાણીમાં) વાવણી બાદ ૨૫ દિવસે છંટકાવ કરવો (30 ગ્રા.સ.ત/.હે.)

૫. લીંબોળીના મીંજમાંથી બનાવેલ ૫ %નો અર્ક ૫૦૦ ગ્રામ મીંજનો ભૂકો/૧૦ લિટર પાણી (રોપણીના ૩૫ દિવસે છંટકાવ કરવો)

૬. એમામેક્ટીન બેન્ઝોએટ ૫ એસજી, ૦.૦૦૨૫%(૫ ગ્રામ/૧૦ લિટર પાણીમાં) (૧૨.૫ ગ્રા.સ.ત/.હે.)

૭ .બીટી પાઉડર ૫ ડબલ્યુ.૫ (૧૦ ગ્રામ/૧૦ લિટર પાણીમાં) ૫૫ દિવસે છંટકાવ કરવો

૮. લીંબોળીની મીંજમાંથી બનાવેલ ૫ %નો અર્ક ૫૦૦ ગ્રામ મીંજનો ભૂકો/૧૦ લિટર પાણ રોપણીના ૬૫ દિવસે છંટકાવ કરવો

વર્ષ	**પાક**	**જીવાત**	**જંતુનાશક**	**પ્રમાણ**	**છંટકાવ**	**છેલ્લો**	**રીમાર્ક**

				સ.ત/ .હે (ગ્રામ)	જંતુનાશક / હે	સાંદ્રતા (%)	જરૂરિયાત (૧૦ લી પાણીમાં)	દિવસે	છંટકાવ અને ઉતાર વચ્ચેનો સમયગાળો	
૨૦૧૮	ભીંડા	ડૂંખ અને ફળ કોરી ખાનાર ઇયળ	ઇમીડાક્લોપ્રીડ ૬૦૦એફ.એસ.	૫૪	૯મિ.લિ /.કિ.ગ્રા . બીજ	--	--	બીજનેઇમીડાક્લોપ્રીડ ૬૦૦ એફએસ ૯ મિ.લિ. સપ્રમાણ પાણી સાથે / કિ.ગ્રા .બીજ માવજત આપવી	--	
			ક્લોરાન્ટ્રાનિલિપ્રોલ ૧૮.૫ એસ.સી .	30	૧૫૦ ગ્રામ	૦.૦૦૬	૩ મિ.લિ .	૨૫	૫	
			લીંબોળીના મીંજનો અર્ક	--	૨૫ કિ.ગ્રા.	૫	૫૦૦ ગ્રામ	૩૫	--	
			એમામેક્ટીન બેન્ઝોએટ ૫ એસ.જી .	૧૨.૫	૨૫૦ ગ્રામ	0.00૨૫	૫ ગ્રામ	૪૫	૫	
			બેસીલસથુરીન્જીન્સીસ	--	૫૦૦ ગ્રામ	--	૧૦ ગ્રામ	૫૫	--	
			લીંબોળીના મીંજનો અર્ક	--	૨૫ કિ.ગ્રા.	૫	૫૦૦ ગ્રામ	૬૫	--	

Suggestion/s: Approved

(**Action:** Asstt. Res. Sci. (Ento.), MVRS, AAU, Anand**)**

14.3.1.3 Impact of sowing period on the pest complex of pigeonpea

For the management of pod fly, farmers of Middle Gujarat Agro-climatic Zone III growing pigeonpea are recommended to adopt *Vaishali* variety and sow the crop during third week of June to first week of July to minimize the incidence of the pest.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૩ તુવેરની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે તુવેરની શિંગ માખીનો ઉપદ્રવ ઓછો રહે તે માટે વૈશાલી જાતની પસંદગી કરવી અને તુવેરની વાવણી જુનના ત્રીજા અઠવાડિયાથી જુલાઈના પ્રથમ અઠવાડિયામાં સુધીમાં કરવી.

Suggestion/s: Approved

(**Action:** Asstt. Res. Sci., ARS, AAU, Derol)

14.3.1.4 Evaluation of insecticides for the control of stem borer and wireworm infesting un-irrigated fodder sorghum

The farmers of *Bhal* and Costal Agro-climatic Zone –VIII growing un-irrigated fodder sorghumin *rabi* season are recommended to treat seeds with thiamethoxam 30 FS, 8 ml/ kg seeds using 8 ml of water before 12 hours of sowing followed by drying under shade for preventing stem borer and wire worm infestation.

Year	Crop	Pest(s)	Pesticide(s) with formulation	Dosage				Application schedule	waiting period/ PHI (days)	Remark
				a. i./ha	Quantity of formulation /ha	Conc. (%)	Dilution in water			
1	2	3	4	5	6	7	8	9	10	11

2018	Fodder Sorghum	Stem borer and wireworm	Thiamethoxam 30 FS	0.144	8 ml/ kg seeds	--	--	Before sowing seed treatment with thiamethoxam 30 FS, 8 ml/ kg seeds with equal water quantity	Being a seed treatment, it is not required	--

ભાલ અને દરિયાકાંઠા ખેત આબોહવાકીય વિસ્તાર ૮ ના બિન -પિયત શિયાળામાં ઘાસચારાની જુવાર ઉગાડતા ખેડૂતોને ગાભમારાની ઇયળ અને વાયરવર્મના ઉપદ્રવને અટકાવવા માટે બીજને થાયામેથોક્ઝામ 30 એફએસ, ૮ મિ.લિ/.કિગ્રા. બીજમાં ૮ મિ.લિ પ્રમાણે પાણી ભેળવી વાવણીના ૧૨ કલાક પહેલા માવજત આપેલા બીજને છાંયડે સૂકવી વાવણી કરવા ભલામણ કરવામાં આવે છે.

વર્ષ	પાક	જીવાત	જંતુનાશક દવાઓનુ ફોર્મ્યુલેશન	પ્રમાણ				વાપરવાની પધ્ધતી	પ્રતિક્ષા સમય (દિવસ)	રીમાર્ક્સ
				સક્રિય તત્વપ્રતિ હેકટર	ફોર્મ્યુલેશનની માત્રા પ્રતિ હેકટર	પ્રમાણ	પાણી સાથે ડાયલ્યુશન			
૨૦૧૮	ઘાસ ચારાની જુવાર	ગાભમારાની ઇયળ અને વાયરવર્મ	થાયામેથોક્ઝામ 30એફએસ	૦.૧૪૪ કિ.ગ્રા.	૮ મિ.લિ/. કિ.ગ્રા બીજ	--	--	વાવતાં પહેલાં બીજને થાયામેથોક્ઝામ ૩૦ એફએસ ૮ મિલિ. સપ્રમાણ પાણી સાથે/કિગ્રા. બીજ માવજત આપવી	બીજમાવજત આપવાનીહોવા થીજરૂરિયાતન થી.	---

Suggestion/s: Approved

(**Action:** Assoc. Res. Sci., ARS, AAU, Arnej)

14.3.1.5 Evaluation of different insecticidal application strategies against stem borer, *Chilo partellus* Swinhoe infesting maize

Maize growers of Middle Gujarat Agro-climatic Zone III are recommended to treat the seeds with thiamthoxam 30 FS, 8 ml/ kg using 8 ml of water before 12 hours of sowing for preventing stem borer infestation. The treated seeds should be dried under shade condition before sowing.

Year	Crop	Pest	Pesticides with formulation	Dosage				Appl. schedule	Waiting period / PHI (Days)	Remark
				kg a.i./ha	Quantity of formulation per hectare	Conc. (%)	Dilution in water (10 lit)			
2018	Maize	Stem borer	Thiamethoxam 30 FS	0.48	8 ml/ kg seeds	--	--	Before sowing seed treatment with thiamethoxam 30 FS, 8 ml/ kg seeds with equal quantity of water	Being a seed treatment, it is not required	-

મકાઇની ખેતી કરતા મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૩ નાં ખેડૂતોને ગાભમારાની ઇયળનો ઉપદ્રવ અટકાવવા માટે થાયામેથોક્ષામ ૩૦ એફએસ, ૮મિ.લિ/.કિગ્રા. બીજમાં ૮ મિ.લિ પ્રમાણે પાણી ભેળવી વાવણી પહેલા ૧૨ કલાક બીજ માવજત આપવાની સલાહ આપવામાં આવે છે .માવજત આપેલ બીયારણને છાયડે સૂકવી વાવેતર માટે ઉપયોગમાં લેવા.

વર્ષ	પાક	જીવાત	જંતુનાશક દવાઓનુ ફોર્મ્યુલેશન	પ્રમાણ				વાપરવાની પધ્ધતી	પ્રતિક્ષાસમય (દિવસ)	રીમાર્ક્સ
				સક્રિયત ત્વપ્રતિહેકટર	ફોર્મ્યુલેશનની માત્રાપ્રતિ હેકટર	પ્રમાણ	પાણી સાથે ડાયલ્યુશન			
૧	૨	૩	૪	૫	૬	૭	૮	૯	૧૦	૧૧
૨૦૧૮	મકાઇ	ગાભમારાનીઇયળ	થાયામેથોક્ઝામ ૩૦ એફએસ	૦.૪૮ કિ.ગ્રા.	૮ મિ.લિ. /કિ.ગ્રા બીજ.	--	--	વાવતાં પહેલાં બીજને થાયામેથોક્ઝામ ૩૦ એફએસ, ૮ મિ .લિ. સપ્રમાણ પાણી સાથે /. કિ.ગ્રા .બીજ માવજત આપવી	બીજ માવજત આપવાની હોવાથી જરૂરિયાત નથી .	---

Suggestion/s: Approved.

(**Action:** Asstt. Res. Sci., ARS, AAU, Sansoli)

14.3.1.6 Management of cumin blight through fungicides

The farmers of Middle Gujarat Agro-climatic Zone III growing cumin are recommanded to apply three sprays of azoxystrobin 23 SC, 0.023% (10 ml/10 liter water) first at the initiation of disease and remaining sprays at 10 days interval for effective and economical management of blight.

Year	Crop	Pest	Pesticides with formulation	Dosage/ha				Application schedule	Waiting period/ PHI (Days)
				g. a.i.	Quantity of formulation (g/ml)	Conc. (%)	Dilution in water (litre)		
2018	Cumin (*Rabi*)	Blight	Azoxystrobin 23 SC	115	500	0.023	500	First spray at the appearance of the disease and remaining two sprays at 10 days	28 days

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૩ ના જીરૂની ખેતી કરતા ખેડૂતોને ચરમી રોગના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે રોગની શરૂઆત થયેથી એઝોકસીસ્ટ્રોબીન ૨૩ એસસી, ૦.૦૨ % ૧૦ મિ.લિ/૧૦ લિટર પાણી પ્રમાણેનો પહેલો છંટકાવ અને બાકીના બે છંટકાવ ૧૦ દિવસના આંતરે કરવાની સલાહ આપવામાં આવે છે.

વર્ષ	પાક	રોગ	ફૂગનાશક દવાઓનુ ફોર્મ્યુલેશન	પ્રમાણ /હે.				વાપરવાનો સમય	વેઇટીંગ પીરીયડ/પી. એચ.આઇ (દિવસ)
				સક્રિય તત્વ	ફોર્મ્યુલેશનની માત્રા (ગ્રા/મિલી)	પ્રમાણ (%)	પાણી સાથે ડાલ્યુશન (લીટર)		
૨૦૧૮	જીરૂ	ચરમી	એઝોક્સીસ્ટ્રોબીન ૨૩એસસી	૧૧૫	૫૦૦	૦.૦૨૩	૫૦૦	પ્રથમ છંટકાવ રોગની શરૂઆત થયે અને બાકીના બેછંટકાવ ૧૦ દિવસના આંતરે કરવા	૨૮ દિવસ

Suggestion/s: Approved

(Action: Professor & Head, Department of Plant Pathology, BACA, Anand)

14.3.1.7 Management of *Meloidogyne* spp. in okra through bioagents

The farmers of Middle Gujarat Agro-climatic Zone III growing okra crop in *kharif* are recommendedto treat seeds with *Purpureocillium lilacinum* ($2x10^6$ cfu/ml), 5

	ml/kg and soil application of vermicompost before sowing @ 2.5 t/ha enriched with *P. lilacinum*, 10 ml/kgfor effective and economical management of root-knot nematodes (*Meloidogyne* spp.).

Year	**Crop**	**Pest**	**Bio-nematicide with formulation**	**Dosage/ha**				**Application schedule**	**Waiting period/ PHI (Days)**
				cfu	**Quantity of formulation (g/ml)**	**Conc. (%)**	**Dilution in water (litre)**		
2018	Okra (*kharif*)	Root-knot nematodes (*Meloidogyne* spp.)	Seed treatment of *Purpureocillium lilacinum*	2 x 10^6 /ml	50 ml	NA	NA	**At the time of sowing:** Seed treatment of *Purpureocillium lilacinum*, 5 ml/kg seed	NA
			Soil application of Vermicompost @ 2.5 t/ha enriched with *P. lilacinum*, 10 ml/kg		Vermi-compost @ 2.5 t/ha + *P. lilacinum*,10 ml/kg	NA	NA	**Soil application:** Soil application of vermicompost @ 2.5 t/ha enriched with *P. lilacinum*, 10 ml/kg	NA

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૩ ના ચોમાસું ભીંડાની ખેતી કરતાં ખેડૂતોને ગંઠવા કૃમિના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે *પરપુરીયોસિલિયમ લીલાસિનમ* (૨x૧૦[૬] સીએફયુ/મિ.લિ.) ની બીજને ૫મિ.લિ./કિ.ગ્રા. પ્રમાણે માવજત આપવી તથા ૧૦ મિ.લિ./કિ.ગ્રા. પ્રમાણે *પરપુરીયોસિલિયમ લીલાસિનમ* ફૂગથી સંવર્ધિત કરેલ વર્મીકમ્પોસ્ટ ૨૫ ટન/હે પ્રમાણે વાવણી પહેલા જમીનમાં આપવાની સલાહ આપવામાં આવે છે.

વર્ષ	પાક	રોગ	જૈવિક કૃમિનાશકદવા ફોર્મ્યુલેશન	પ્રમાણ /હે .				વાપરવાનો સમય	વેઇટીંગ પીરીયડ/પી. એચ.આઇ (દિવસ)
				સીએ ફયુ	ફોર્મ્યુલેશનની માત્રા)ગ્રામ /મિલિ	પ્રમાણ (%)	પાણી સાથે ડાયલ્યુશન લિટર		
૨૦૧૮	ભીંડા ચોમાસું	ગંઠવા કૃમિ	બીજમાવજત *પરપુરીયોસિલિયમ લીલાસિનમ*	૨x ૧૦[૬] / મિ. લિ .	૫૦ મિ.લિ .	લાગુ પડતું નથી	લાગુ પડતું નથી	બીજ માવજત : *પરપુરીયોસિલિયમ લીલાસિનમ*-૫ મિલિ/કિ.ગ્રા. બીજ	લાગુ પડતું નથી
			જમીનમાવજત *પરપુરીયોસિલિયમ લીલાસિનમ* ફૂગથી (૧૦મિ.લિ/.કિ.ગ્રા.) સંવર્ધિત કરેલ વર્મીકમ્પોસ્ટ૨ .૫ટન /હે		જમીન માવજત *પરપુરીયો-સિલિયમ લીલાસિનમ* ફૂગથી સંવર્ધિત કરેલ વર્મીકમ્પોસ્ટ૨. ૫ટન /હે			જમીન માવજત: *પરપુરીયોસિલિયમ લીલાસિનમ* ફૂગથી (૧૦ મિ.લિ/. કિ.ગ્રા.) સંવર્ધિત કરેલ વર્મીકમ્પોસ્ટ ૨.૫ ટન /હે	

Suggestion/s: Approved

(Action: Professor & Head, Department of Nematology, BACA, Anand)

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

14.3.1.8	**Bio-efficacy of *Beauveria bassiana* in combination with different insecticides against sucking pests of *Bt* cotton (Bollgard-II).**
	For effective and economical management of aphid, jassid, whitefly and thrips in cotton, the farmers of South Saurashtra Agro-climatic Zone are recommended to apply five spray of any one of the following 1. Dinotefuran 20 SG 0.01 % (5.0 g/10 litre of water).

2. Diafenthiuron 50 WP 0.05% (10.0 g/10 litre of water).
3. Flonicamid 50 WG 0.015% (3.0 g/10 litre of water).
4. Spiromesifen 22.9 SC 0.011% (5.0 ml/10 litre of water).
5. Spinosad 45 SC 0.018% (4.0 ml/10 litre of water).

For ecofriendly management, apply *Beauveria bassiana* 1.15 WP (Min. 2 x 10^6 cfu/g) 0.007% (60 g/10 litre of water), first spray at pest initiation and subsequent four spray should be given at 10 days interval after first spray.

Year	Crop	Pest	Pesticides with formu-lation	Dosage				Total Quantity of Chemical suspension required/ha	Appli-cation schedule	Waiting period/ PHI (days)	Remark (s)
				a.i. g/ha	Quantity of formulation ml or kg/ha	Con (%)	Dilution in water (10 lit.)				
2017-18	Cotton	Aphid, Jassid, Thrips and Whitefly	Dinotefuran 20 SG	50	0.250 kg	0.01	5 g	500 lit	First spray at pest appearance and subsequent four sprays at 10 days interval after first spray	15	-
			Diafenthiuron 50 WP	250	0.500 kg	0.05	10 g	500 lit		21	-
			Flonicamid 50 WG	75	0.150 kg	0.015	3 g	500 lit		25	-
			Spiromesifen 22.9 SC	57.25	250 ml	0.011	5 ml	500 lit		10	--
			Beauveria bassiana 1.15 WP	2 x 10^6 cfu/g	3.0 kg	0.007 (Min. 2x10^6 cfu/g)	60 g	500 lit		--	--

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં કપાસની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, આ પાકમાં મોલો, તડતડીયા, થ્રીપ્સ અને સફેદ માખીના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે નીચેની કોઇપણ એક દવાના પાંચ છંટકાવ, પ્રથમ છંટકાવ જીવાત દેખાયે અને બીજા ચાર છંટકાવ, પ્રથમ છંટકાવ બાદ ૧૦ દિવસના અંતરે કરવાની ભલામણ છે.

૧. ડીનોટેફ્યુરાન ૨૦ એસજી ૦.૦૧ % (૫.૦ ગ્રામ/૧૦ લીટર પાણીમાં).

૨. ડાયફેન્થ્યુરોન ૫૦ વે.પા. ૦.૦૫ % (૧૦ ગ્રામ/૧૦ લીટર પાણીમાં).

૩. ફ્લોનીકામાઈડ ૫૦ ડબલ્યુજી ૦.૦૧૫ % (૩.૦ ગ્રામ/૧૦ લીટર પાણીમાં).

૪. સ્પાઈરોમેસીફેન ૨૨.૯ એસસી ૦.૦૧૧ % (૫.૦ મીલી/૧૦ લીટર પાણીમાં).

૫. સ્પીનોસાડ ૪૫ એસ.સી. ૦.૦૧૮ % (૪ મીલી/૧૦ લીટર પાણીમાં).

પર્યાવરણ અનુકૂળ નિયંત્રણ માટે બ્યુવેરીયા બાસીયાના ૧.૧૫ વે.પા. (ન્યુનતમ ૨×૧૦[૬] સીએફયુ/ગ્રામ) ૦.૦૦૭ % (૬૦ ગ્રામ/૧૦ લીટર પાણીમાં) ના પાંચ છંટકાવ, પ્રથમ છંટકાવ જીવાત દેખાયે અને બીજા ચાર છંટકાવ, પ્રથમ છંટકાવ બાદ ૧૦ દિવસના અંતરે કરવાની ભલામણ છે.

વર્ષ	પાક	જીવાત	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણીનાં દ્રાવણની કુલ જરૂરીયાત પ્રતિ હેક્ટર	વાપરવાની પધ્ધતિ	વેઈટીંગ પીરીયડ/ પી.એસ.આઈ. (દિવસ)
				સક્રિય તત્વ પ્રતિ હેક્ટર ગ્રામ/હે	ફોર્મ્યુલેશનની માત્રા મીલી, કિલો પ્રતિ હેક્ટર	સાંદ્રતા (%)	પાણી સાથે ડાયલ્યુશન (૧૦ લીટર)			
૨૦૧૭-૧૮	કપાસ	મોલો, તડતડીયા, થ્રીપ્સ અને સફેદમાખી	ડીનેટોફ્યુરાન ૨૦એસજી	૫૦.૦૦	૦.૨૫૦ કિ.ગ્રા.	૦.૦૧	૫ ગ્રામ	૫૦૦ લીટર	પ્રથમ છંટકાવ જીવાત દેખાયે અને બીજા ચાર છંટકાવ પ્રથમ છંટકાવના	૧૫
			ડાયફેન્થ્યુરોન ૫૦વે. પા.	૨૫૦.૦	૦.૫૦૦ કિ.ગ્રા.	૦.૦૫	૧૦ ગ્રામ	૫૦૦ લીટર		૨૧
			ફ્લોનીકામાઈડ ૫૦ડબલ્યુજી	૭૫.૦૦	૦.૧૫૦ કિ.ગ્રા.	૦.૦૧૫	૩ ગ્રામ	૫૦૦ લીટર		૨૫
			સ્પાઈરોમેસીફેન ૨૨.૯એસસી	૫૭.૨૫	૨૫૦ મીલી	૦.૦૧૧	૫ મીલી	૫૦૦ લીટર		૧૦

			બ્યુવેરીયા બાસીયાના ૧.૧૫વે.પા.	૨×૧૦^{૬} સીએફયુ /ગ્રામ	૩.૦ કિ.ગ્રા.	૦.૦૦૭ (ન્યુનત મ૨×૧૦^{૬}સીએફયુ /ગ્રામ)	૬૦ ગ્રામ	૫૦૦ લીટર	૧૦ દિવસના અંતરે	--

Suggestion/s : Approved

(Action: Professor & Head, Department of Entomology, JAU, Junagadh)

14.3.1.9 Evaluation of new pheromone based mating disruption technology for pink bollworm in cotton

The farmers of South Saurashtra Agro-climatic Zone growing Bt cotton are recommended to give three application of Sawaj Pheromone based Mating Disruption Paste (Sawaj MDP) technology @ 400g paste per application per hectare (uniformly distributed in 1000 dots between two branches) against pink bollworm, first at initiation of pest infestation (flowering stage) and subsequent two applications at an interval of 30 days for effective, economical and ecofriendly management.

Year	Crop	Pest	Pesticides with formulation	Dosage				Total Qty. of water required/ ha	Application schedule
				g.a.i./ha	Qty. of formulation g/ha	Conc (%)	Dilution in water (10 lit.)		
2018	Cotton	Pink boll worm	Sawaj MDP technology	-	1200 g/ha (400 g paste per application per hectare)	-	-	-	First application at pest infestation (flowering stage), while second and third at 30 days interval after first application.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં કપાસની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, પાકમાં ગુલાબી ઈયળના અસરકારક, અર્થક્ષમ અને પર્યાવરણ અનુકૂળ નિયંત્રણ માટે સાવજ એમડીપી ટેક્નોલોજીની ૪૦૦ ગ્રામ પેસ્ટ પ્રતિ હેક્ટર મુજબ (એક સરખા ૧૦૦૦ ટપકાને બેડાળીની વચ્ચેની જગ્યા પર), પ્રથમ માવજત જીવાતનો ઉપદ્રવ જણાય (ફુલ અવસ્થા) ત્યારે અને પછીની બે માવજત, પ્રથમ માવજતના ૩૦ દિવસના અંતરે આપવાની ભલામણ છે.

વર્ષ	પાક	જીવાત	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણીનાં દ્રાવણની કુલ જરૂરીયાત/હે	વાપરવાની પધ્ધતિ
				સક્રિય તત્વ પ્રતિ હેક્ટર (ગ્રામ/ હેક્ટર)	ફોમ્યુલેશનની માત્રા ગ્રામ/હે	સાંદ્રતા (%)	પાણી સાથેડાયલ્યુશન (૧૦લીટર)		
૨૦૧૮	કપાસ	ગુલાબીઈયળ	સાવજ એમડીપી ટેકનોલોજી	-	૧૨૦૦ ગ્રામ/હે (૪૦૦ ગ્રામ પેસ્ટ/માવજત/હેક્ટર)	-	-	-	પ્રથમ માવજત જીવાતનો ઉપદ્રવ જણાય (ફુલ અવસ્થા) ત્યારે અને બીજી અને ત્રીજી માવજત પ્રથમ માવજતના ૩૦ દિવસના અંતરે

Suggestion/s : Approved

(Action: Professor & Head, Department of Entomology, JAU, Junagadh**)**

14.3.1.10 Microbial management of white grubs in groundnut

The farmers of South Saurashtra Agro-climatic Zone growing *kharif* groundnut are recommended to give seed treatment with chlorpyrifos 20 EC @ 25 ml/kg seed

and soil application of *Beauveria bassiana* or *Metarizium anisopliae* 1.15 WP @ 5 kg/ha (Min. 2 x 10^6 cfu/g) along with castor cake (300 kg/ha) before sowing and drenching in plant row after 30 days of germination.

For organic farming, soil application of *Beauveria bassiana* or *Metarizium anisopliae* 1.15 WP @ 5 kg/ha (Min. 2 x 10^6 cfu/g) along with castor cake (300 kg/ha) before sowing and drenching in plant row after 30 days of germination for effective and economical management of white grub.

Year	Crop	Pest	Pesticides with formu-lation	Dosage				Total Quantity of Chemical suspension required/ ha	Application schedule	Waiting period / PHI (days)
				a.i.g/ ha	Quantity of form-ulation ml, kg/ha	Con. (%)	Dilution in water (10 lit.)			
2017-18	Groundnut	White grub	Chlorpyrifos 20 % EC (ST) + *Beauveria bassiana* 1.15 WP (SA and drenching)	600 + 57.50 + 57.50	3.0 lit + 5.0 kg + 5.0 kg	-- 0.006 (Min. 2 x 10^6 cfu/ g)	NA 50 g	-- 1000 lit (Drenching)	ST and soil application before sowing and drenching after 30 days of germination	-
			OR Chlorpyrifos 20 % EC (ST) *Metarhizium anisopliae* 1.15 WP (SA and drenching)	600 + 57.50 + 57.50	3.0 lit + 5.0 kg + 5.0 kg	-- 0.006 (Min. 2 x 10^6 cfu/ g)	NA 50 g			
			Beauveria bassiana 1.15 WP (SA and drenching)	57.50 + 57.50	5.0 kg + 5.0 kg	0.006 (Min. 2 x 10^6 cfu/ g)	50 g	1000 lit (Drenching)	Soil application before sowing and drenching after 30 days of germination	-
			OR *Metarhizium anisopliae* 1.15 WP (SA and drenching)	57.50 + 57.50	5.0 kg + 5.0 kg	0.006 (Min. 2 x 10^6 cfu/ g)	50 g			

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસું મગફળીની ખેતી કરતા ખેડૂતોને સફેદ ઘૈણના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે કલોરપાયરીફોસ ૨૦ ઇસીર૫મીલી / કિગ્રા બીજ મુજબ માવજત અને આ સાથે બ્યુવેરીયા બાસીયાના અથવા મેટારીઝીયમએનીસોપ્લી ૧.૧૫ વે.પા. (ન્યુનતમ ૨×૧૦^{૬} સીએફયુ/ગ્રામ) વાવેતર પહેલા જમીનમાં એરંડીના ખોળ (૩૦૦ કિ.ગ્રા./હે.) સાથે અને ઉગાવાના ૩૦ દિવસ બાદ પાણી સાથે ૫ કિ.ગ્રા./હેક્ટર પ્રમાણે જમીનમાં આપવાની ભલામણ કરવામાં આવે છે.

જૈવિક ખેતી માટે બ્યુવેરીયા બાસીયાના અથવા મેટારીઝીયમ એનીસોપ્લી ૧.૧૫ વે.પા. (ન્યુનતમ ૨×૧૦^{૬} સીએફયુ/ગ્રામ) ૫ કિ.ગ્રા./હેક્ટર વાવેતર પહેલા જમીનમાં એરંડીના ખોળ (૩૦૦ કિ.ગ્રા./હે.) સાથે અને ઉગાવાના ૩૦ દિવસ બાદ પાણી સાથે જમીનમાં આપવાની ભલામણ કરવામાં આવે છે.

વર્ષ	પાક	જીવાત	જંતુનાશક દવાને તેનું ફોર્મ્યુલેશન	પ્રમાણ				પાણીની કુલ જરૂરીયા	વાપર વાની પધ્ધ	પી.એચ .આઈ.
				સક્રિય તત્વ પ્રતિ હેક્ટર	ફોમ્યુલેશન નીમાંત્રાલી	સાંદ્રતા (%)	પાણી સાથે			

				(ગ્રામ/ હેક્ટર)	કિલો પ્રતિ હેક્ટર		ડાયલ્યુશન (૧૦ લીટર)	તપ્રતિ હેક્ટર	તિ	(દિવસ)
૨૦૧૭ -૧૮	મગફળી	મુંડા (ઘૈણ)	કલોરપાયરીફોસ ૨૦ ઇસી (બીજ માવજત) + બ્યુવેરીયા બાસીયાના ૧.૧૫ વે.પા. (જમીન માવજત અને રેડવું)	૬૦૦ + ૫૭.૫૦ + ૫૭.૫૦	૩.૦ લીટર + ૫.૦ કિ.ગ્રા. + ૫.૦ કિ.ગ્રા.	-- 0.00૬ (ન્યુનતમ ૨×૧૦^{૬} સીએફયુ / ગ્રામ)	લાગુ પડતું નથી ૫૦ગ્રામ	-- ૧000 લીટર (જમીન માંરેડવું)	બીજ માવજત અને વાવેતર પહેલા અને ઉગાવાના ૩૦ દિવસ બાદ જમીનમાં રેડવું	--
			અથવા કલોરપાયરીફોસ ૨૦ ઇસી (બીજ માવજત) + મેટારીઝીયમ એનીસોપ્લી ૧.૧૫ વે.પા. (જમીન માવજત અને રેડવું)	૬૦૦ + ૫૭.૫૦ + ૫૭.૫૦	૩.૦ લીટર + ૫.૦ કિ.ગ્રા. + ૫.૦ કિ.ગ્રા.	-- 0.00૬ (ન્યુનતમ ૨×૧0^{૬} સીએફયુ/ ગ્રામ)	લાગુ પડતું નથી ૫૦ ગ્રામ	-- ૧000 લીટર (જમીન માંરેડવું)		--
			બ્યુવેરીયા બાસીયાના ૧.૧૫ વે.પા. (જમીન માવજત અને રેડવું)	૫૭.૫૦ + ૫૭.૫૦	૫.૦ કિ.ગ્રા. + ૫.૦ કિ.ગ્રા.	0.00૬ (ન્યુનતમ ૨×૧૦^{૬} સીએફયુ/ ગ્રામ)	૫૦ ગ્રામ	૧000 લીટર (જમીનમાંરેડવું)	વાવેતર પહેલા અને ઉગાવાના ૩૦ દિવસ બાદ જમીનમાં રેડવું	--
			અથવા મેટારીઝીયમ એનીસોપ્લી ૧.૧૫ વે.પા. (જમીન માવજત અને રેડવું)	૫૭.૫૦ + ૫૭.૫૦	૫.૦ કિ.ગ્રા. + ૫.૦ કિ.ગ્રા.	0.00૬ (ન્યુનતમ ૨×૧૦^{૬} સીએફયુ/ ગ્રામ)	૫૦ ગ્રામ	૧000 લીટર (જમીનમાંરેડવું)		--

Suggestion/s : Approved

(Action: Professor & Head, Department of Entomology, JAU, Junagadh**)**

14.3.1.11 Effect of insecticides on growth of *Beauveria bassiana*

For mixing Sawaj Beauveria with differnet insecticides, farmers are advided to refer the following table (Yes/No).

Sr. No.	Insecticide	At lower dose			At recommended dose			At higher dose		
		Conc. (%)	Dose (ml/g)/10 lit.	Farmer are advise to mix the insecticides with *B. bassiana* (Yes/No)	Conc. (%)	Dose (ml/g)/10 lit.	Farmer are advise to mix the insecticides with *B. bassiana* (Yes/No)	Conc. (%)	Dose (ml/g)/10 lit.	Farmer are advise to mix the insecticides with *B. bassiana* (Yes/No)
1.	Methomyl 40 SP	0.040	10.00	Yes	0.080	20.00	Yes	0.12	30.00	Yes
2.	Lambda cyhalothrin 5 EC	0.00125	2.50	Yes	0.0025	5.00	Yes	0.00375	7.50	Yes

3.	Thiodicarb 75 WP	0.075	10.00	Yes	0.15	20.00	Yes	0.225	30.00	Yes
4.	Chlorpyriphos 20 EC	0.020	10.00	Yes	0.040	20.00	Yes	0.060	30	No
5.	Profenophos 50 EC	0.037	7.50	No	0.075	15.00	No	0.112	22.50	No
6.	Quinalphos 25 EC	0.025	10.00	Yes	0.050	20.00	No	0.075	30.00	No
7.	Spiromesifen 22.9 SC	0.011	5.00	Yes	0.023	10.00	Yes	0.033	15.00	Yes
8.	Bifenthrin 10 EC	0.0025	2.50	Yes	0.005	5.00	Yes	0.0075	7.50	Yes
9.	Diflubenzuron 25 WP	0.012	5.00	Yes	0.025	10.00	Yes	0.037	15.00	No
10.	Novaluron 10 EC	0.005	5.00	Yes	0.010	10.00	Yes	0.015	15.00	Yes
11.	Fipronil 5 SC	0.005	10.00	Yes	0.010	20.00	Yes	0.015	30.00	Yes
12.	Indoxacarb 14.5 EC	0.0036	2.50	Yes	0.007	5.00	Yes	0.0108	7.50	Yes
13.	Chlorantranilipr ole 18.5 SC	0.003	1.50	Yes	0.006	3.00	Yes	0.009	4.50	Yes
14.	Spinosad 45 SC	0.007	1.50	Yes	0.014	3.00	Yes	0.021	4.50	Yes
15.	Imidacloprid 17.8 SL	0.0026	1.50	Yes	0.005	3.00	Yes	0.008	4.50	Yes
16.	Acetamiprid 20 SP	0.003	1.50	Yes	0.006	3.00	Yes	0.009	4.50	No
17.	Thiamethoxam 25 WG	0.005	2.00	Yes	0.010	4.00	Yes	0.015	6.00	Yes
18.	Chlorfenpyr 10 EC	0.0075	7.50	Yes	0.015	15.00	Yes	0.0225	22.50	No
19.	Diafenthiuron 50 WP	0.025	5.00	Yes	0.050	10.00	Yes	0.075	15.00	Yes
20.	Flubeniamide 480 SC	0.072	1.50	Yes	0.144	3.00	Yes	0.216	4.50	Yes
21.	Cartap hydrochloride 50 SP	0.025	5.00	Yes	0.050	10.00	Yes	0.075	15.00	No
22.	Emamectin benzoate 5 SG	0.00125	2.50	Yes	0.0025	5.00	Yes	0.00375	7.50	Yes
23.	Carbosulfan 25 EC	0.025	10.00	Yes	0.050	20.00	Yes	0.075	30.00	Yes
24.	Buprofezin 25 EC	0.025	10.00	Yes	0.050	20.00	Yes	0.075	30.00	No
25.	Polytrin 44 EC	0.022	5.00	Yes	0.044	10.00	Yes	0.066	15.00	Yes
26.	Dinotefuran 20 SG	0.005	2.50	Yes	0.010	5.00	Yes	0.0152	7.50	Yes
27.	Flonicamide 50 SG	0.0075	1.50	Yes	0.015	3.00	Yes	0.0225	4.50	No
28.	Acephate 75 SP	0.037	5.00	Yes	0.075	10.00	Yes	0.112	15.00	No
29.	Dimethoate 30 EC	0.015	5.00	Yes	0.030	10.00	Yes	0.045	15.00	Yes
30.	Azadirachtin 0.15 EC	0.0003	25.00	Yes	0.0007	50.00	Yes	0.0011	75.00	Yes

સાવજબ્યુવેરીયાને જુદી જુદી કીટનાશકો સાથે મિશ્ર કરી શકાય કે નહી, તેમાટે નીચેના કોઠાને અનુસરવું .

ક્રમ	કીટનાશક દવાનું નામ	ભલામણ કરતા ઓછી માત્રા			ભલામણ મુજબની માત્રા			ભલામણ કરતા વધુ માત્રા		
		સાંદ્રતા (%)	પ્રમાણ (મી./ગ્રા / ૧૦લી	બ્યુવેરીયા બાસીયાના સાથે કીટનાશક દવા ભેળવવાની ભલામણ (હા/ના)	સાંદ્રતા(%)	પ્રમાણ (મી./ગ્રામ)/ ૧૦લીટર	બ્યુવેરીયા બાસીયાના સાથે કીટનાશક દવા ભેળવવાની ભલામણ (હા/ના)	સાંદ્રતા (%)	પ્રમાણ (મી./ગ્રામ)/ ૧૦લીટર	બ્યુવેરીયા બાસીયાના સાથે કીટનાશક દવા ભેળવવાની ભલામણ (હા/ના)
૧	૨	૩	૪	૫	૬	૭	૮	૯	૧૦	૧૧
૧	મિથોમાઈલ ૪૦ એસપી	૦.૦૪૦	૧૦.૦૦	હા	૦.૦૮૦	૨૦.૦૦	હા	૦.૧૨	૩૦.૦૦	હા

૨	લેમડાસાયહેલોથ્રીન ૫ ઇસી	૦.૦૦૧૨૫	૨.૫૦	હા	૦.૦૦૨૫	૫.૦૦	હા	૦.૦૦૩૭૫	૭.૫૦	હા
૩	થાયોડીકાર્બ ૭૫ ડબ્લ્યુપી	૦.૦૭૫	૧૦.૦૦	હા	૦.૧૫	૨૦.૦૦	હા	૦.૨૨૫	૩૦.૦૦	હા
૪	ક્લોરપાયરીફોસ ૨૦ ઇસી	૦.૦૨૦	૧૦.૦૦	હા	૦.૦૪૦	૨૦.૦૦	હા	૦.૦૬૦	૩૦.૦૦	ના
૫	પ્રોફેનોફોસ૫૦ઇસી	૦.૦૩૭	૭.૫૦	ના	૦.૦૭૫	૧૫.૦૦	ના	૦.૧૧૨	૨૨.૫૦	ના
૬	ક્વીનાલફોસ૨૫ઇસી	૦.૦૨૫	૧૦.૦૦	હા	૦.૦૫૦	૨૦.૦૦	ના	૦.૦૭૫	૩૦.૦૦	ના
૭	સ્પાયરોમેસીફેન ૨૨.૯ એસસી	૦.૦૧૧	૫.૦૦	હા	૦.૦૨૩	૧૦.૦૦	હા	૦.૦૩૩	૧૫.૦૦	હા
૮	બાયફેન્થ્રીન૧૦ઇસી	૦.૦૦૨૫	૨.૫૦	હા	૦.૦૦૫	૫.૦૦	હા	૦.૦૦૭૫	૭.૫૦	હા
૯	ડાયફ્લુબેન્ઝ્યુરોન ૨૫ ડબ્લ્યુપી	૦.૦૧૨	૫.૦૦	હા	૦.૦૨૫	૧૦.૦૦	હા	૦.૦૩૭	૧૫.૦૦	ના
૧૦	નોવાલ્યુરોન ૧૦ ઇસી	૦.૦૦૫	૫.૦૦	હા	૦.૦૧૦	૧૦.૦૦	હા	૦.૦૧૫	૧૫.૦૦	હા
૧૧	ફીપ્રોનીલ૫એસસી	૦.૦૦૫	૧૦.૦૦	હા	૦.૦૧૦	૨૦.૦૦	હા	૦.૦૧૫	૩૦.૦૦	હા
૧૨	ઇન્ડોકઝાકાર્બ૧૪.૫ ઇસી	૦.૦૦૩૬	૨.૫૦	હા	૦.૦૦૭	૫.૦૦	હા	૦.૦૧૦૮	૭.૫૦	હા
૧૩	ક્લોરાન્ટ્રાનીલીપ્રોલ ૧૮.૫ એસસી	૦.૦૦૩	૧.૫૦	હા	૦.૦૦૬	૩.૦૦	હા	૦.૦૦૯	૪.૫૦	હા
૧૪	સ્પીનોસાડ ૪૫ એસસી	૦.૦૦૭	૧.૫૦	હા	૦.૦૧૪	૩.૦૦	હા	૦.૦૨૧	૪.૫૦	હા
૧૫	ઈમીડાક્લોપ્રીડ૧૭.૮ એસએલ	૦.૦૦૨૬	૧.૫૦	હા	૦.૦૦૫	૩.૦૦	હા	૦.૦૦૮	૪.૫૦	હા
૧૬	એસીટામીપ્રીડ૨૦ એસપી	૦.૦૦૩	૧.૫૦	હા	૦.૦૦૬	૩.૦૦	હા	૦.૦૦૯	૪.૫૦	ના
૧૭	થાયોમેથોકઝામ ૨૫ ડબલ્યુડી	૦.૦૦૫	૨.૦૦	હા	૦.૦૧૦	૪.૦૦	હા	૦.૦૧૫	૬.૦૦	હા
૧૮	ક્લોરફેનપાયર૧૦ઇસી	૦.૦૦૭૫	૭.૫૦	હા	૦.૦૧૫	૧૫.૦૦	હા	૦.૦૨૨૫	૨૨.૫૦	ના
૧૯	ડાયફેન્થ્યુરોન ૫૦ ડબ્લ્યુપી	૦.૦૨૫	૫.૦૦	હા	૦.૦૫૦	૧૦.૦૦	હા	૦.૦૭૫	૧૫.૦૦	હા
૨૦	ફ્લુબેન્ડીયામાઈડ૪૮૦ એસસી	૦.૦૭૨	૧.૫૦	હા	૦.૧૪૪	૩.૦૦	હા	૦.૨૧૬	૪.૫૦	હા
૨૧	કારટેપહાઇડ્રોક્લોરાઈડ૫૦એસપી	૦.૦૨૫	૫.૦૦	હા	૦.૦૫૦	૧૦.૦૦	હા	૦.૦૭૫	૧૫.૦૦	ના
૨૨	એમામેક્ટીનબેન્ઝોએટ૫એસજી	૦.૦૦૧૨૫	૨.૫૦	હા	૦.૦૦૨૫	૫.૦૦	હા	૦.૦૦૩૭૫	૭.૫૦	હા
૨૩	કાર્બોસલ્ફાન ૨૫ ઇસી	૦.૦૨૫	૧૦.૦૦	હા	૦.૦૫૦	૨૦.૦૦	હા	૦.૦૭૫	૩૦.૦૦	હા
૨૪	બુપ્રોફેઝીન ૨૫ ઇસી	૦.૦૨૫	૧૦.૦૦	હા	૦.૦૫૦	૨૦.૦૦	હા	૦.૦૭૫	૩૦.૦૦	ના
૨૫	પોલીટ્રીનસી ૪૪ ઇસી	૦.૦૨૨	૫.૦૦	હા	૦.૦૪૪	૧૦.૦૦	હા	૦.૦૬૬	૧૫.૦૦	હા
૨૬	ડીનોટેફયુરાન ૨૦ એસજી	૦.૦૦૫	૨.૫૦	હા	૦.૦૧૦	૫.૦૦	હા	૦.૦૧૫૨	૭.૫૦	હા
૨૭	ફ્લોનીકામાઈડ ૫૦ એસજી	૦.૦૦૭૫	૧.૫૦	હા	૦.૦૧૫	૩.૦૦	હા	૦.૦૨૨૫	૪.૫૦	ના
૨૮	એસીફેટ૭૫એસપી	૦.૦૩૭	૫.૦૦	હા	૦.૦૭૫	૧૦.૦૦	હા	૦.૧૧૨	૧૫.૦૦	ના
૨૯	ડાયમિથોએટ ૩૦ ઇસી	૦.૦૧૫	૫.૦૦	હા	૦.૦૩૦	૧૦.૦૦	હા	૦.૦૪૫	૧૫.૦૦	હા
૩૦	એઝાડીરેક્ટીન ૦.૧૫ ઇસી	૦.૦૦૦૩	૨૫.૦૦	હા	૦.૦૦૦૭	૫૦.૦૦	હા	૦.૦૦૧૧	૭૫.૦૦	હા

Suggestion/s : Approved

(Action: Professor & Head, Department of Entomology, JAU, Junagadh**)**

14.3.1.12 Effect of fungicides on growth of *Beauveria bassiana*

For mixing Sawaj Beauveria with differnet fungicides, farmers are advided to refer the following table (Yes/No).

Sr. No.	Insecticide	At lower dose			At recommended dose			At higher dose		
		Conc. (%)	Dose (ml/g)/ 10 lit.	Farmer are advise to mix the fungicides with *B. bassiana* (Yes/No)	Conc. (%)	Dose (ml/g)/ 10 lit.	Farmer are advise to mix the fungicides with *B. bassiana* (Yes/No)	Conc. (%)	Dose (ml/g)/ 10 lit.	Farmer are advise to mix the fungicides with *B. bassiana* (Yes/No)
1.	Sulphur 80 WP	0.100	12.50	Yes	0.200	25.00	Yes	0.300	37.50	Yes
2.	Copper oxychloride 50 WP	0.100	20.00	Yes	0.200	40.00	Yes	0.300	60.00	Yes
3.	Dinocap 48 EC	0.024	5.00	Yes	0.048	10.00	Yes	0.072	15.00	Yes
4.	Metalaxyl 4 + Mancozeb 64 WP	0.102	15.00	No	0.204	30.00	No	0.306	45.00	No
5.	Zineb 75 WP	0.100	13.30	No	0.200	26.60	No	0.300	40.00	No
6.	Fosetyl-Al 80 WP	0.080	10.00	Yes	0.160	20.00	Yes	0.240	30.00	No
7.	Chlorothalonil 75 WP	0.100	13.40	Yes	0.200	26.70	Yes	0.300	40.10	Yes

8.	Mancozeb 75 WP	0.093	13.40	No	0.187	26.70	No	0.280	40.10	No
9.	Benomyl 50 WP	0.025	5.00	Yes	0.050	10.00	No	0.075	15.00	No
10.	Hexaconazole 5 EC	0.0025	5.00	No	0.005	10.00	No	0.0075	15.00	No
11.	Carbendazim 50 WP	0.025	5.00	No	0.050	10.00	No	0.075	15.00	No
12.	Propiconazole 25 EC	0.013	5.00	No	0.025	10.00	No	0.038	15.00	No
13.	Thiophanate methyl 70 WP	0.035	5.00	No	0.070	10.00	No	0.105	15.00	No
14.	Thiram 75 SP	0.100	13.40	No	0.200	26.70	No	0.300	40.10	No
15.	Carboxin 37.5 + Thiram 37.5 DS	0.038	5.00	No	0.075	10.00	No	0.113	15.00	No
16.	Metalaxyl 8 + Mancozeb 64 WP	0.0748	10.40	No	0.1497	20.80	No	0.2246	31.20	No
17.	Tabucanazole 25 EC	0.013	5.00	No	0.025	10.00	No	0.038	15.00	No
18.	Propineb 70 WP	0.070	10.00	No	0.140	20.00	No	0.210	30.00	No
19.	Tridimefon 25 WP	0.013	5.00	No	0.025	10.00	No	0.038	15.00	No
20.	Mancozeb 63 + Carbendazim 12 WP	0.075	10.00	No	0.15	20.00	No	0.225	30.00	No
21.	Azoxystrobin 23SC	0.012	5.00	No	0.023	10.00	No	0.035	15.00	No

સાવજબ્યુવેરીયાને જુદી જુદી ફૂગનાશકો સાથે મિશ્ર કરી શકાય કે નહી, તેમાટે નીચેના કોઠાને અનુસરવું .

ક્રમ	ફુગનાશક દવાનું નામ	ભલામણ કરતા ઓછી માત્રા			ભલામણ મુજબની માત્રા			ભલામણ કરતાવધુ માત્રા		
		સાંદ્રતા (%)	પ્રમાણ (મી./ ગ્રામ) પ્રતિ ૧૦ લીટર	ખેડૂતોને બ્યુવેરીયા બાસીયાના સાથે ફૂગનાશક દવા ભેળવવાની ભલામણ (હા/ના)	સાંદ્રતા (%)	પ્રમાણ (મી./ ગ્રામ) પ્રતિ૧૦લીટર	ખેડૂતોને બ્યુવેરીયા બાસીયાના સાથે ફૂગનાશક દવા ભેળવવાની ભલામણ (હા/ના)	સાંદ્રતા (%)	પ્રમાણ (મી./ગ્રામ) પ્રતિ૧૦લીટર	ખેડૂતોને બ્યુવેરીયા બાસીયાના સાથે ફૂગનાશક દવા ભેળવવાની ભલામણ (હા/ના)
૧	સલ્ફર ૮૦ વે.પા.	૦.૧૦૦	૧૨.૫૦	હા	૦.૨૦૦	૨૫.૦૦	હા	૦.૩૦૦	૩૭.૫૦	હા
૨	કોપરઓક્ઝીક્લોરાઇડ ૫૦ વે.પા.	૦.૧૦૦	૨૦.૦૦	હા	૦.૨૦૦	૪૦.૦૦	હા	૦.૩૦૦	૬૦.૦૦	હા
૩	ડીનોકે ૫૪૮ ઇસી	૦.૦૨૪	૫.૦૦	હા	૦.૦૪૮	૧૦.૦૦	હા	૦.૦૭૨	૧૫.૦૦	હા
૪	મેટાલેક્ષીલ૪ + મેન્કોઝેબ ૬૪ વે.પા.	૦.૧૦૨	૧૫.૦૦	ના	૦.૨૦૪	૩૦.૦૦	ના	૦.૩૦૬	૪૫.૦૦	ના
૫	ઝાઈનેબ ૭૫ વે.પા.	૦.૧૦૦	૧૩.૩૦	ના	૦.૨૦૦	૨૬.૬૦	ના	૦.૩૦૦	૪૦.૦૦	ના
૬	ફોઝેટાઇલ-એએલ૮૦ વે.પા.	૦.૦૮૦	૧૦.૦૦	હા	૦.૧૬૦	૨૦.૦૦	હા	૦.૨૪૦	૩૦.૦૦	ના
૭	ક્લોરોથેલોનીલ ૭૫ વે.પા.	૦.૧૦૦	૧૩.૪૦	હા	૦.૨૦૦	૨૬.૭૦	હા	૦.૩૦૦	૪૦.૧૦	હા
૮	મેન્કોઝેબ૭૫વે.પા.	૦.૦૯૩	૧૩.૪૦	ના	૦.૧૮૭	૨૬.૭૦	ના	૦.૨૮૦	૪૦.૧૦	ના
૯	બેનોમાઇલ ૫૦ વે.પા.	૦.૦૨૫	૫.૦૦	હા	૦.૦૫૦	૧૦.૦૦	ના	૦.૦૭૫	૧૫.૦૦	ના
૧૦	હેક્ઝાકોનાઝોલ૫ઇસી	૦.૦૦૨૫	૫.૦૦	ના	૦.૦૦૫	૧૦.૦૦	ના	૦.૦૦૭૫	૧૫.૦૦	ના
૧૧	કાર્બેન્ડાઝીમ ૫૦વે.પા.	૦.૦૨૫	૫.૦૦	ના	૦.૦૫૦	૧૦.૦૦	ના	૦.૦૭૫	૧૫.૦૦	ના
૧૨	પ્રોપીકોનાઝોલ ૨૫ઇસી	૦.૦૧૩	૫.૦૦	ના	૦.૦૨૫	૧૦.૦૦	ના	૦.૦૩૮	૧૫.૦૦	ના
૧૩	થાયોફેનેટમીથાઇલ૭૦વે.પા.	૦.૦૩૫	૫.૦૦	ના	૦.૦૭૦	૧૦.૦૦	ના	૦.૧૦૫	૧૫.૦૦	ના
૧૪	થાયરમ૭૫એસપી	૦.૧૦૦	૧૩.૪૦	ના	૦.૨૦૦	૨૬.૭૦	ના	૦.૩૦૦	૪૦.૧૦	ના
૧૫	કાર્બોક્ષીન૩૭.૫ + થાયરમ૩૭.૫ડી.એસ.	૦.૦૩૮	૫.૦૦	ના	૦.૦૭૫	૧૦.૦૦	ના	૦.૧૧૩	૧૫.૦૦	ના
૧૬	મેટાલેક્ષીલ૮ + મેન્કોઝેબ ૬૪વે.પા.	૦.૦૭૪૮	૧૦.૪૦	ના	૦.૧૪૯૭	૨૦.૮૦	ના	૦.૨૨૪૬	૩૧.૨૦	ના
૧૭	ટેબ્યુકોનાઝોલ ૨૫ ઇસી	૦.૦૧૩	૫.૦૦	ના	૦.૦૨૫	૧૦.૦૦	ના	૦.૦૩૮	૧૫.૦૦	ના
૧૮	પ્રોપીનેબ૭૦વે.પા.	૦.૦૭૦	૧૦.૦૦	ના	૦.૧૪૦	૨૦.૦૦	ના	૦.૨૧૦	૩૦.૦૦	ના
૧૯	ટ્રાઈડીમેફોન ૨૫વે.પા.	૦.૦૧૩	૫.૦૦	ના	૦.૦૨૫	૧૦.૦૦	ના	૦.૦૩૮	૧૫.૦૦	ના

૨૦	મેન્કોઝેબ૬૩ + કાર્બેન્ડાઝીમ ૧૨વે.પા.	૦.૦૭૫	૧૦.૦૦	ના	૦.૧૫	૨૦.૦૦	ના	૦.૨૨૫	૩૦.૦૦	ના
૨૧	એઝોક્સીસ્ટ્રોબીન ૨૩એસસી	૦.૦૧૨	૫.૦૦	ના	૦.૦૨૩	૧૦.૦૦	ના	૦.૦૩૫	૧૫.૦૦	ના

Suggestion/s : Approved

(Action: Professor & Head, Department of Entomology, JAU, Junagadh**)**

14.3.1.13 Bio-efficacy of different bio-pesticides and insecticides against pink bollworm in *Bt* cotton (Bollgard-II)

The farmers growing cotton are recommended to apply five spray of *Beauveria bassiana* 1.15 WP (Min. 2 x 10^6 cfu/g) 0.009 % (80 g/10 litre of water), first spray at 5 % appearance of rosette flower and subsequent four spray at 10 days interval after first spray for effective and economical management of pink bollworm.

Year	Crop	Pest	Pesticides with formu-lation	Dosage				Total Quantity of Chemical suspension required/ ha	Application schedule	Waiting period / PHI (days)
				a.i.g/ ha	Quantity of formu-lation ml, kg/ha	Con. (%)	Dilution in water (10 lit.)			
2017-18	Cotton	Pink boll worm	*Beauveria bassi*ana 1.15 WP	46.00	4.0 kg	0.009 (Min. 2 x 10^6 cfu/ g)	80 g	500 lit	First spray at 5% rosette appearance of flower and subsequent four spray at 10 days interval after first spray	-

કપાસની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ગુલાબી ઈયળના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે બ્યુવેરીયા બાસીયાના ૧.૧૫ વે.પા. (ન્યુનતમ ૨ x ૧૦^{૬} સીએફયુ/ગ્રામ) ૦.૦૦૯ % (૮૦ ગ્રામ/ ૧૦ લીટર પાણીમાં) ના પાચ છંટકાવ, પ્રથમ છંટકાવ ૫ % અર્ધ ખુલેલા ફૂલ દેખાય ત્યારે અને બીજા ચાર છંટકાવ, પ્રથમ છંટકાવના ૧૦ દિવસના અંતરે કરવાની ભલામણ છે.

વર્ષ	પાક	જીવાત	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણીનાં દ્રાવણની કુલ જરૂરીયાત પ્રતિહે.	વાપરવાની પધ્ધતિ	વેઈટીંગ પીરીયડ/ પી.એચ. આઈ. (દિવસ)
				સક્રિય તત્વ પ્રતિ હેક્ટર (ગ્રામ/હેક્ટર)	ફોમ્યુલેશન ની માત્રા મીલી, કિલો પ્રતિ હેક્ટર	સાંદ્રતા (%)	પાણી સાથેડાયલ્યુશન (૧૦ લીટર)			
૨૦૧૭-૧૮	કપાસ	ગુલાબી ઈયળ	બ્યુવેરીયા બાસીયાના ૧.૧૫વે.પા.	૪૬.૦૦	૪.૦ કિ.ગ્રા.	૦.૦૦૯ (ન્યુનતમ ૨×૧૦^{૬} સીએફયુ /ગ્રામ)	૮૦ ગ્રામ	૫૦૦ લીટર	પ્રથમ છંટકાવ ૫ % રોઝેટ ફૂલ દેખાયે અને બીજા ચાર છંટકાવ પ્રથમ છંટકાવના ૧૦ દિવસના અંતરે	-

Suggestion/s: Approved.

(Action: Professor & Head, Department of Entomology, JAU, Junagadh**)**

14.3.1.14 Bio-efficacy of selected insecticides against pink bollworm in *Bt* cotton

The farmers of South Saurashtra Agro-climatic Zone growing *Bt* cotton are

recommended to apply any one of the following insecticides, first spray at 75 days after sowing and second at 15 days of first spray for effective and economical management of pink bollworm.

1. Lamda cyhalothrin 2.5 EC, 0.0025% (10 ml/10 lit. of water) or
2. Deltamethrin 2.8 EC, 0.0028% (10 ml/10 lit. of water)

Year	Crop	Pest	Pesticides with formulation	Dosage					Application schedule	Waiting period/ PHI (days)
				g. a.i./ha	Quantity of formulation ml/ha	Con. (%)	Dilution in water (10 lit.)	Total Quant. of water lit /ha		
1	2	3	4	5	6	7	8	9	10	11
2017	Cotton	PBW	Lambda cyhalothrin 2.5 EC	12.5	500	0.0025	10 ml	500	First spray at 75 days after sowing and second after 15 days of the first spray for effective control of pink bollworm.	21
			Deltamethrin 2.8 EC	14	500	0.0028	10 ml	500		-

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના બીટી કપાસ ઉગાડતા ખેડૂતો ને ગુલાબી ઇયળના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે નીચે દર્શાવેલ ગમે તે એક કીટનાશકનો પ્રથમ છંટકાવ વાવણી બાદ ૭૫ દિવસે અને બીજો છંટકાવ ત્યારબાદ ૧૫ દિવસે કરવાની ભલામણ છે.

૧. લેમડા સાયહેલોથ્રીન ૨.૫ ઇસી ૦.૦૦૨૫ % (૧૦ મીલી/ ૧૦ લીટર પાણીમાં) **અથવા**
૨. ડેલ્ટામેથ્રીન ૨.૮ ઇસી ૦.૦૦૨૮ % (૧૦ મીલી/ ૧૦ લીટર પાણીમાં)

વર્ષ	પાક	જીવાત	જંતુનાશક દવા અને તેનું ફોર્મ્યુલેશન	પ્રમાણ				પાણીનો જથ્થો લી / હેક્ટર	વાપરવાનીપધ્ધતિ	વેઈટીંગ પીરીયડ / પી.એચ. આઈ (દિવસ)
				સક્રિય તત્વ પ્રતિ હેક્ટર (ગ્રામ/ હે.)	ફોમ્યુલેશન ની માત્રા મીલી/ હેક્ટર	પ્રમાણ (%)	પાણી સાથે ડાયલ્યુશન (૧૦)			
૧	૨	૩	૪	૫	૬	૭	૮	૯	૧૦	૧૧
૨૦૧૭	કપાસ	ગુલાબી ઇયળ	લેમડાસાય હેલોથ્રીન ૨.૫ઇસી	૧૨.૫	૫૦૦	૦.૦૦૨૫	૧૦ મીલી	૫૦૦ લી	પ્રથમ છંટકાવ કપાસની વાવણી બાદ ૭૫ દિવસે અને ત્યારબાદ ૧૫ દિવસે બીજો છંટકાવ	૨૧
			ડેલ્ટામેથ્રીન૨.૮ઇસી	૧૪	૫૦૦	૦.૦૦૨૮	૧૦ મીલી	૫૦૦ લી		-

Suggestion/s: Approved

[Action: Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh**]**

14.3.1.15 Management of ear head worm, *Helicoverpa armigera* (Hub.) infesting bajra crop with bio-pesticides

Farmers of North Saurashtra Agro-climatic Zone growing *kharif* pearl millet are recommended to spray *Ha*NPV @ 450 LE/ha (10 ml/10 lit. water) **or***Bacillus thuringiensis*5 WP (2 x 10^8 cfu/g) @ 1.0 kg/ha (20 g/10 lit. water) or *Beauveria bassiana* 1.15 WP (2 x 10^6 cfu/g) @ 2.0 kg/ha (40 g/10 lit. water) on appearance of *Helicoverpa armigera* at ear head stage for effective and economical management of pest.

Year	Crop	Pest	Pesticides with Formulati	Dosage				Total qty. of water	Application schedule	Waiting period
				g.a.i. /	Qty. of	Conc.	Dilution in			

			on	ha	form u g, ml, kg or l/ha	(%)	water (10 lit.)	required /ha		/ PHI (days)
1	2	3	4	5	6	7	8	9	10	11
2018	Pearl millet (bajra)	*Helicoverpa armigera*	*Ha*NPV 450 LE/ha	--	500 ml	450 LE/ ha	10 ml	500 litre	Single spray at the appearance of *H. armigera* larva on ear head	--
			Bacillus thuringiensis 5 WP	50	1.0 kg	0.01 (2×10^8 cfu/g)	20g			
			Beauveria bassiana 1.15 WP	23	2.0 kg	0.0046 (2×10^6 cfu/g)	40g			

ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ચોમાસુ બાજરો ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે એચએએનપીવી ૪૫૦ એલઈ/હેક્ટર (૧૦ મીલી/૧૦ લીટર પાણી) અથવા બેસીલસ થુરીનજીએનસીસ ૫ ડબ્લયુ.પી. (૨×૧૦^{૮} સીએફયુ/ગ્રામ) ૧ કિગ્રા/હે. (૨૦ ગ્રામ/૧૦ લીટર પાણી) અથવા બ્યુવેરીયા બાસીયાના ૧.૧૫ ડબ્લયુ.પી. (૨×૧૦^{૬} સીએફયુ/ગ્રામ) ૨ કિગ્રા/હે. (૪૦ ગ્રામ/૧૦ લીટર પાણી) ડુંડાની ઈયળ દેખાય ત્યારે છંટકાવ કરવાથી અસરકારક અને અર્થક્ષમ નિયંત્રણ મળે છે.

વર્ષ	પાક	જીવાત	જંતુનાશક દવાઓનું ફોર્મુલેશન	પ્રમાણ				પાણીની કુલજરૂરીયાત પ્રતિ હેક્ટર	વાપરવાની પધ્ધતિ	વેઈટીંગ પીરીયડ /પી. એચ. આઈ. (દિવસ)
				સક્રિય તત્વ ગ્રામ પ્રતિ હેક્ટર	ફોર્મુલેશન ની માત્રા ગ્રામ/ મીલી / કિલો/ લી પ્રતિ હેક્ટર	સાંદ્રતા (%)	પાણી સાથે ડાયલ્યુશન ૧૦ લીટર			
૧	૨	૩	૪	૫	૬	૭	૮	૯	૧૦	૧૧
૨૦૧૮	બાજરી	ડુંડાની ઈયળ (લીલી ઈયળ)	એચ.એન.પી.વી. ૪૫૦ એલ.ઇ./હે.	--	૫૦૦ મીલી	૪૫૦ એલ.ઇ. /હે.	૧૦મીલી	૫૦૦ લી.	ડુંડાની ઈયળ દેખાય ત્યારે છંટકાવ	લાગુપડતુ નથી.
			બેસીલસથુરીયેનજીનેસીસ ૫ % ડબ્લયુ. પી.	૫૦	૧.૦કિ.ગ્રા	૦.૦૧ %	૨૦ગ્રામ			
			બ્યુવેરીયા બાસીયાના ૧.૧૫ % ડબ્લયુ.પી.	--	૨.૦કિગ્રા	૪ગ્રામ/લી.	૪૦ગ્રામ			

Suggestion/s : Approved

[Action: Research Scientist (Bajara), Pearl Millet Research Station, JAU, Jamnagar**]**

14.3.1.16 **Effect of intercrop on the incidence of major insect pests of sesame**

Farmers of North Saurashtra Agro-climatic Zone growing sesame in *kharif* are recommended to grow black gram as an intercrop (2 line sesame + 1 line black gram) at the spacing 60 x 10 cm to reduce pest infestation, increase predator activity and to get higher net realization.

ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારનાં ચોમાસુ ઋતુમાં તલ ઉગાડતા ખેડૂતોને પાકમાં જીવાતોનું પ્રમાણ ઘટાડવા, પરભક્ષી જીવાતોની સક્રિયતા વધારવા અને એકંદર ચોખ્ખી આવક વધારવા તલનાં પાકમાં આંતર પાક તરીકે અડદ (૨ લાઈન તલ + ૧ લાઈન અડદ) ૬૦ x ૧૦ સેમી. નાં અંતરે વાવવા ભલામણ કરવામાં આવે છે.

	Suggestion/s : Approved. **(Action:** Research Scientist, Agril Research Station, JAU, Amreli**)**
14.3.1.17	**Testing bio-efficacy of insecticides against leaf webber (*Crocidolomia binotalis* Zell) of mustard**

The farmers of South Saurashtra Agro-climatic Zone growing mustard in *rabi* season are recommended to apply two spray of chlorpyriphos 20 EC 0.05 % @ 250 g a.i./ha (25 ml/10 liter water) or quinalphos 25 EC 0.05 % @ 250 g a.i./ha (20 ml/10 litre water) at 7 days interval starting from the initiation of pest infestation for effective and economical management of mustard leaf webber.

Year	Crop	Pest	Pesticides with formu-lation	Dosage				Total Quantity of Chemical suspension required /ha	Appli-cation schedule	Waiting period/ PHI (days)	Remark (s)
				a.i g/ ha	Quantity of formu-lation ml or kg/ha	Con. (%)	Dilution in water (10 lit.)				
2017	Mustard	Leaf webber	Chlorpyriphos 20 EC	250	1.25 lit	0.05	25	500 lit	First spray at initiation of leaf webber damage and second at 7 days after first spray	--	Registered under CIB Approved list
			Quinalphos 25 EC	250	1.0 lit	0.05	20	500 lit			

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના શિયાળુ ઋતુમા રાઈ વાવતા ખેડૂતોને પાન વાળનાર ઈયળના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે ક્લોરપાયરીફોસ ૨૦ ઈ.સી. ૨૫૦ ગ્રામ સક્રિય તત્વ/હે. (૨૫ મીલી/૧૦ લીટર પાણીમાં) અથવા ક્વીનાંલફોસ ૨૫ ઈ.સી. ૨૫૦ ગ્રામ સક્રિય તત્વ/હે. (૨૦ મીલી/૧૦ લીટર પાણીમાં) બે છંટકાવ જીવાતનો ઉપદ્રવ શરુ થયેથી સાત દિવસના અંતરે કરવાની ભલામણ છે.

વર્ષ	પાક	જીવાત	જંતુનાશક દવઓનુ ફોર્મ્યુલેશન	પ્રમાણ				જંતુનાશક દવા અને પાણીના દ્રાવણની કુલ જરુરીયાત પ્રતિ હેકટર	વાપરવાની પધ્ધતિ	વેઈટીંગપીરીયડ/ પી.એચ.આઈ. (દિવસ)	રીમાર્કસ
				સક્રીય તત્વ ગ્રામ /હે.	ફોર્મ્યુલેશનની માત્રા ગ્રામ/ મીલી /કિલો/લી પ્રતિ હેકટર	સાંદ્રતા (%)	પાણી સાથે ડાયલ્યુશન (૧૦ લિટર)				
૧	૨	૩	૪	૫	૬	૭	૮	૯	૧૦	૧૧	૧૨
૨૦૧૭	રાઈ	પાન વાળનારઈયળ	ક્લોરપાયરીફોસ ૨૦ ઈ.સી.	૨૫૦	૧.૨૫ લી.	૦.૦૫	૨૫	૫૦૦ લી.	સાત દિવસના અંતરે બે છંટકાવ કરવા. પ્રથમ છંટકાવ જીવાતનો ઉપદ્રવ શરુ થયે કરવો.	--	સી.આઈ.બી. માંમાન્ય થયેલછે.
			ક્વીનાલફોસ ૨૫ ઈ.સી.	૨૫૦	૧.૦ લી.	૦.૦૫	૨૦	૫૦૦ લી.		--	

Suggestion/s : Approved

[Action: Research Scientist (G'nut), Main Oilseeds Res. Station, JAU, Junagadh**]**

14.3.1.18 **Evaluation of different storage bags against the groundnut bruchid beetle (*Caryedon serratus*) in storage**

The farmers of South Saurashtra Agro-climatic Zone are recommended to store fumigated groundnut pods in high density polythene (HDPE) bags or polythene layered gunny bags for effective and economical management of bruchid pest.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ખેડૂતોને ભલામણ કરવમાં આવે છે કે, ધ્રૂમીકૃત કરેલ મગફળી ડોડવાને હાઈડેન્સીટી પોલીથીન બેગ અથવા પોલીથીન લેયર્ડ બેગમાં સંગ્રહ કરવાથી ભોટવાનું અસરકારક અને અર્થક્ષમ વ્યવસ્થાપન કરી શકાય છે.

Suggestion/s : Approved

[Action: Research Scientist (G'nut),Main Oilseeds Research Station, JAU, Junagadh**]**

14.3.1.19 **Management of fungal foliar diseases of cotton**

The farmers growing cotton are recommended to apply three spray of pyraclostrobin 5WG + metiram 55WG 0.18 % @ 30 g/10liter of water, first spray at initiation of diseases and subsequent two spray at 15 days interval after first spray for effective and economical management of fungal foliar diseases.

The farmers those interested in organic cotton production are recommended to apply three spray of to *Pseudomonas fluorescens*(2x10^8 cfu/g) 50 ml/10 liter of water, first spray at initiation of diseases and subsequent two spray at 15 days interval after first spray for effective and economical management of fungal foliar and bacterial blight diseases.

Year	**Crop**	**Disease**	**Fungicide with formulation**	**Dosage**				**Total Quantity of Chemical suspension required / ha**	**Application schedule**	**Waiting Period/ PHI (days)**	**Remark**
				g.a.i./ha	**Quantity of formu-lation g, ml, kg or l/ha**	**Concentration (%)**	**Dilution in water (10 lit)**				
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2018	Cotton	Foliar diseases	Mancozeb 63WP + Carbendazim 12 WP	750	1.0kg	0.15	20g	500	First spray at initiation of diseases & next sprays at interval of 15days	BDL	-
			Pyreclostobin 5WG+ Metiram55WG	900	1.5kg	0.18	30g	500		45	Registered in CIB-RC
			Pseudomonas fluorescens	25 2x10^8 cfu/ml	2.5 l	0.005 2x10^8 cfu/ml	50ml	500		--	--

કપાસ ઉગાડનારા ખેડૂતોને કપાસના પાન પર આવતા ફુગજન્ય રોગોના વ્યવસ્થાપન અને વધુ આવક મેળવવાં માટે પાયરેક્લોસ્ટોબીન ૫ ડબલ્યુજી + મેટીરામ ૫૫ ડબલ્યુજી ના (૩૦ ગ્રામ / ૧૦ લીટર પાણીમાં) ત્રણ છંટકાવ, પ્રથમ છંટકાવ રોગ ની શરુઆત થયે તુરંત અને ત્યારબાદ ૧૫દિવસ ના અંતરે બે છંટકાવ કરવા ની ભલામણ કરવામાં આવેછે.

કપાસની સજીવ ખેતી માટે કપાસના પાન પર આવતા ફુગ અને જીવાણુંજન્ય રોગોના વ્યવસ્થાપન અને વધુ આવક મેળવવાં માટે સ્યુડોમોનાસ ફ્લુરોસેન્સ (૨x૧૦^૮ સીએફ્યું) (૫૦ મીલી/ ૧૦ લીટર પાણીમાં) નાં ત્રણ છંટકાવ રોગની શરુઆત થયે તુરંત અને ત્યારબાદ ૧૫

દિવસ ના ગાળે બે છંટકાવ કરવાંની ભલામણ કરવામાં આવે છે.

વર્ષ	પાક	જીવાત	જંતુનાશક દવાઓનુ ફોર્મ્યુલેશન	પ્રમાણ				જંતુનાશક દવાઅને પાણી ના દ્રાવણ ની કુલ જરુરીયત પ્રતિ હેક્ટર	વાપરવાની પધ્ધતિ	ઇટીંગ પીરીયડ પીએચઆઇ (દિવસ)	રીમાર્કસ
				સક્રિય તત્વ ગ્રામ પ્રતિ હેક્ટર	ફોર્મ્યુલેશન ની માત્રા ગ્રામ/મીલી/ કિલો/લી પ્રતિ હેક્ટર	સાંદ્રતા (%)	પાણી સાથે ડાયલ્યુશન (૧૦ લીટરપાણીમાં)				
૧	૨	૩	૪	૫	૬	૭	૮	૯	૧૦	૧૧	૧૨
૨૦૧૮	કપાસ	પાન પર આવતા રોગ	મેન્કોઝેબ ૬૩ વેપા+ કર્બેન્ડાઝીમ ૧૨વેપા	૭૫૦	૧.૦ કીગ્રા	૦.૧૫	૨૦ ગ્રામ	૫૦૦ લિટર	પ્રથમ છંટકાવ રોગ દેખાય ત્યારે અને ત્યારપછી નાં છંટકાવ ૧૫દિવસે	--	નક્કી કરેલ માત્રા થી ઓછી
			પાયરેક્લોસ્ટ્રોબીન ૫ ડબલ્યુજી + મેટીરામ૫૫ડબલ્યુજી	૯૦૦	૧.૫ કીગ્રા	૦.૧૮	૩૦ ગ્રામ	૫૦૦ લિટર	પ્રથમ છંટકાવ રોગ દેખાય ત્યારે અને ત્યારપછી નાં છંટકાવ ૧૫દિવસે	૪૫	સીઆઇબીઆરસીમાં નોધાયેલ છે.
			સ્યુડોમોનાસ ફ્લુરોસન્સ	૨૫ ૨x૧૦^{૮} સીએફ્યું/મિલી	૨.૫ કીગ્રા	૦.૦૦૫ ૨x૧૦^{૮} સીએફ્યું/ મિલી	૫૦ મીલી	૫૦૦ લિટર	પ્રથમ છંટકાવ રોગ દેખાય ત્યારે અને ત્યારપછી નાં છંટકાવ ૧૫દિવસે	--	--

Suggestions : Approved

[Action: Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh**]**

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

14.3.1.20 **Dispersal of *Trichogramma chilonis* Ishii (Hymenoptera: Trichogrammatidae) in sugarcane field**

Sugarcane growers of South Gujarat Heavy Rainfall Agro-climatic Zone are advised to staple trichocard stripes on lower surface of the sugarcane leaves @ 12/ha (Aprrox. 4000 parasitized eggs/stripe) keeping distance of 30 m between two stripes for effective biological control of sugarcane borers.

દક્ષિણ ખેત આબોહવાકીય ગુજરાતના વધુ વરસાદવાળા વિસ્તારમાં શેરડીની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, વેધકોના જૈવિક નીયંત્રણ માટે ટ્રાયકોકાર્ડ ૧૨ ટુકડા (અંદાજીત ૪૦૦૦ પર્જીવીકરણ થયેલ ઈંડાઓ/ટુકડા) પ્રતિ હેકટરે બે ટુકડા વચ્ચે ૩૦ મીટરનું અંતર જળવાય તે રીતે શેરડીના

પાનની નીચેની સપાટીએ સ્ટેપલ કરવાથી વેધકોના ઈંડાઓનું અસરકારક પર્જીવીકરણ થઈ શકે છે.

Suggestions: Approved

(**Action:** Prof & Head, Dept. of Ento., N.M. College of Agriculture, NAU; Navsari)

14.3.1.21 Population dynamics of *Helicoverpa armigera* (Hubner) through pheromone trap in tomato

Farmers of South Gujarat Heavy Rainfall Agro-climatic Zone III growing tomato are recommended to monitor the infestation of *Helicoverpa armigera* from 3rd to 18th week after transplanting tomato crop for timely management of pest.

દક્ષિણ ગુજરાતના ભારે વરસાદ આબોહવાકીય વિસ્તાર-૩ નાં ટામેટીના ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ફેરરોપણીના ત્રીજાથી અઢારમાં અઠવાડિયા સુધી લીલી ઈયળના ઉપદ્રવની મોજાણી કરતા રહેવુ જેથી આ જીવાતનું સમયસર વ્યવસ્થાપન કરી શકાય.

Suggestions : Approved

(**Action:**Prof and Head, Deptt. of Ento, ASPEE College of Hort and Forestry, NAU; Navsari)

14.3.1.22 Dissipation and persistence of combi-product of chlorantraniliprole 9.26 % + λ cyhalothrin 4.63 % in/on pigeonpea

Pigeonpea growers of South Gujarat are recommended pre-mix formulation of chlorantraniliprole 9.26 ZC + λ-cyhalothrin 4.63 %,twice at 15 days interval starting from 50 per cent flowering stage @ 30 g a.i./ha (4.0 ml/10l water) for the control pod borer. Preharvest interval of nine days should be observed to avoid residue problem.

દક્ષિણ ગુજરાતના તુવેર પકવતા ખેડૂતોને તૂવેરમાં શીંગો કોરી ખાનાર ઇયળના નિયંત્રણ માટે લેંમડા-સાયહેલોથ્રિન ૪.૬૩ % + ક્લોરાન્ટ્રાનીલીપ્રોલ ૯.૨૬ ઝેડ સી ના ૫૦ % ફૂલ બેસવાની અવસ્થામાં ૩૦ ગ્રા.સ.ત./હે (૪ મિલી/૧૦ લી) નાં બે છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. જંતુનાશક અવશેષ નિવારવા માટે છેલ્લા છંટકાવ અને ઉતાર વચ્ચે ઓછામાં ઓછા ૯ દિવસ સમયગાળો રાખવો.

Recommendation as per CIBRC Format

Year	Crop	Pest	Pesticide with Formulation	Doses			Waiting Period (days)
				Quantity of formulation	Conc (%)	Dilution in water	
2018	Pigeon Pea	Pod Borer	Chlorantraniliprole 9.26 % + λ-Cyhalothrin 4.63 %	220 ml/ 30 g a.i./ha	0.006	550 L	9.0

સીઆઈબીઆરસીના ફોર્મેટ મુજબ ભલામણ

વર્ષ	પાક	જીવાત	જંતુનાશકની બનાવટ	માત્રા			પ્રતીક્ષા સમય (દિવસ)
				બનાવટનું પ્રમાણ	સાંદ્રતા (%)	પાણીમાં મિશ્રણ	
૨૦૧૮	તૂવેર	શીંગો કોરી ખાનાર ઇયળ	ક્લોરાન્ટ્રાનીલીપ્રોલ ૯.૨૬ % + લેમડા-સાયહેલોથ્રિન ૪.૬૩ %	૨૨૦ મી.લિ . અથવા ૩૦ ગ્રા .સ.ત. /હે	૦.૦૦૬	૫૫૦ લિ.	૯.૦

Suggestions: Approved

(**Action:**Assoc. Professor & I/C Food Quality Testing Laboratory, NAU; Navsari)

14.3.1.23 Dissipation and persistence of spiromesifen (22.9 SC) in brinjal under south Gujarat conditions

Brinjal growers of South Gujarat Heavy Rainfall Agro-climatic Zone are recommended to apply spiromesifen 22.9 SC, twice @ 96 g a.i/ha (8.4 ml/10 lit.) at 15 days interval starting from fruit setting stage for the control of red spider mite.

Pre-harvest interval of one day should be observed to avoid residue problem.

Recommendation as per CIBRC Format

Year	Crop	Pest	Pesticide with Formulation	Doses			Waiting Period (days)
				Quantity of formulation	Conc. (%)	Dilution in water	
2018	Brinjal	Red spider mite	Spiromesifen 22.9 SC	420 ml/ 96 g a.i./ha	0.02	500L	1.0

દક્ષિણ ગુજરાતના ભારે વરસાદ ખેત આબોહવાકીય વિસ્તારના રીંગણની ખેતી કરતા ખેડૂતોને લાલ કથીરીના નિયંત્રણ માટે સ્પાયરોમેસિફેન (૨૨.૯ એસ. સી.) નાં ફળ બેસવાની અવસ્થાથી ૧૫ દિવસના અંતરે ૯૬ ગ્રા.સ.ત./હે (૮.૪ મિલી/૧૦ લિ) નાં બે છંટકાવ કરવા.

જંતુનાશક અવશેષ નિવારવા માટે છેલ્લા છંટકાવ અને ઉતાર વચ્ચે ઓછામાં ઓછા ૧ દિવસ સમયગાળો રાખવો.

સીઆઈબીઆરસીના ફોર્મેટ મુજબ ભલામણ

વર્ષ	પાક	જીવાત	જંતુનાશકની બનાવટ	માત્રા			પ્રતીક્ષા સમય દિવસ
				બનાવટનું પ્રમાણ	સાંદ્રતા (%)	પાણીમાં મિશ્રણ	
૨૦૧૮	રીંગણ	લાલ કથીરી	સ્પાઇરોમેસિફેન ૨૨.૯ એસ.સી.	૪૨૦ મી.લિ . અથવા ૯૬ ગ્રા . સ.ત/.હે.	૦.૦૨	૫૦૦લિ.	૧.૦

Suggestions : Approved

(Action: Assoc. Professor & I/C Food Quality Testing Laboratory, NAU; Navsari**)**

14.3.1.24 Studies on bio-efficacy of insecticides and botanicals against shoot fly and stem Borer infesting sorghum crop

Sorghum growers of South and North Gujarat are recommended to treat seeds with thiamethoxam 30 FS @ 3 g/kg seeds before sowing or treat seeds with thiamethoxam 30 FS @ 3 g/kg seeds before sowing along with spraying of Neem base pesticide 1500 ppm @ 35 ml/10 lit .of water after 30 days of emergence of crop to manage the sorghum shoot fly and stem borer.

દક્ષિણ તથા ઉતર ગુજરાત વિસ્તારમાં જુવારની ખેતી કરતા ખેડુતોને ભલામણ કરવામાં આવે છે કે, જુવાર પાકમાં સાંઠાની માખી અને સાંઠાના વેધકના અસરકારક નિયંત્રણ માટે વાવેતર પહેલા બીજને થાયોમેથોક્ઝામ ૩૦ એફ.એસ. દવાનો ૩ ગ્રામ પ્રતિ કિલોગ્રામ બીજ પ્રમાણે બીજ માવજત આપવી અથવા થાયોમેથોક્ઝામ ૩૦ એફ.એસ. દવાનો ૩ ગ્રામ પ્રતિ કિલોગ્રામ બીજ પ્રમાણે બીજ માવજત આપી વાવેતર બાદ ૩૦ દિવસે કોઇપણ લીમડાયુક્ત દવા (૧૫૦૦ પીપીએમ) નો ૧૦ લિટર પાણીમાં ૩૫ મિલી પ્રમાણે છંટકાવ કરવો.

Asper CIB Format

Year	Crop	Pests	Pesticide with formulation	Dose			Wait-ing Period	Residue
				Quantity of formula-tion	Conc	Diluti-on in water		
2018	Sorghum	Shoot fly Stem borer	Thiamethoxam 30 FS	3 g/kg seed	-	-	-	-

સીઆઈબીઆરસીના ફોર્મેટ મુજબ ભલામણ

વર્ષ	પાક	જીવાત	જંતુનાશકની બનાવટ	માત્રા			પ્રતિક્ષા સ ય	અવશેષ
				દવાની માત્રા	સાં તા	પાણીમાં મિશ્રણ		

૨૦૧૮	જુવાર	સાંઠાની માખી	થાયોમેથોકઝામ ૩૦ એફ.એસ.	૩ ગ્રામ/ કિલોગ્રામ બીજ	-	-	-	-

Suggestions :Approved

[Action: Asstt. Res. Scientist (Ento), Main Sorghum Research Station, NAU; Surat**]**

14.3.1.25 Biological management of rice blast

The rice growers of South Gujarat Agro-climate Zoneare recommended to apply two sprays of *Pseudomonas fluorescens* Waghai or *P. fluorescens* Navsari isolate @ 6 ml/l. foliar spray (10^8 cfu/ml) for effective management of leaf and neck blast and to get higher grain and straw yields. The first spray should be given at initiation of disease and second spray at the time of panicle emergence.

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા આબોહવાકીય વિસ્તારના ડાંગર ઉગાડતા ખેડૂતોને ડાંગરનાં દાહ/કરમોડી રોગના અસરકારક વ્યવસ્થાપન અને ડાંગરનુ વધુ ઉત્પાદન મેળવવા માટે સ્યુડોમોનાસ ફ્લોરેસન્સ અથવા સ્યુડોમોનાસ ફ્લોરેસન્સ નવસારી અથવા વઘઇ આઇસોલેટે ૬ મી.લી. પ્રતિ ૧ લિટરના બે છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. પહેલો છંટકાવ રોગની શરૂઆત થાય ત્યારે અને બીજો છંટકાવ કંટી નિકળવાના સમયે કરવો.

Suggestions : Approved

[Action: Asstt. Res. Scientist (Pl. Path.), Main Rice Research Centre, NAU; Navsari**]**

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

14.3.1.26 Management of termite in isabgol through intercropping

Farmers of North Gujarat Agro-Climatic Zone growing isabgul are recommended to grow ajwain as an inter crop in Isabgol at 30 cm distance (1:1 ratio) for effective management of termite.

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તારના ઈસબગુલ ઉગાડતા ખેડૂતોને ઉધઈનાં અસરાકારક નિયંત્રણ માટે ઈસબગુલના પાકમાં અજમાને આંતરપાક તરીકે ૩૦ સેમી અંતરે (૧:૧ પ્રમાણ) વાવવાની ભલામણ કરવામાં આવે છે.

Suggestions: Approved

[Action: Associate Res. Scientist (Ento.) Seed Spices Res. Station,SDAU,Jagudan]

14.3.1.27 Management of white grub in groundnut

Farmers of North Gujarat Agro-climatic Zone are recommended to apply seed treatment of chlorpyriphos 20 EC @ 25 ml/kg seed (500 g a.i./ha) one day before sowing for effective management of white grub in groundnut.

ઉત્તર ગુજરાતના મગફળી ઉગાડતા ખેડૂતોએ ડોળના અસરકારક નિયંત્રણ માટે બીજને વાવણીના એક દીવસ પહેલા કલોરપાયરીફોસ ૨૦ ઈસી ૨૫ મિલી/કિલો બીજ (૫૦૦ ગ્રામ સ.ત./હે) પ્રમાણે માવજત આપવાની ભલામણ કરવામાં આવે છે.

Suggestions: Approved

[Action: Associate Professor (Ento.) Deptt. of Ag.Entomology, SDAU, SKNagar**]**

14.3.2. RECOMMENDATION FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

14.3.2.1 Bio-efficacy of newer insecticides against *Spodoptera litura* (Fabricius) infesting castor

For effective and economical management of leaf eating caterpillar, *Spodoptera litura* (Fabricius) in castor, spray any one of the following insecticides at initiation of pest.

1. Emamectin benzoate 5 SG, 0.002 %, 4 g/10 litre of water (ICBR: 1:26.46).
2. Chlorantraniliprole 18.5 SC, 0.006 %, 3 ml/10 litre of water (ICBR: 1:16.35).
3. Spinosad 45 SC 0.009 %, 2 ml/10 litre of water (ICBR: 1:10.27).

Suggestion/s: Approved.

	(**Action:** Prof.& Head, Department of Entomology, BACA, AAU, Anand**)**
14.3.2.2	**Evaluation of root dip treatment and foliar spray of insecticides against aphid infesting gaillardia (var. Lorenziana)**
	Diping the roots of gaillardia for two hours in the solution of thiamethoxam 25 WG, 0.0125 % (5 g/10 litre of water) coupled with foliar spray of dimethoate 30 EC, 0.03 %, (10 ml/l0 litre of water) at initiation of aphid and second spray after 15 days of first spray give effective and economical control of the pest. **Suggestion/s: Approved.** (**Action:** Prof. and Head, Department of Entomology, BACA, AAU, Anand**)**
14.3.2.3	**Bio-efficacy of different insecticides against capsule borer, *Dichocrosis punctiferalis* Guenee infesting castor**
	For effective and economical control of capsule borer in castor, spray any one of the following insecticides at initiation of the pest damage and second at 15 days of the first spray. 1. Chlorantraniliprole 20 SC, 0.006 %, 3ml /10 litre of water (1:9.30). 2. Flubendiamide 48 SC, 0.015 %, 3 ml /10 litre of water (1: 7.93). 3. Indoxacarb 15.8 EC, 0.0079 %, 5 ml /10 litre of water (1: 18.55). 4. Emamectin benzoate 5 SG, 0.0025 %, 5 g/10 litre of water (1:12.24). **Suggestion/s: Approved.** (**Action:** Professor and Head, Department of Entomology, BACA, AAU, Anand**)**
14.3.2.4	**Bio-efficacy of insecticides against aphid in cumin**
	For effective and economical control of cumin aphid, spray any one of the following insecticides, first spray at initiation of aphid and if required, second spray at 15 days after first spray. 1. Flonicamid 50 WG, 0.015 %, 3 g/ 10 litre of water (ICBR: 1:34.50). 2. Clothianidin 50 WDG, 0.02 %, 4 g/ 10 litre of water (ICBR: 1:19.05). 3. Carbosulfan 25 EC, 0.04 %, 16 ml/ 10 litre of water (ICBR: 1:46.00). 4. Thiacloprid 24 SC, 0.024 %, 10 ml/ 10 litre of water (ICBR: 1: 34.25). **Suggestion/s: Approved.** (**Action:** Prof.& Head, Department of Entomology, BACA, AAU, Anand**)**
14.3.2.5	**Evaluation of insecticidal toxicity against tobacco mealy bug *Phenacoccus solenopsis* tinsley and its parasites and predators under laboratory conditions.**
	The insecticides *viz*., triazophos 40 EC, 0.06 %, imidacloprid 17.8 SL, 0.004 %, thiamethoxam 25 WG, 0.005 %, buprofezin 25SC, 0.005 % and azadirachtin 1 EC, 0.003 % effectively killed the mealybug, *Phenacoccus solenopsis* Tinsley under controlled conditions. However, these insecticides are highly toxic to its parasitoid, *Aenasius bambawalei* Hayat in laboratory conditions. **Suggestion/s: Approved.** [**Action:** Assoc. Res. Sci., (Ento), BTRS, AAU, Anand**]**
14.3.2.6	**Residue and persistence of lambda- cyhalothrin 5 EC in/on cucumber**
	Two foliar sprays of lambda-cyhalothrin 5 EC in cucumber at 10-day interval @ 15 g a.i./ha at fruiting stage resulted in its residue below the Codex MRL of 0.05 µg/g in cucumber fruits if harvested from 1st day after the last application. Therefore, PHI of 1-day could be suggested if lambda-cyhalothrin 5 EC recommended in cucumber. **Suggestion/s: Approved.** (**Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.7	**Residue and persistence of acephate 75 SP in/on cucumber**
	Two foliar sprays of acephate 75 SP in cucumber at 10-day interval @ 560 g a.i./ha at fruiting stage resulted in its residue below the limit of quantitation of 0.05 µg/g in cucumber fruits if harvested from 20th day after the last application. Therefore, PHI of 20-day could be suggested if acephate 75 SP recommended in cucumber. **Suggestion/s: Approved.** (**Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

14.3.2.8	**Residue and persistence of imidacloprid 17.8 SL in/on cucumber**
	Two foliar sprays of imidacloprid 17.8 SL in cucumber at 10-day interval @ 20 g a.i./ha at fruiting stage resulted in its residue below the Codex MRL of 1.0 µg/g in cucumber fruits if harvested immediately after the last spray. Therefore, PHI of 1-day could be suggested if imidacloprid 17.8 SL recommended in cucumber. **Suggestion/s: Approved.** (**Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.9	**Residue and persistence of spiromesifen 22.9 SC in/on cucumber**
	Two foliar sprays of spiromesifen 22.9 SC in cucumber at 10-day interval @ 96 g a.i./ha at fruiting stage resulted in its residue below the limit of quantitation of 0.05 µg/g in cucumber fruits if harvested from 10th day after the last application. Therefore, PHI of 10-day could be suggested if spiromesifen 22.9 SC recommended in cucumber. **Suggestion/s: Approved.** (**Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.10	**Residue and persistence of lambda-cyhalothrin 5 EC in/on cauliflower**
	Two foliar sprays of lambda-cyhalothrin 5 EC in cauliflower at 10-day interval @ 15 g a.i./ha at curd formation resulted in its residue below the Codex MRL of 0.5 µg/gin cauliflower heads if harvested immediately after the last spray. Therefore, PHI of 1-day could be suggested if lambda-cyhalothrin 5 EC recommended in cauliflower. **Suggestion/s: Approved.** (**Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.11	**Residue and persistence of Imidacloprid 17.8 SL in/on cauliflower**
	Two foliar sprays of imidacloprid 17.8 SL in cauliflower at 10-day interval @ 20 g a.i./ha at curd formation resulted in its residue below the limit of quantitation of 0.05 µg/g in cauliflower curds if harvested from 7th day after the last application. Therefore, PHI of 7-day could be suggested if imidacloprid 17.8 SL recommended in cauliflower. **Suggestion/s: Approved.** (**Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.12	**Residue and persistence of spiromesifen 22.9 SC in/on cauliflower**
	Two foliar sprays of spiromesifen 22.9 SC in cauliflower at 10-day interval @ 96 g a.i./ha at curd formation resulted in its residue below the limit of quantitation of 0.05 µg/g in cauliflower curds if harvested from 10th day after the last application. Therefore, PHI of 10-day could be suggested if spiromesifen 22.9 SC recommended in cauliflower. **Suggestion/s: Approved.** (**Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.13	**Residue and persistence of cypermethrin 25 EC in/on capsicum**
	Two foliar sprays of cypermethrin 25 EC in capsicum at 10-day interval @ 50 g a.i./ha at fruiting stage resulted in its residue below the Codex MRL of 0.10 µg/g in capsicum fruits if harvested from 15th day after the last application. Therefore, PHI of 15-day could be suggested if cypermethrin 25 EC recommended in capsicum. **Suggestion/s: Approved.** (**Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.14	**Residue and persistence of ethion 50 EC in/on capsicum**
	Two foliar sprays of ethion 50 EC in capsicum at 10-day interval @ 500 g a.i./ha at fruiting stage resulted in its residue below the FSSAI MRL of 1.0 µg/g in capsicum fruits if harvested from 1st day after the last application. Therefore, PHI of 1-day could be suggested if ethion 50 EC recommended in capsicum. **Suggestion/s: Approved.** (**Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.15	**Residue and persistence of lambda-cyhalothrin 5 EC in/on capsicum**
	Two foliar sprays of lambda-cyhalothrin 5 EC in capsicum at 10-day interval @

	15 g a.i./ha at fruiting stage resulted in its residue below the Codex MRL of 0.30 µg/g in capsicum fruits if harvested immediately after the last spray. Therefore, PHI of 1-day could be suggested if lambda-cyhalothrin 5 EC recommended in capsicum. **Suggestion/s: Approved.** (**Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.16	**Residue and persistence of imidacloprid 17.8 SL in/on capsicum**
	Two foliar sprays of imidacloprid 17.8 SL in capsicum at 10-day interval @ 20 g a.i./ha at fruiting stage resulted in its residue below the limit of quantitation of 0.05 µg/g in capsicum fruits if harvested from 1st day after the spray. Therefore, PHI of 1-day could be suggested if imidacloprid 17.8 SL recommended in capsicum. **Suggestion/s: Approved.** (**Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.17	**Residue and persistence of spiromesifen 22.9 SC in/on capsicum**
	Two foliar sprays of spiromesifen 22.9 SC in capsicum at 10-day interval @ 96 g a.i./ha at fruiting stage resulted in its residue below the limit of quantitation of 0.05 µg/g in capsicum fruits if harvested from 15th day after the last application. Therefore, PHI of 15-day could be suggested if spiromesifen 22.9 SC recommended in capsicum. **Suggestion/s: Approved.** (**Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.18	**Residue and persistence of acephate 75 SP in/on tomato**
	Two foliar sprays of acephate 75 SP in tomato at 10-day interval @ 560 g a.i./ha at fruiting stage resulted in its residue below the Codex MRL of 1.0 µg/g in tomato fruits if harvested immediately after the last spray. Therefore, PHI of 1-day could be suggested if acephate 75 SP recommended in tomato. **Suggestion/s: Approved.** (**Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.19	**Residue and persistence of lambda-cyhalothrin 5 EC in/on cabbage**
	Two foliar sprays of lambda-cyhalothrin 5 EC in cabbage at 10-day interval @ 15 g a.i./ha at head formation resulted in its residue below the Codex MRL of 0.30 µg/g in cabbage heads if harvested immediately after the last spray. Therefore, PHI of 1-day could be suggested if lambda-cyhalothrin 5 EC recommended in cabbage. **Suggestion/s: Approved.** (**Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.20	**Residue and persistence of spiromesifen 22.9 SC in/on cabbage**
	Two foliar sprays of spiromesifen 22.9 SC in cabbage at 10-day interval @ 96 g a.i./ha at head formation resulted in its residue below the limit of quantitation of 0.05 µg/g in cabbage heads if harvested from 10th day after the last application. Therefore, PHI of 10-day could be suggested if spiromesifen 22.9 SC recommended in cabbage. **Suggestion/s: Approved.** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.21	**Residue and persistence of imidacloprid 17.8 SL in/on cabbage**
	Two foliar sprays of imidacloprid 17.8 SL in cabbage at 10-day interval @ 20 g a.i./ha at head formation resulted in its residue below the Codex MRL of 0.50 µg/g in cabbage head if harvested immediately after the last spray. Therefore, PHI of 1-day could be suggested if imidacloprid 17.8 SL recommended in cabbage. **Suggestion/s: Approved.** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.22	**Residue and persistence of acephate 75 SP in/on bitter gourd**
	Two foliar sprays of acephate 75 SP in bitter gourd at 10-day interval @ 560 g a.i./ha at fruiting stage resulted in its residue below the limit of quantitation of 0.05 µg/g in bitter gourd fruits if harvested from 15th day after the last application. Therefore, PHI of 15-day could be suggested if acephate 75 SP recommended in bitter gourd. **Suggestion/s: Approved.**

	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.23	**Residue and persistence of lambda-cyhalothrin 5 EC in/on bitter gourd**
	Two foliar sprays of lambda-cyhalothrin in bitter gourd at 10-day interval @ 15 g a.i./ha at fruiting stage resulted in its residue below the Codex MRL of 0.3 µg/g in bitter gourd fruits if harvested immediately after the last application. Therefore, PHI of 1-day could be suggested if lambda-cyhalothrin recommended in bitter gourd. **Suggestion/s: Approved.** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.2.24	**Residue and persistence of spiromesifen 22.9 SC in/on bitter gourd**
	Two foliar sprays of spiromesifen 22.9 SC in bitter gourd at 10-day interval @ 96 g a.i./ha at fruiting stage resulted in its residue below the limit of quantitation of 0.05 µg/g in bitter gourd fruits if harvested from 10th day after the last application. Therefore, PHI of 10-day could be suggested if spiromesifen recommended on bitter gourd with MRL of 0.05 µg g^{-1}. **Suggestion/s: Approved.** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
14.3.2.25	**Evaluation of different insecticidal application strategies against stem borer, *Chilo partellus* Swinhoe infesting maize**
	Treat the seeds of maize with imidacloprid 600 FS, 8 ml/ kg seed (0.96 kg. a.i./ ha; ICBR: 19.83) using equal quantity of water before 12 hours of sowing for preventing stem borer infestation. The treated seeds should be dried under shade condition before sowing. **Suggestion/s: Approved.** **(Action:** Asstt. Res. Sci., ARS, AAU, Sansoli)
14.3.2.26	**Field evaluation of fungicides for the management of Pyricularia leaf spot/ blast disease of pearl millet**
	Treat the seeds with thirum 75 WS, 3g/kg seed at the time of sowing and apply two sprays of tebuconazole (50%) + trifloxystrobin (25%) 75 WG, 0.075% (ICBR 1: 5.70) **OR** azoxystrobin (18.2%) + difenoconazole (11.4%) 29.6 SC, 0.03% (ICBR 1: 8.00) starting at the appearance of the disease and second at 15 days after first spray for effective management of Pyricularia leaf spot/ blast disease of pearl millet in *kharif* season. **Suggestion/s: Approved.** **(Action:** Professor & Head, Department of Plant Pathology, BACA, Anand)
14.3.2.27	**Evaluation of seed treatment of bioagents for management of soil borne diseases in mungbean**
	Treat the seed with *Trichoderma viride* (10^8 cfu/g) 1 WP, 10 g/kg seeds and *Pseudomonas fluorescens* (10^8 cfu/ml) 1 WP, 10 ml/kg seeds (ICBR 1: 116.06) at the time of sowing for effective management of root rot disease of mungbean in *kharif* season. **Suggestion/s: Approved.** **(Action:** Professor & Head, Department of Plant Pathology, BACA, Anand)
14.3.2.28	**Identification of sources of resistance in mungbean against bean common mosaic disease**
	Mungbean genotypes *viz.*, GM-02-07 and LGG 460 found resistant, while GM-9917, GM-02-01, GM-02-02, GM-02-05, GM-02-08, GM-02-10, GM-02-13, GM-02-15, GM-02-20, GM-03-04, GM-03-07, GM-03-13 and GM-03-14 found moderately resistant against bean common mosaicdisease under field conditions. These genotypes can be used in breeding programme for developing varieties resistant to bean common mosaic. **Suggestion/s: Approved.** **[Action:** Professor & Head, Department of Plant Pathology, BACA, Anand; Assistant Research Scientist (Ento.), ARS, AAU, Derol]

14.3.2.29	**Management of citrus gummosis (*Phytophthora citrophthora*)**
	Pasting the stem with metalaxyl MZ 68 WP (50 g/litre) followed by drenching of fenamidone 10% + mancozeb 50% WG, 0.2% (10 litre/ tree) twice *i.e.* first at onset of monsoon and second at one month after first application found effective for management of citrus gummosis. **Suggestion/s: Approved.** **[Action:** AssistantProfessor (Pl. Path.), College of Horticulture, AAU, Anand]
14.3.2.30	**Biological control of chilli fruit rot/ anthracnose disease**
	Following treatments of either *Pichia guilliermondii* (Y12) **or** *Pseudomonas fluorescens* (Pf-1), in sequence found effective for management of chilli fruit rot/ anthracnose disease. 1. Seed treatment (10 g or ml/kg seeds). 2. Seedling root dip (20 g or ml/liter water for 5 minutes). 3. Four foliar sprays (10 g or ml/liter, 1 AS, $2x10^8$ cfu/g) at fortnightly interval starting from the initiation of fruit ripening. These bioagents could be included as components of IDM strategy. **Suggestion/s: Approved.** **(Action:** Principal Res. Sci., AICRP on Biological Control of Crop Pests, AAU, Anand)
14.3.2.31	**Screening of promising genotypes for resistance against bacterial blight disease in rice**
	Rice genotypes *viz.*, IET-24486, IET-25400, IET-25421, *Chittimuthyalu* and *Sabita* found resistant against bacterial blight (*Xanthomonas oryzae* pv. *oryzae*) under artificial inoculation and high disease pressure conditions in the field. These genotypes can be used in breeding programme for developing varieties resistant to bacterial blight. **Suggestion/s: Approved.** **[Action:** Research Scientist (Rice), Main Rice Research Station, AAU, Nawagam]
14.3.2.32	**Efficacy of *Trichoderma viride* in management of banded leaf and sheath blight of maize under field conditions**
	Treating the seed with *Trichoderma viride* (10^8 cfu/g) 1 WP, 10 g/kg seeds, its soil application (10 kg/ tonne FYM/ha) at the time of sowing and four foliar sprays of*T. Viride* (60 g/10 litre) (ICBR1: 2.78), first spray at 30 days after germination and remaining at 10 days interval after first spray give effective management of banded leaf and sheath blight disease of maize in *kharif* season. **Suggestion/s: Approved.** **[Action:** Research Scientist (Maize), Main Maize Research Station, AAU, Godhra; Assistant Professor (Plant Pathology), College of Agriculture, AAU, Jabugam]

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

14.3.2.33	**Bio-efficacy of different bio-pesticides and insecticides against pink bollworm in *Bt* cotton (Bollgard-II)**
	For effective and economical management of pink bollworm, five spray of spinosad 45 SC 0.014 % (3.0 ml/10 litre of water) or chlorantraniliprole 18.5 SC 0.006 % (3.0 ml/10 litre of water), first spray at 5 % appearance of rosette flower and subsequent four spray at 10 days interval after first spray found effective in cotton. **Suggestions: Approved.** **(Action:** Professor & Head, Department of Entomology, JAU, Junagadh)
14.3.2.34	**Management of *Helicoverpa armigera* (Hubner) and *Spodoptera litura* (Fabricius) in groundnut through insecticides**
	For effective and economical management of *Helicoverpa armigera* (Hubner) and *Spodoptera litura* (Fabricius), three spray of indoxacarb 14.5 SC 0.007 % (5.0 ml/10 litre of water) or spinosad 45 SC 0.014 % (3.0 ml/10 litre of water) or

	chlorantraniliprole 18.5 SC 0.006 % (3.0 ml/10 litre of water), first spray at the initiation of pest infestation and subsequent sprays at 15 days interval after first spray found effective in *kharif* groundnut. **Suggestions: Approved.** **(Action:** Professor & Head, Department of Entomology, JAU, Junagadh**)**
14.3.2.35	**Management of ear head worm, *Helicoverpa armigera* (Hub.) infesting bajra crop with bio-pesticides**
	Spray of DDVP 76 EC @ 0.05 % was found effective and economical for the management of ear head worm, *Helicoverpa armigera* (Hub) in pearl millet at ear head stage. **Suggestions: Approved.** **[Action:** Research Scientist (Bajara), Pearl Millet Research Station, JAU, Jamnagar]
14.3.2.36	**Testing bio-efficacy of insecticides against leaf webber *Crocidolomia binotalis* Zell) of mustard**
	The scientific community is informed to apply two spray of ready mixture of profenophos 40 % + cypermethrin 4 %, 44 EC 0.044 % 220 g a.i./ha (10 ml/10 litre of water) or profenophos 50 EC 0.05 % 250 g a.i./ha (10 ml/10 litre of water) or novaluron 10 EC 0.005 % 25 g a.i./ha (5 ml/10 litre of water) at 7 days interval starting from pest infestation for effective and economical management of mustard leaf webber. **Suggestions: Approved.** **[Action:** Research Scientist (G'nut), Oilseeds Research Station, JAU, Junagadh]
14.3.2.37	**Response of coconut varieties in relation to different seasons for the eriophyid mite damage**
	The coconut eriophyid mite damage was higher in summer where as it was lower in winter.Higher damage was recorded in dwarf green variety and less damage in west cost tall (WCT), In hybrid variety, higher damage found in DxT as compared to TxD. **Suggestions: Approved.** **[Action:** Research Scientist (FC), Agril Research Station, JAU, Mahuva]
14.3.2.38	**Management of fungal foliar diseases of cotton**
	Three spray of mancozeb 63 WP + carbendazim 12 WP, 0.15 % (20g /10 litre of water) first at initiation of disease and subsequent sprays at 15 days interval was found effective and economical for management of fungal foliar diseases of cotton. **Suggestions: Approved.** **[Action:** Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh**]**
14.3.2.39	**IDM Package for tomato diseases**
	For effective and economical integrated management of major diseases of tomato *viz.,* damping off, early blight, tomato leaf curl virus and tomato spotted wilt virus disease and to improve the marketable fruit yield following treatments should be adopted. 1. Seeds of tomato should be treated with seed pro @ 4 g per kg seeds at the time of sowing in nursery and after germination of the seeds soil drenching with seed pro @ 5 % should be carried out. 2. Tomato nursery should covered with 40 - 60 mesh white nylon net until transplanting and at the time of transplanting tomato seedling should be dip with 0.1 % (carbendazim 12 % + mancozeb 63 WP) solution. 3. Maize should be grown as border crop surrounding transplanted tomato field. The foliar sprayings of pesticides should be scheduled as acephate 75 WP @ 1.5 g / litre 10 days after transplanting, fipronil 5 SC @ 1.5 ml / litre 20 DAT, copper hydroxide 77 WP @ 2.0 g / litre 25 DAT and imidacloprid 70 WG @ 2g / 15 litre 40 DAT along with two to three spraying of Fenamidone 10 % + Mancozeb 50 WDG, 0.25 % from 45 DAT at 10 days intervals. **Suggestions: Approved.** **[Action:** Research Scientist (G & O)Vegetable Research Station, JAU, Junagadh**]**

14.3.2.40	**Studies of weather parameters in relation to initiation and development of stem rot of groundnut**
	The infection of stem rot in groundnut was commenced in 28th std. week, which developed gradually and reached a peak in 33rd std. week. All the weather parameters *viz*., minimum temperature, maximum temperature, morning relative humidity, afternoon relative humidity, soil temperature @ 10 cm, rain fall and rainy days were found significantly co-related in building up the disease incidence in groundnut. The influence of all the weather parameters was found 39.10 per cent. **Suggestions: Approved.** **(Action:** Research Scientist, Dry Farming Research Station, JAU, Targhadia)
14.3.2.41	**Efficacy of newer insecticides against diamond back moth infesting cauliflower**
	In South Saurashtra Agro-climatic Zone growing cauliflower in *rabi* season are advised to apply two spray of chlorantraniliprole 18.5 SC 0.006 % (3.2 ml/10 litre of water) at 15 days interval starting from pest infestation for effective and economical management of diamond back moth. **Suggestion: Farmers' recommendation approved as scientific information as it isnot fulfilling the CIB guide line.** **(Action:** Professor & Head, Department of Entomology, JAU, Junagadh**)**
14.3.2.42	**Developing IDM modules for the management of cotton diseases**
	Apply the following Integrated Disease Management Module (IDM) for management of cotton diseases and higher net return. **IDM Module-1:** 1. Seed treatment with *Pseudomonas fluorescens* (2 x 10^8 cfu/g-JAU isolate) @10 g/kg seed. 2. Soil application of *Trichoderma harzianum* (2 x 10^6 cfu/g-JAU isolate) @2.5 kg/ha in 250 kg of FYM. 3. Foliar sprays with *Pseudomonas fluorescens* (2 x 10^8 cfu/g-JAU isolate) 1 % for alternaria leaf spot and copper oxychloride (0.2 %) + streptocycline (0.01%) for bacterial leaf blight on need basis. **OR** **IDM Module- 2:** 1. Seed treatment with *Pseudomonas fluorescens* (2 x 10^8 cfu/g- CICR isolate) @ 10 g/kg seed. 2. Soil application of *Trichoderma viride* (2 x 10^6 cfu/g-TNAU isolate) @ 2.5 kg / ha in 250 kg of FYM; 3. Foliar sprays with Kresoxim-methyl 44.3 SC @ 1ml/lit followed by captan 70 % + hexaconaxole 5 % @1.5 g/lit for fungal diseases and copper oxychloride (0.3 %) + streptocycline (0.01 %) for bacterial blight. **Suggestion: Farmers' recommendation approved as scientific information as it is notfulfilling the CIB guide line.** **[Action:** Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh**]**

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

14.3.2.43	**Survey of natural enemies of rice insect pests**
	The parasitoids *viz*., *Telenomus* sp. (0.00-31.08, Av. 9.84 % parasitization) and *Tetrastichus* sp. (0.00-7.15, Av. 1.11 %) were found parasitizing eggs of yellow stem borer; Tachinidfly (0.00-20.44, Av. 8.07 %), *Charops* sp.(0.00-33.73, Av. 15.33 %) and *Apanteles* sp. (0.00-66.67, Av. 13.17%) on larvae of paddy skipper; *Xanthopimpla* sp.(0.00-26.67, Av. 4.77 %) and *Brachymeria* sp.(0.00-50.00, Av. 2.69) on pupa of paddy skipper; *Apanteles* sp. (0.00-24.38, Av. 10.15 %) on larva of paddy leaf folder. Moreover, *Trissolcus* sp. and *Oenocyrtus utetheisae* (0.00-21.25, Av. 5.62 %) on eggs of paddy gundhi bug were found predominant as well as potent parasitoids in paddy agro-ecosystem under south Gujarat condition.

	Suggestions: Approved. (**Action:**Prof & Head, Dept. of Ento; N.M. College of Agril, NAU; Navsari)
14.3.2.44	**Survey of natural enemies of sugarcane**
	The parasitoids *viz.*, *Telenomus* sp. (0.00-37.30, Av. 9.02 % parasitization) on egg mass of sugarcane top borer; *Trichogramma* sp. (0.00-50.00, Av. 7.42 %) on egg mass of sugarcane shoot borer; *Apanteles* sp.(0.00-20.83, Av. 3.17 % on *Chilo sp.*), Tachinid fly (0.00-35.00 Av. 9.58 % on *Chilo* sp.) and Tachinidfly (0.00-33.33, Av. 1.89 % on *Sesamia* sp.) on larvae of shoot borer; *Tetrastichus* sp.(0.00-50.00, Av. 12.26%) on egg mass of sugarcane pyrilla and *Encarcia* sp. (0.00-91.67, Av. 25.77 %) on puparium of sugarcane whitefly were found predominant and potent parasitoids in sugarcane agro-ecosystem under south Gujarat conditions. **Suggestions: Approved.** (**Action:**Prof & Head, Dept. of Ento; N.M. College of Agril, NAU; Navsari)
14.3.2.45	**Screening of sugarcane varieties for mealy bug resistance**
	Sugarcane genotypes *viz.*, Co 10015, CoN 05071 and CoN 14072 were found less susceptible against mealy bugs. **Suggestions: Approved.** **[Action:** Asstt. Res. Scientist (Ento), Main Sugarcane Research station, NAU; Navsari]
14.3.2.46	**Screening of promising genotypes for multiple resistance against rice yellow stem borer, *Scirpophaga incertulus* Walker and sheath mite, *Steneotarsonemus spinki* Smiley**
	Rice genotypes *viz.*, NWGR-7011, NWGR-9088, IET-23189 and IET-22649 showed multi-resistant reactions against rice yellow stem borer, *Scirpophaga incertulas* Walker and sheath mite, *Steneotarsonemus spinki* Smiley. **Suggestions: Approved.** **[Action:**Assoc. Res. Scientist (Ento); Main Rice Research Centre, NAU, Navsari]
14.3.2.47	**Survey for assessment of losses due to mealybug infestations in the cotton fields of Farmers**
	The loss due to mealybug infestation in cotton (based on 4-grade infested plants) was estimated to be 1.07 (0.00 to 2.97) per cent and the natural parasitism of *Aenasius bambawalei* Hayat was 8.55 (4.73 to 14.93) per cent under farmers' management practices in 21 surveyed villages of Surat and Bharuch districts. **Suggestions: Approved.** **[Action:**Assoc. Res. Scientist (Ento), Main Cotton Research Station, NAU; Surat]
14.3.2.48	**Survey for assessment of losses due to pink bollworm infestations in the farmers fields**
	The quantitative loss due to pink bollworm infestation was estimated to be 2.14 (0.88 to 3.61) per cent under farmers' practices of 274 cotton fields in 21 surveyed villages of Surat and Bharuch districts during 2015-16 to 2017-18. **Suggestions: Approved.** [**Action:** Assoc. Res. Scientist (Ento), Main Cotton Research Station, NAU; Surat]
14.3.2.49	**Studies on species composition of sugarcane shoot borer**
	Sugarcane crop in South Gujarat Agro-climatic Zone was infested by complex of two species of shoot borer namely, *Sesamia inferens* (Walker) and *Chilo sacchariphagus indicus* (Kapur). Moreover, *S. inferens* was found to be predominant shoot borer species. **Suggestions: Approved.** **[Action:** Scientist (Pl. Prot.), Krishi Vigyan Kendra, NAU; Vyara]
14.3.2.50	**Screening of sugarcane varieties for red rot resistance**
	Sugarcane varieties *viz.*, Co 10005, Co 10006, Co 10026, Co 10027, CoT 10367, Co 09009, Co 10031, CoT 10368, CoT 10369, PI 10131, CoN 14071, CoN 14072, CoN 14073 and CoN 14074 were found moderately resistant to red rot under artificial inoculation condition. **Suggestions: Approved.**

	[Action: Asstt. Res. Scientist (Pl. Path.), Main Sugarcane Research Station, NAU; Navsari]
14.3.2.51	**Screening of Sugarcane varieties for Whip smut resistance**
	Sugarcane varieties *viz*., Co 10005, Co 10006, CoT 10366, CoT 10368, CoT 10369, CoVC 10061, PI 10132, CoN 14071, CoN 14072, CoN 14073 and CoN 14074 showed resistant reaction against whip smut disease under artificial inoculation condition. **Suggestions: Approved.** **[Action:** Asstt. Res. Scientist (Pl. Path.), Main Sugarcane Research Station, NAU; Navsari]
14.3.2.52	**Screening of promising genotypes for multiple resistance against bacterial blight, sheath rot and grain discoloration diseases of rice**
	Rice genotypes *viz*., IET-23832, IET-22015, NVSR-6100 and NVSR-6137 were found multiple resistant against bacterial blight and sheath rot diseases under artificial inoculation and high disease pressure in the field and grain discoloration in normal field condition. **Suggestions: Approved.** **[Action:** Asstt. Res. Scientist (Pl. Path.), Main Rice Research Centre, Navsari]
14.3.2.53	**Screening of promising genotypes for bacterial leaf blight disease of rice**
	Rice genotypes *viz*., NVSR-348, NVSR-351, IET-18710 and NVSR-6121 were found resistant against bacterial blight disease by artificial inoculation under field condition. **Suggestions: Approved.** **[Action:** Asstt. Res. Scientist (Pl. Path.), Main Rice Research Centre, NAU; Navsari]
14.3.2.54	**Management of sterility mosaic disease of pigeonpea**
	The spraying of either fenazaquin 10 EC @ 0.01 % or propargite 57 EC @ 0.1 % after 25 days of sowing and second at 15 days after first spray was found significantly most effective to manage sterility mosaic disease through vector control and gave higher seed yield and better net profit of pigeonpea in SMD nursery. Further the residues of these insecticides remained below determination level (< 0.05 µg/ml), (< 0.03 µg/ml) in pigeonpea seeds and plant residues, respectively. **Suggestions: Approved.** **[Action:**Assoc. Prof. (Pl. Path.), College of Agriculture- NARP- Bharuch]
14.3.2.55	**Epidemiology of rainfed cotton diseases under Bharuch condition**
	Maximum temperature as well as morning and evening temperature of soil upto 20 cm depth showed highly positive significant effect on development of cotton root rot whereas, maximum temperature had highly positive significant effect against bacterial leaf blight of cotton, however rest of parameters showed non-significant effect on bacterial leaf blight. Maximum temperature had non-significant effect on Alternaria leaf spot but minimum temperature, vapour pressure (morning & evening), RH (morning & evening), wind speed and rainfall showed highly significant negative effect, whereas sunshine and evaporation showed highly significant positive effect on alternaria leaf spot development. **Suggestions: Approved.** **[Action:** Asstt. Prof. (Pl. Path.), COA- NARP- Bharuch]
14.3.2.56	**Survey of major cotton diseases under Bharuch and Narmada districts**
	The maximum disease intensity of bacterial leaf blight and alternaria leaf spot of cotton were observed in 42-43rd SMW (15-28th October) i.e.14.34 per cent and 50-51st SMW (10-23rd December) *i.e.* 19.67 per cent in Bharuch district and 42-43rd SMW (15-28th October) *i.e.*17.83 per cent and 50-51st SMW (10-23rd December) *i.e.* 21.83 per cent in Narmada district, respectively. **Suggestions: Approved.** **[Action:** Asstt. Prof. (Pl. Path.), COA- NARP- Bharuch]

14.3.2.57	**Current situation and status of rice false smut disease in South Gujarat**
	The disease incidence was noticed higher in Vansda Taluka. The losses due to false smut of rice was estimated to be 0.029 (Dediapada Taluka) to 2.354 per cent (Vansda Taluka) in 50 surveyed villages of 10 talukas of south Gujarat. The false smut disease of rice has attained a major status in Vansda taluka and recorded maximum loss up to 28.02 per cent in the Kavdej village on hybrid rice during *Kharif* 2016. **Suggestions: Approved.** **[Action:** Asstt. Prof.(Pl. Path.), Regional Rice research Station, NAU; Vyara]
14.3.2.58	**Survey of Root knot nematode (*Meloidogyne graminicola*) in rice nurseries of South Gujarat**
	Roving Survey was conducted in rice nurseries during summer season from the year 2015-2018 and found 18.64 percent root knot disease incidence with 5.25 percent gall index in infested rice nurseries of South Gujarat. Rice root knot pathogen was identified as *Meloidogyne graminicola*and isfirst reported in South Gujarat condition. **Suggestions: Approved.** [**Action:** Asstt. Prof.(Pl. Path.), Regional Rice Research Station, NAU; Vyara]
14.3.2.59	**Evaluation of acaricides against pigeonpea eriophyid mite, *Aceria cajani***
	Three sprays of spiromesifen 22.9 SC @ 0.005 % (2 ml/10 lit) or fenazaquin 10 EC (10 ml/ 10 lit) @ 0.01 % at 25, 40 and 55 days after sowing which effectively control pigeonpea eriophyid mite, *Aceria cajani* and give higher seed yield and net return. Further, the residues of these acaricides were found below determination level in pigeonpea seeds and plant residue. **Suggestion/s: Approved as scientific recommendation.** **Farmers' recommendation is approved as scientific information as it is not fulfilling the CIB guide line.** (**Action**: Asstt.Prof.College of Agriculture,NAU,Bharuch)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

14.3.2.60	**Effect of different concentrations of pendimethalin and glyphosate on soil microbial communities and soil enzymatic activity *in-vitro***
	➢ *In-vitro* study revealed that application of pendimethalin and glyphosate @ 0.5, 1.0, and 1.5 kg ai/ha declined the population of soil microbes i.e. actinomycetes and *Azotobacter* up to 15 days. ➢ Application of higher doses of pendimethalin and glyphosate (@ 2.0 kg ai/ha) drastically reduced the population of microorganisms (bacteria, actinomycetes, *Azotobacter,* fungi and PSB) and soil enzyme (dehydrogenase, urease, FDH, acid phosphatase, and alkaline phosphatase) activity in soil at 15 days after application. ➢ Further, population of microbes viz., bacteria, actinomycetes, *Azotobacter,* fungi and PSB increased at 30 days after application of weedicides in all the treatments. **Suggestions: Approved.** [**Action**: Asstt. Prof. (Micro.) Deptt.of Ag. Microbiology, SDAU, Sardarkrushinagar]
14.3.2.61	**Management of insect pests of mungbean through insecticides**
	The seeds of mungbean to be treated with imidacloprid 600 FS (@ 5ml/kg (525 g ai/ha) seed followed by spray of indoxacarb 15.8 EC @ 5ml/10 lit (39.5 g ai/ha) at 50 % flowering stage for effective and economical management of sucking pests and podborers of mungbean. **Suggestions: Farmers' recommendation is approved as scientific information as it Is not fulfilling the CIB guide line.** **[Action:** Asstt. Res.Sci.(Ento.), Pulses Research Station, SDAU, Sardarkrushinagar]
14.3.2.62	**Management of white grub in groundnut**
	In the absence of seed treatment of chlorpyriphos, drenching of imidacloprid 40 WG+ fipronil 40 WG–80 % @ 400 g/ha (320 g a.i./ha) near the base of plant at 20 days after the first rainfall was found effective for the management of white grub in

	groundnut. **Suggestions: Part of farmers' recommendation is approved as scientific information as it is not fulfilling the CIB guide line** **[Action :** Associate Professor (Ento.), CoA, SDAU, Sardarkrushinagar**]**
14.3.2.63	**Management of foliar diseases of tomato (*Lycopersicon esculentum* Mill.)**
	Tomato growers are advised to apply three spray of carbendazim 12 % + mancozeb 63 % WP @ 0.2 % concentration at 15 days interval (First spray at the time of initiation of the disease and subsequent two sprays at 15 days interval after 1st spray) for getting the maximum yield and income with minimum disease intensity of early blight of tomato. **Suggestions: Farmers' recommmendation is approved as scientific information as it is not fulfilling the CIB guide line.** **[Action:** Asstt. Research Scientist (Pl. Path.), SDAU, Ladol**]**

14.3.3 NEW TECHNICAL PROGRAMMES

Chairman	: Dr. A. M. Patel, DR, SDAU
Co-chairmen	: Dr. K.G. Patel, Dean, CA, NAU, Bharuch
	: Dr. H,.R. Patel, ADR, AAU
Rapporteurs	: Dr. A.G. Desai, Professor, SDAU
	: Dr. M. F. Acharya, Prof. & Head, JAU
	: Dr. H.V. Pandya, ASSoc.Prof., NAU
Statistician	: Dr. A. D. Kalola, Asso. Prof., AAU

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title	Suggestion/s and Action
14.3.3.1	Biorational management of mango hoppers	**Approved.** (Action: Professor and Head, Dept. of Entomology, BACA, AAU, Anand)
14.3.3.2	Evaluation of insecticides against leaf eating caterpillar in drumstick	**Approved with following suggestion/s:** Observation on natural enemies and phytotoxicity should be recorded. (Action: Professor and Head, Dep.t of Entomology, BACA, AAU, Anand)
14.3.3.3	Bio-efficacy of botanicals against aphids on coriander	**Approved with following suggestion/s:** In treatments write water extract instead of only extract. (Action: Professor and Head, Dept. of Entomology, BACA, AAU, Anand)
14.3.3.4	Efficacy of biocontrol agents for the management of fruit borer *Earias vittella* on bhendi (okra)	**Approved.** (Action: Principal Research Scientist, AICRP on Biological Control of Crop Pests, AAU, Anand)
14.3.3.5	Assessment of bird population in different habitats of agricultural ecosystem	**Approved.** (Action: Ornithologist, AINPVPM: Agril. Ornithology, AAU, Anand)
14.3.3.6	Assessment of Rose-Ringed Parakeet (*Psittacula krameri*) depredations to guava fruits	**Approved.** (Action: Ornithologist, AINPVPM: Agril. Ornithology, AAU, Anand)
14.3.3.7	Role of insectivorous birds in suppression of *Helicoverpa armigera*in tomato	**Approved.** (Action: Ornithologist, AINPVPM: Agril. Ornithology, AAU, Anand)
14.3.3.8	Studies of community structure of birds in wheat-bajra agro ecosystem	**Approved.** (Action: Ornithologist, AINPVPM: Agril.

		Ornithology, AAU, Anand)
14.3.3.9	Effect of ozone on degradation of pesticides in water	**Approved.** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.3.10	Establishment of processing factors for different pesticides in chilli	**Approved.** (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
14.3.3.11	Bio-efficacy of ready-mix insecticides against pest complex of Indian bean, *Lablab purpureus (L.)* Walp.	**Approved.** [Action: Assistant Research Scientist (Ento), MVRS, AAU, Anand]
14.3.3.12	Evaluation of insecticides against aphid infesting chrysanthemum	**Approved.** [Action:Assistant Professor (Ento.), College of Horticulture, AAU, Anand]
14.3.3.13	Evaluation of insecticides against *Callosobruchus maculatus* (Fabricius) infesting green gram seed during storage	**Approved.** [Action: Assistant Research Scientist (Ento.), RRS, AAU, Anand]
14.3.3.14	Evaluation of insecticides against plant hoppers infesting rice	**Approved.** [Action: Asstt. Res. Scientist (Ento.),Main Rice Research Station, Nawagam]
14.3.3.15	Screening of pigeopea genotypes against sterility mosaic disease	**Approved.** [Action:Research Scientist (Ento.), Pulse Research Station, Vadodara]
14.3.3.16	Efficacy of different botanicals against pod borer complex in pigeonpea	**Approved with following suggestion/s:** In treatments write water extract instead of only extract. [Action: Asstt. Research Scientist (Ento.) Agril. Res. Station, AAU, Derol]
14.3.3.17	Effect of different organic manures on incidence of gram pod borer, *Helicoverpa armigera* (Hubner) Hardwick infesting chickpea under *Bhal* region	**Approved with following suggestion/s:** Consider multidisciplinary experiment Observation on soil moisture, soil properityand disease incidence. (Action:Associate Research Scientist, Agricultural Res. Station, AAU, Arnej)
14.3.3.18	Management of melon fruit fly, *Bactocera cucurbitae* infesting cucumber in river-bed area of Orsang	**Approved with following suggestion/s:** In treatment details write farmers practices instead of only control. [Action: Asstt. Professor (Ento.), College of Agriculture, AAU, Jabugam]
14.3.3.19	Integrated pest management in soybean	**Approved with following suggestion/s:** Specify farmers' practices as module 4. [Action:Training Associate (Ento.), TRTC, Devgadhbaria]
14.3.3.20	Evaluation of insecticides for the control of lepidopteran pests of rice	**Approved with following suggestion/s:** Tereatments should be ememectin benzoate 5 SG @ 9.5, 12.66 and 15.83 g ai/ha, thiodicarb 75 WP @ 470, 626.66 and 783.33 g ai/ha and flubendiamide 20 WG @ 75 g ai/ha along with control. [Action: Asstt. Res. Scientist (Ento.), Agril. Res. Station, AAU, Sansoli]
14.3.3.21	Evaluation of fungicides for the management of anthracnose in green gram	**Approved.** (Action:Prof. & Head, Dept. of Plant Pathology, BACA, AAU, Anand)

14.3.3.22	Management of tikka disease of groundnut through fungicides	**Approved.** (Action: Prof. & Head, Dept. of Plant Pathology, BACA, AAU, Anand)
14.3.3.23	Bio-efficacy of botanicals against Powdery mildew of fenugreek	**Approved.** [Action: Asst. Prof. (Pl.Patho.), College of Horticulture,AAU, Anand]
14.3.3.24	Rotational study with resistant bidi tobacco to manage root-knot disease	**Approved.** [Action:Research Scientist (Plant Pathology), BTRS, AAU, Anand]
14.3.3.25	Efficacy of fungicides in management of charcoal rot (*Macrophomina phaseolina*) disease of maize	**Approved with following suggestion/s:** Conduct as pot trial only. [Action: Asstt. Res. Scientist (Plant Pathology), **Main Maize Research Station**, AAU, Godhara]
14.3.3.26	Effects of biocontrol agent and fungicide on soft rot of ginger	**Approved.** [Action: Asstt. Res. Scientist (Plant Pathology), **Hill Millets Research Station**, AAU, Dahod]
14.3.3.27	Effects of planting dates on soft rot of ginger	**Approved with following suggestion/s:** Record soil temperature at 15 cm depth at 30 days interval from germination to harvest of the crop. [Action: Asstt. Res. Scientist (Plant Pathology), **Hill Millets Research Station**, AAU, Dahod]
14.3.3.28	**Management of powdery mildew and *Cercospora* leaf spot in black gram**	**Approved.** [Action: Asstt. Prof. (Plant Pathology), **College of Agriculture**, AAU, Jabugam]

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

Sr. No.	Title	Suggestion/s and Action
14.3.3.29	Area wide integrated management of white grub in groundnut.	**Approved with following suggestion/s:** In design, take large plot CRD. (Action: Professor & Head, Department of Entomology, JAU, Junagadh)
14.3.3.30	Comparable study of different colored sticky traps for monitoring of sucking pests in brinjal.	**Approved with following suggestion/s:** CRD with 4 repetitions in 20 x 20 m block (Action: Professor & Head, Department of Entomology, JAU, Junagadh)
14.3.3.31	Comparable study of different colored sticky traps for monitoring of sucking pests in seed spices.	**Approved with following suggestion/s:** CRD with 4 repetitions in 20 x 20 m block (Action: Professor & Head, Department of Entomology, JAU, Junagadh)
14.3.3.32	Management of shoot fly and stem bore infesting pearl millet crop	**Approved with following suggestion/ss:** 1. Delete word "Eco-frindly" from objective. 2. Consider T_{10} as recommended check. 3. Mention the preparation method of "Panchgavya". [Action: Research Scientist (Bajra), Main Pearl Millet Res. Station, JAU, Jamnagar]
14.3.3.33	Effect of carbon dioxide (CO2) treatment on the control of storage insect pests and	**Approved.**

	the seed quality attributes under ambient conditions. (Crop: pearl millet).	[Action: Research Scientist (Bajra), Main Pearl Millet Res. Station, JAU, Jamnagar]
14.3.3.34	Screening of tolerant entries for confirmation of source of resistance to *Helicoverpa armigera*(AICRP)	**Approved.** [Action: Research Scientist (Chickpea), Pulses Research Station, JAU, Junagadh]
14.3.3.35	Management of mungbean pod borer [*Maruca vitrata* (Geyer)] in summer condition by different insecticidal treatments.	**Approved with following suggestion/s:** Take only treatment No. 3, 4 and 6 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose and control. Total treatments = 10. [Action: Research Scientist (Chickpea), Pulses Research Station, JAU, Junagadh]
14.3.3.36	Evaluation of biopesticide and insecticide against pod borer (*Helicoverpa armigera* (Hubner)) in pigeonpea.	**Approved.** [Action: Research Scientist (Chickpea), Pulses Research Station, JAU, Junagadh]
14.3.3.37	Efficacy of different insecticides against eriophyid mites (*Aceria guerrenonis* Keifer) infesting coconut cv. D X T.	**Approved with following suggestion/ss:** 1. Take only treatment No. 5,7 and 8 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith treatment No. 1, 2 and control. Total treatments = 12. 2. CRD with 3 repetitions. [Action: Research Scientist (Horti) Agril. Res. Station (FC), JAU, Mahuva]
14.3.3.38	Varietal screening of pomegranate (*Punica granatum* L.) against anar butterfly (*Virachol aisocrates* Fab.) in coastal region.	**Approved with following suggestion/ss:** 1. Use CRD with 6 repetitions. 2. Redord observations from two trees per treatment. [Action: Research Scientist (Horti) Agril. Res. Station (FC), JAU, Mahuva]
14.3.3.39	Evaluation of new molecule and its combination for insect-pests and disease complex of onion (AINRPOG).	**Approved.** [Action: Research Scientist (G & O), Vegetable Res. Station, JAU, Junagadh]
14.3.3.40	Evaluation of newer acaricides against mite infesting in sesame	**Approved with following suggestion/ss:** Take only treatment No. 2,4 and 6 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith treatment No. 3 and control. Total treatments = 11. [Action: Research Scientist (Pl. Br.), Agricultural Res. Station, JAU, Amreli]
14.3.3.41	Evaluation of newer acaricides against mite infesting in soybean	**Approved with following suggestion/s:** Take only treatment No. 2, 4 and 6 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith treatment No. 3 and control. Total treatments = 11 [Action: Research Scientist (Pl. Br.),

		Agricultural Res. Station, JAU, Amreli]
14.3.3.42	Management of mealy bug (*Maconellicoccus hirsutus*) infesting custard apple	**Approved with following suggestion/ss:** Take only treatment No. 4,6 and 8 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith treatment No. 1, 2 and control. Total treatments = 12. [Action: Professor & Head,Department of Horticulture, CoA, JAU, Junagadh]
14.3.3.43	Integrated management of foliar diseases in high density planting of cotton.	**Approved with following suggestion/ss:** Take treatments of carbendazim, pyroclostrobin and propiconazole with three doses of streptomycin sulphate i.e. 50, 100 and 150 ppm along with *Pseudomonas fluorescens* and control. Total treatments = 11. (Action: Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh)
14.3.3.44	Downy mildew resistance qtl mapping trial-1, Downy mildew resistance qtl mapping trial-2 (quantitative trait loci).	**Approved.** [Action: Research Scientist (Bajra), Main Pearl Millet Res. Station, JAU, Jamnagar]
14.3.3.45	Management of pearl millet blast (*Pyricularia grisea*) disease	**Approved with following suggestion/ss:** Take only treatment No. 1, 5 and 6 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith control. Total treatments = 10. [Action: Research Scientist (Bajra), Main Pearl Millet Res. Station, JAU, Jamnagar]
14.3.3.46	Management of sterility mosaic disease of pigeonpea	**Approved with following suggestion/ss:** 1. Take only treatment No. 2 and 4 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith control. Total treatments = 7 2. Replications 3. [Action: Research Scientist (Chickpea) Pulses Research Station, JAU, Junagadh]
14.3.3.47	Effect of biofertilizers on seedling growth and biochemical changes of coconut (*Cocos nucifera* L.).	Accepted with following suggestion/s/s 1. Advised to present also in Horticulture and Agro-forestry Sub-committe [Action: Research Scientist (Horti.), Agril. Res. Station (FC), JAU, Mahuva]
14.3.3.48	Evaluation of biocontrol agent and their combination against disease complex of onion.	**Approved with following suggestion/ss:** 1. Take treatment No. 8 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith remaining other treatments. Total treatments = 11.

		2. Maintain proper plot size for the crop. [Action: Research Scientist (Horti.), Agril. Res. Station (FC), JAU, Mahuva]
14.3.3.49	Impact of *Thrips tabaci* diversity on epidemiology of iris yellow spot virus (IYSV) in seed onion crop (AINRPOG).	**Approved.** [Action: Research Scientist (G & O), Vegetable Res. Station, JAU, Junagadh]
14.3.3.50	Testing of new formulation of fungicide for the control of powdery mildew of sesame.	**Approved with following suggestion/ss:** 1. Take only treatment No. 2, 5 and 8 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith treatment No. 9 and 10. Total treatments = 11 2. Take water @ 500 lit./ha. [Action: Research Scientist (Pl. Br.), Agricultural Res. Station, JAU, Amreli]
14.3.3.51	Integrated management practices to minimize aflatoxin contamination and soil borne diseases in groundnut.	**Approved with following suggestion/s:** 1. Add treatment of soil drenching of chlorpyriphos @ 5 ml/lit at 30 and 60 DAS Total treatments = 8. [Action: Research Scientist (G'nut), Main Oilseeds Res. Station, JAU, Junagadh]

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Sr. No.	Title	Suggestion/s/s and Action
14.3.3.52	Feasibility of lac culture under south Gujarat condition	**Approved.** [Action:Prof. & Head, Dept. of Ento, NMCA, Navsari]
14.3.3.53	Status of sugarcane pyrilla and its natural enemies fauna in sugarcane ecosystem	**Approved.** [Action:Prof. & Head, Dept. of Ento, NMCA, Navsari]
14.3.3.54	Status of leaf eating caterpillars and its natural enemies fauna in paddy agro-ecosystem	**Approved.** [Action:Prof. & Head, Dept. of Ento, NMCA, Navsari]
14.3.3.55	Effect of pollination by stingless bees on yield and quality of musk melon fruits.	**Approved.** [Action:Prof. & Head, Dept. of Ento, NMCA, Navsari]
14.3.3.56	Survey of quarantine pests of mango in South Gujarat	**Approved.** (Action: Prof. & Head, Dept. of Ento, ACHF, Navsari)
14.3.3.57	Efficacy of biorational insecticides against rice yellow stem borer, leaf folder and plant hoppers	**Approved.** [Action: Assoc. Res. Scientist (Ento), MRRC, NAU, Navsari]
14.3.3.58	Evaluation of different Novel Plus formulations against pest complex of Okra	**Approved with following suggestion/s:** Mention botanical names of plants used in formulations. [Action: Asstt. Res. Scientist (Ento), SWM, MRRC, NAU, Navsari]
14.3.3.59	Evaluation of different Novel Plus formulations against pest complex of Mango crop	**Approved with following suggestion/s:** Mention botanical names of plants used in formulations. [Action: Asstt. Res. Scientist (Ento),

		SWM, MRRC, NAU, Navsari]
14.3.3.60	Estimation of terminal residues of insecticides in tomatoes grown under open field and greenhouse under South Gujarat conditions	**Approved with following suggestion/s:** 1.Title should be "Dissipation of insecticides in tomatoes grown under open field and greenhouse under South Gujarat conditions 2. Study the dissipation of insecticides at 0, 1, 3, 5 and 7 days after application. 3. Take only treatment No. 1,2,3,4 and 7. (Action:Assoc. Professor & I/C FQTL, Navsari)
14.3.3.61	Management of podfly, *Melanagromyza obtusa* (Mollach) in pigeonpea	**Approved with following suggestion/ss:** 1. M_1 as such. 2. M_2 = Basal soil application of (i) neem cake @ 0.5 t/ha before sowing (ii) installation of trap baited with 20 ml ethanol @ 20/ha during 50% flowering up to maturity (iii) Application of spinosad 48 SC 0.0096% (2 ml/20 l) at 50% pod setting followed by NSKE 5% and Emamectin benzoate 5 SG (11 g ai/ha) at 10 days interval. 3. Plot size should be 20 x 20 m. [Action: Asstt. Professor (Ento.), COA, Bharuch]
14.3.3.62	Estimation of yield losses caused by insect pests on pigeon pea *Cajanus cajan* (L.)	**Approved.** [Action: Asstt. Professor (Ento.), COA, Bharuch]
14.3.3.63	Varietal performance of sapota against bud borer and chiku moth	**Approved.** [Action: Asstt. Res. Scientist (Ento), FRS; Gandevi]
14.3.3.64	Studies on natural parasitization of sugarcane shoot borer	**Approved.** [Action: Scientist (Pl. Prot.), KVK; NAU; Vyara]
14.3.3.65	Management of post-harvest diseases of mango using hot water treatment	**Approved** [Action: Assoc. Professor, Deptt. of Pl. Path., ACHF, Navsari]
14.3.3.66	Management of collar rot disease in Elephant foot yam	**Approved.** (Action:Assoc. Professor, Deptt. of Pl. Path., ACHF, Navsari)
14.3.3.67	Evaluation of fungicides against the sheath rot of rice	**Approved.** [Action: Asstt. Res. Scientist (Pl. Path.), MRRC, Navsari]
14.3.3.68	Management of mungbean yellow mosaic disease through vector control	**Approved with following suggestion/s:** Take only treatment No. 6, 8 and 9 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith control. Total treatments = 10. [Action: Asstt. Res. Scientist (Pl. Path.), PCRS, NAU, Navsari]

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

Sr. No.	Title	Suggestion/s and Action
14.3.3.69	Integrated Pest Management of eggplant shoot and fruit borer	**Approved with following suggestion/ss:** 1. Replace Indoxacarb with ememectin benzoate. 2. Large scale CRD with 5 quadrats. [Action: Asstt. Professor (Ento.), Dept. of Entomology, CPCA, SDAU,SKnagar]
14.3.3.70	Eco-safe management of white grub in groundnut	**Approved.** [Action: Asstt. Professor (Ento.), Dept. of Entomology, CPCA, SDAU,SKnagar]
14.3.3.71	Eco-friendly approaches for management of jassids in *kharif* okra	**Approved.** [Action: Asstt. Professor (Ento.), Dept. of Entomology, CPCA, SDAU,SKnagar]
14.3.3.72	Eco friendly management of pod borer, *Helicoverp aarmigera* in chickpea	**Approved with following suggestion/s:** Phytotoxicity effect of cow urine should be checked. [Action: Asstt. Res. Scientist (Ento.), Pulse Research Station, SDAU, SKnagar]
14.3.3.73	Management of spotted pod borer, *Maruca vitrata* (Geyer) on cowpea	**Approved with following suggestion/s:** Take only treatment No. 1 and 2 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith treatment No. 5, 6, 7 and 8. Total treatments = 10. [Action: Asstt. Res. Scientist (Ento.), Pulse Research Station, SDAU, SKnagar]
14.3.3.74	Evaluation of newer insecticides against sucking insect pests of castor	**Approved with following suggestion/s:** Take only treatment No. 1,3 and 4 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith control. Total treatments = 10 [Action: Asstt. Res. Scientist (Ento.), Main Castor and Mustard Research Station, SDAU, SKnagar]
14.3.3.75	Evaluation of biorationals for the management of sucking pests infesting fenugreek	**Approved.** [Action: Assoc. Professor (Pl. Path.), Seed Spices Research Station,SDAU,SKNagar]
14.3.3.76	Eco-friendly management of wheat aphid,*Rhopalosiphum maidi* F in wheat crop	**Approved with following suggestion/ss:** 1. Remove the word “Eco-friendly” from the title 2. Treatment No. 6 and 7 to be treated as chemical check [Action: Res. Scientist (Ento.), Wheat Research Station, SDAU, SKnagar]
14.3.3.77	Bio-efficacy of insecticides against pest complex of pomegranate	**Approved with following suggestion/s:** Design should be CRD. [Action: Asstt. Res.Scientist (Pl. Path.), Arid Horti. Res. Stat., SDAU, SKnagar]

14.3.3.78	Management of potato aphid(*Myzus persicae*) through chemicals	**Approved with following suggestion/s:** Take only treatment No. 1, 2 and 8 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith control. Total treatments = 10 [Action: Asstt. Res. Scientist (Pl. Path.), Potato Research Station, SDAU,SKnagar]
14.3.3.79	Bio-efficacy of newer acaricides and botanical pesticides agains red spider mite(*Tetranychus urticae*) in summer okra	**Approved with following suggestion/s:** Take only treatment No. 1 and 4 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith treatment No. 2, 6, 8 and control. Total treatments = 10 [Action: Asstt. Res. Scientist (Ento.), Polytechnic in Agriculture, SDAU, Khedbrahma]
14.3.3.80	Management of mustard aphid(*Lipaphis reysimi*) through botanical pesticides	**Approved with following suggestion/s:** Remove the word “pesticides” from the title. [Action:Assoc. Professor (Pl. Path.), Polytechnic in Agriculture, SDAU, Khedbrahma]
14.3.3.81	Survey and identification of pod borer infesting the Indian bean in Sabarkantha District	**Approved.** [Action: Asstt. Res. Scientist (Pl. Path.), Polytechnic in Agriculture, SDAU, Khedbrahma]
14.3.3.82	Survey of pink stem borer damage in wheat in Banaskantha district	**Approved.** [Action: Asstt. Res. Scientist (Pl. Path.), KVK, SDAU, Thasra]
14.3.3.83	Management of lepidopterous pests in okra	**Approved with following suggestion/ss:** 1. Title should be “Evaluatuion of insecticides against lepidopteran pests in okra 2. Take only treatment No. 2, 3 and 5 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith treatment No. 1 and control. Total treatments = 11 3. Spacing should be 45 x 30 cm [Action: Asstt. Res. Scientist (Pl. Path.), Agril. Research Station, SDAU, Ladol]
14.3.3.84	Evaluation of biorationals for the management of mite complex infesting date palm	**Approved with following suggestion/ss:** Design should be CRD [Action: Asstt. Res. Scientist (Pl. Path.), Date palm Res. Station, SDAU, Mundra]

14.3.3.85	Race specific screening of wheat genotypes against rusts under glass house conditions	**Approved.** [Action: Assoc. Res. Scientist (Pl. Path.), Wheat Research Station, SDAU, Vijapur]
14.3.3.86	Survey and surveillance for foliar diseases of wheat with special emphasis on wheat blast	**Approved.** [Action: Asstt.Res. Scientist (Pl. Path.), SDAU,SKnagar]
14.3.3.87	Management of Ramularia blight in fennel	**Approved with following suggestion/s:** In investigators and associates, keep only faculty members [Action: Assoc. Res. Scientist (Pl. Path.), Wheat Research Station, SDAU, Vijapur]
14.3.3.88	Management of powdery mildew in fenugreek	**Approved with following suggestion/s:** Take only treatment No. 4 and 6 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith control. Total treatments = 7 [Action: Asstt. Res. Scientist (Pl. Path.), Seed Spices Research Station, SDAU, Jagudan]
14.3.3.89	Management of leaf spots of groundnut by different fungicides and their impact on yield	**Approved with following suggestion/s:** Take only treatment No. 4 and 5 with three doses i.e. 25 % less than recommended dose, recommended dose and 25 % higher than recommended dose alongwith treatment No. 6 and 8. Total treatments = 8 [Action: Asstt. Res. Scientist (Pl. Path.), Agril. Research Station, SDAU,Ladol]
14.3.3.90	Management of chilli anthracnose/die-back or fruit rot by systemic acquired resistance activators	**Approved with following suggestion/s:** Mention the concentration and quantity of fungicides [Action: Assoc. Professor (Pl. Path.), College of Horticulture, SDAU, Jagudan]
14.3.3.91	Management of sterility mosaic disease of pigeonpea	Accepted with following suggestion/s Consider as filler trial [Action: Assoc. Professor (Pl. Path.), Pulse Research Station, SDAU,SKnagar]
14.3.3.92	Impact of date of sowing and spacing on the development of yellow mosaic disease in *summer* mungbean.	**Approved.** [Action: Asstt. Res. Scientist (Pl. Path.), Pulse Research Station, SDAU, SKnagar]
14.3.3.93	Confirmation of resistance of promising genotypes against Fusarium wilt disease of castor	**Approved.** [Action: Professor (Pl.Path.), Castor -Mustard Research Station, SDAU, SKnagar]
14.3.3.94	Effect of calcium salts on Fusarium wilt disease of castor	**Accepted with following suggestion/s:** Consider as filler trial [Action: Asstt. Res.Scientist (Pl. Path.), Castor -Mustard Research Station,

		SDAU, SKnagar]
14.3.3.95	Survey of insect-pests and diseases of soybean in Sabarkantha district of north Gujarat	**Approved with following suggestion/s:** Observations on natural enemies should be recored [Action: Assoc. Professor (Pl. Path.), Dept. of Plant Pathology, CPCA, SDAU, SKnagar]
14.3.3.96	Studies on prevalence of pomegranate root rot-wilt complex and its etiology in pomegranate growing area of Tharad taluka	**Approved.** [Action: Asstt. Professor (Pl. Path.), College of Agriculture, SDAU, Tharad, SKnagar]
14.3.3.97	Bio-efficacy of different fungicides against *Alternaria* blight of groundnut	**Approved with following suggestion/ss:** 1. In title, replace the word "Bio-efficacy" with "Evaluation" 2. Consider as filler trial [Action: Asstt. Professor (Pl. Path.), Dept. of Plant Pathology, CPCA, SDAU, SKnagar]
14.3.3.98	Bioefficacy of plant extract enriched cow urine against leaf blight of tomato	**Approved with following suggestion/s:** The design should be CRD with factorial concept [Action: Asstt. Professor (Pl. Path.), Dept. of Plant Pathology, CPCA, SDAU, SKnagar]
14.3.3.99	Screening of sorghum germplasms against anthracnose (*Colletotrichum graminicola*) disease	**Approved.** [Action: Professor (Pl. Path.), Dept. of Plant Pathology, CPCA, SDAU, SKnagar]
14.3.3.100	Survey and biodiversity study of arbuscular mycorrhizal fungi in the rhizosphere soils of Deesa, Banaskantha	**Approved.** [Action: Asstt. Professor (Pl. Path.), Agril. Research Station, SDAU, Aseda]
14.3.3.101	Screening of pearl millet germplasm against blast disease	**Approved.** [Action: Asstt. Professor (Pl. Path.), Regional Research Station, SDAU, Kothara]
14.3.3.102	Bioefficacy of botanical, bioagent and fungicides against *Alternaria* and *Curvularia* pathogens of date palm leaf spot diseases *in vitro*.	**Approved.** [Action: Asstt. Professor (Pl. Path.), Regional Research Station, SDAU, Bhachau]
14.3.3.103	Antinemic properties of aqueous leaf extracts of various botanicals on egg hatching and larval mortality of root knot nematode (*Meloidogyne incognita*) *in vitro*	**Approved with following suggestion/s:** Check and correct the botanical name of Periwinkle [Action: Professor (Nema.), Dept. of Nematology, CPCA, SDAU,SKnagar]
14.3.3.104	Antinemic properties of aqueous leaf extracts of various botanicals on egg hatching and larval mortality of root knot nematode (*Meloidogyne javanica*) *in vitro*	**Approved.** [Action: Asstt. Res. Scientist (Nema.), Pulse Research Station, SDAU,SKnagar]
14.3.3.105	Screening of Pearl millet germplasm against downey mildew disease	**Approved.** Asstt. Res. Scientist (PBG/Pl.Path.), Centre for Crop Improvement, SDAU, SKnagar]

General suggestions:

1. Pesticides listed in CIB should be selected while deciding a new technical programme.
2. Efforts should be made to generate bioefficacy of pesticides in line with CIB guidelines as well as residue data in crops not listed in CIB for their future inclusion.
3. Phytotoxicity data of newer insecticides and molecules should be generated before releasing recommendations.
4. Short duration as well as pot trails should be avoided for approval in AGRESCO.
5. Experimental trials based on testing of new products/pesticides of companies should not be discussed/presented in AGRESCO. If, such trials are found later for discussion, the whole responsibility of the experimental trial will be of the concerned researcher.
6. Number of PI and Co-PI should not exceed three except in case of multi-location experimental trial.
7. In multidisciplinary trials, there should be minimum one Co-PI from the other discipline.
8. There should be uniform format for preparing manuscript of recommendation and new technical programme of SAU's of Gujarat.
9. While mentioning the plot size of the experiment, the correct sequence of length X Breadth should be followed.
10. In farming community recommendation, Shruti font must be used in vernacular draft and Times New Roman in MS Word format.

14.4. HORTICULTURE AND AGRO-FORESTRY

Chairman	Dr. C. J. Dangaria, Hon'ble Vice Chancellor, NAU, Navsari
Co-Chairmen	Dr. V. P. Chovatia, Director of Research, JAU, Junagadh Dr. B. N. Patel, Principal & Dean, ASPEE College of Horti., NAU, Navsari
Rapporteurs	Dr. D. K. Varu, Associate Professor, Dept. of Horticulture, JAU, Junagadh Dr. Piyush Varma, Professor, Department of Horticulture, SDAU, SKNagar Dr. Alka Singh, Associate Professor, Dept. of Floriculture, NAU, Navsari

Presentation of recommendations and technical programmes by Conveners of SAUs

SN	Name	Designation & University
1	Dr. N. I. Shah	Professor & Head, Dept. of Horticulture, BACA, AAU., Anand
2	Dr. R. S. Chovatia	Professor & Head, Dept. of Horticulture, CoA, JAU, Junagadh
3	Dr. D. K. Sharma	Research Scientist (Fruit), NAU, Navsari
4	Dr. J. R. Vadodaria	Assoc. Research Scientist, College of Horti., SDAU, SKNagar Associate Professor, College of Horti., SDAU, Jagudan

Summary

Name of University	No. of Recommendations				New Technical Programmes	
	Farming Community		Scientific Community			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU, Anand	06	06	-	-	11	11
JAU, Junagadh	02	02	01	01	06	06
NAU, Navsari	20	19	08	08	34	34
SDAU, SKNagar	03	03	01	01	18	18
Total	**31**	**30**	**10**	**10**	**69**	**69**

14.4.1 RECOMMENDATION FOR FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

14.4.1.1	**Effect of plant growth regulators on growth, flowering and flower yield of *desi* Red Rose (*Rosa damascena* L.)**
	The farmers of Middle Gujarat Agro-climatic Zone- III growing desi red rose are advised to spray gibberellic acid @ 150 mg per litre at 30 and 60 days after pruning (in October month) along with recommended dose of manure and fertilizers(FYM 3 kg/plant as basal dose after pruning and 40:40:25 g N:P:Kalongwith 1 ml *Azospirillum* and 1 ml PSB/litre water each per plant as soil application in three equal splits during June, October and January)for getting higher yield, net realization and better shelf life. મધ્ય ગુજરાત ખેત આબોહવાકીય વિભાગ-૩ માં દેશી લાલ ગુલાબની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ગુલાબના પાકમાં છાંટણી (ઓક્ટોબર માસમા) કર્યા પછી ૩૦ અને ૬૦ દિવસે છોડ ઊપર ૧૫૦ મીલી ગ્રામ પ્રતિ લિટર જીબ્રેલીક એસીડનો છંટકાવ કરવાથી તેમજ ભલામણ મુજબના ખાતર નો (૩ કિલો/છોડ છાંણીયુ ખાતર પાયામાં છાંટણી કર્યા પછી ૪૦:૪૦:૨૫ ગ્રામ ના:ફો:પો અને ૧ મિ.લિ એઝોસ્પીરીલમ અને ૧ મિ.લિ. પીએસબી /લિટર પાણીમા પ્રતિ છોડ ત્રણ સરખા ભાગે જૂન, ઓક્ટોબર તથા જાન્યુઆરીમાં જમીનમાં આપવા) ઉપયોગ કરવાથી વધુ ઉત્પાદન અને નફો મેળવી શકાય છે તેમજ ફુલોની તાજગીનો સમય વધે છે. **Approved with following suggestion/s:** Recommended T_2 i.e. GA_3 @150 ppm instead of T_1 in recommendation draft on the basis of net realization. (**Action:** Professor & Head, Dept. of Horticulture, BACA, AAU, Anand)
14.4.1.2	**Effect of integrated nutrient management on growth, flowering and flower yield of annual white chrysanthemum (*Chrysanthemum coronarium* L.) cv. Local**
	The farmers of Middle Gujarat Agro-climatic Zone-III growing annual chrysanthemum are advised to apply 5 ton FYM alongwith 75 : 100 : 50 kg NPK/ha as

	basal dose. Prior to transplanting of seedlings should be dipped in 5 ml/l of water Bio NPK consortium. The remaining 75 kg nitrogen per hectare should be applied as top dressing at 30 days after transplanting to obtain higher yield and net realization. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૩ માં વર્ષાયુ સેવંતી (વિજળી)ની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, હેક્ટરે ૫ ટન છાણિયુ ખાતર તેમજ ૭૫:૧૦૦:૫૦ કિ.ગ્રા. ના:ફો:પો. પ્રતિ હેક્ટર પાયામાં આપવું. ધરૂની ફેરરોપણી પહેલા મૂળને બાયો એન.પી.કે. કોન્સર્ટિયમ ૫ મિલિ/લીટર પાણી માં ૨૦ મીનીટ બોળી રાખવા. બાકીનો ૭૫ કિલો નાઈટ્રોજન ધરૂની ફેરરોપણી પછી ૩૦ દિવસે આપવાથી વધુ ઉત્પાદન અને નફો મળે છે . **Approved with following suggestion/s:** Recast the recommendation. (**Action:** Professor & Head, Dept. of Horticulture, BACA, A.A.U., Anand**)**
14.4.1.3	**Determination of effective planting time for potato cultivars under middle Gujarat conditions**
	The farmers of Middle Gujarat Agro-climatic Zone-III growing potato (*cv.* Kufri Pukhraj, Kufri Badshah and Kufri Laukar) are advised to plant the potato in 2nd week of November to 4th week of November to get higher income and net realization. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર-3માં બટાટા (જાત: કુફરી પુખરાજ, કુફરી બાદશાહ અને કુફરી લૌકર) ની રોપણી કરતાં ખેડૂતોને વધુ આવક અને નફો મેળવવા માટે બટાટાનું વાવેતર નવેમ્બર માસના બીજા અઠવાડીયાથી ચોથા અઠવાડીયા સુધીમાં કરવા સલાહ આપવામાં આવે છે. **Approved:** (**Action:** Research Scientist, Main Vegetable Research Station, AAU, Anand**)**
14.4.1.4	**Nitrogen management in tomato cv. AT 3**
	The farmers of Middle Gujarat Agro-climatic Zone-III growing tomato(AT 3) are advised to apply 62.5 kg N(in the form of ammonium sulphate), 50 kg P_2O_5 and 50 kg K_2O per hectare as basal dose and remaining 62.5 kg N apply in two equal splits at 30 and 60 DATP to get higher yield and net return. મધ્ય ગુજરાત ખેત આબોહવાકીય ખેત આબોહવાકીય વિસ્તાર-૩ માં ટામેટી (એટી ૩) ની ખેતી કરતા ખેડૂતોને સલાહ આપવામાં આવે છે કે, ૬૨.૫ કિલોગ્રામ નાઈટ્રોજન, ૫૦ કિલોગ્રામ ફોસ્ફરસ અને ૫૦ કિલોગ્રામ પોટાશ પાયામાં અને બાકીનો ૬૨.૫ કિલોગ્રામ નાઈટ્રોજન બે સરખા હપ્તામાં ફેરરોપણી બાદ ૩૦ અને ૬૦ દિવસે આપવાથી વધુ ઉત્પાદન અને આવક મેળવી શકાય છે. **Approved with following suggestion/s:** Check the data of O.C. (**Action:** Research Scientist, Main Vegetable Research Station, AAU, Anand**)**
14.4.1.5	**Nitrogen management in chilli cv. GAVCH 1**
	The farmers of Middle Gujarat Agro-climatic Zone-III growing hybrid chilli ar**e** advised to apply 70 kg N, 50 kg P_2O_5 and 50 kg K_2O as basal and remaining 70 kg N apply in two equal splits at 30 and 60 DATP to get higher yield and net return. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૩માં સંકર મરચીની ખેતી કરતા ખેડૂતોને સલાહ આપવામાં આવે છે કે, ૭૦ કિલોગ્રામ નાઈટ્રોજન, ૫૦ કિલોગ્રામ ફોસ્ફરસ અને ૫૦ કિલોગ્રામ પોટાશ પાયામાં અને બાકીનો ૭૦ કિલોગ્રામ નાઈટ્રોજન બે સરખા હપ્તામાં ફેરરોપણી બાદ ૩૦ અને ૬૦ દિવસે આપવાથી વધુ ઉત્પાદન અને આવક મેળવી શકાય છે. **Approved with following suggestion/s:** 1. Check the data of O.C. 2. Check the data of soil-analysis. 3. Recast the recommendation. (**Action:** Research Scientist, Main Vegetable Research Station, AAU, Anand**)**

14.4.1.6	**Nutrient management through fertigation in guava**
	The farmers of Middle Gujarat Agro-climatic Zone-III growing guava under drip irrigation system are advised to apply 375-188-188 g NPK/tree (apply water soluble NP grade 310 g/tree, Urea 740 g/tree and MOP 315 g/tree) in four equal splits during 2nd and 4th week of June and September through fertigation to save 25 per cent fertilizers. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૩માં ટપક સિંચાઇ પધ્ધતિ અપનાવી જામફળની ખેતી કરતા ખેડૂતોને ઝાડ દીઠ ૩૭૫-૧૮૮-૧૮૮ ગ્રામ એન.પી.કે. પાણીમાં દ્રાવ્ય ખાતર (જેના માટે ઝાડ દીઠ એન.પી. ગ્રેડ ૩૧૦ ગ્રામ, યુરિયા ૭૪૦ ગ્રામ અને મ્યુરેટ ઓફ પોટાશ ૩૧૫ ગ્રામ) ચાર સરખા હપ્તામાં જૂન અને સપ્ટેમ્બર મહિનાના બીજા અને ચોથા સપ્તાહમાં આપવા ભલામણ છે. જેનાથી ખાતરની ૨૫ ટકા જેટલી બચત થાય છે. **Approved.** (**Action:** Associate Research Scientist, ARS for Irrigated Crops, AAU, Thasra**)**

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

14.4.1.7	**Evaluation of tomato varieties under poly house and net house condition**
	Farmers of Saurashtra region interested to grow tomato in protected condition are advised to grow indeterminate variety in 60 % white shade net house for getting higher yield and net return. સૌરાષ્ટ્ર વિસ્તારના રક્ષિત આવરણમાં ટામેટાની ખેતી કરવામાં રસ ધરાવતા ખેડૂતોને સલાહ આપવામાં આવે છે કે ૬૦ ટકા છાયાવાળા સફેદ નેટ હાઉસમાં ટામેટાની અનિયંત્રિત વૃધ્ધિવાળી જાતની ખેતી કરવાથી વધુ ઉત્પાદન અને આર્થિક વળતર મેળવી શકાય છે. **Approved.** **(Action:** Professor and Head, Dept. of Horticulture, JAU, Junagadh)
14.4.1.8	**Effect of organic manures in sapota [*Manilkara achras* (Mill)] cv. Kalipatti under saline water irrigation condition**
	Farmers of Saurashtra region interested to organic cultivation of sapota are advised to apply FYM @ 90 kg/tree(8 year) per year during June-July under saline irrigation water (EC 10-14 dSm^{-1}) for obtaining higher yield with net return and for improving soil fertility and microbial status of soil. સૌરાષ્ટ્ર વિસ્તારના ખેડૂતોને સલાહ આપવામાં આવે છે કે, ક્ષારીય પાણીવાળા પિયતથી (૧૦-૧૪ ઈ.સી.) ચીકુ ફળપાકની સેન્દ્રીય ખેતી માટે ઝાડ દીઠ દર વર્ષે ૯૦ કી.ગ્રા. છાણિયું ખાતર જૂન-જુલાઈ માસમાં આપવાથી વધુ ઉત્પાદન તથા વધુ આવક મેળવી શકાય છે, તેમજ જમીનની ફળદ્રુપતામાં અને સુક્ષ્મ જીવાણુંની માત્રામાં વધારો થાય છે. **Approved.** **(Action:** Assistant Research Scientist, Fruit Research Station, JAU, Mangrol)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

14.4.1.9	**Effect of foliar application of GA_3 and CPPU on yield and quality of mango (*Mangifera indica* L.) cv. Kesar**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone growing adult trees of mango cv. Kesar in high density plantation (5 m x 5 m) are advised to spray CPPU 10 mg l^{-1} or GA_3 100 mg l^{-1} 15 days after marble stage to get higher yield and net return. દક્ષિણ ગુજરાતનાં વધુ વરસાદવાળા ખેત આબોહવાકીય વિસ્તારમાં પુખ્ત વયના આંબાના કેસર જાતમાં ઘનિષ્ઠ વાવેતર પદ્ધતિ (૫ મી x ૫ મી) અપનાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે કેસર ઝાડમાં સીપીપીયુ ૧૦ મી.ગ્રા. /લી. અથવા જીએ.-૩ ૧૦૦ મી.ગ્રા./લી. નો છંટકાવ કેરી લખોટી જેવડી થાય ત્યાર પછી ૧૫ દિવસે કરવાથી અંબામાં ગુણવત્તા સભર વધુ ઉત્પાદન સાથે વધારે આવક મેળવી શકાય છે. Differed for one year: Experiment required to take one more year and the same be

	presented after inclusion of one year result. (**Action:** Res. Scientist, Regional Horticulture Res. Station, ACHF, NAU, Navsari)
14.4.1.10	**Effect of time of inarch grafting on success and survival in mango cv. Kesar**
	Farmers and nurserymen of South Gujarat Heavy Rainfall Agro-climatic Zone I (AES-III) preparing inarch graft of mango are advised to prepare grafts throughout the year with uniform success rate and survival of inarch grafts. દક્ષિણ ગુજરાતનાં ભારે વરસાદીય ખેત આબોહવાકીય ઝોન-૧, પરિસ્થિતિ-૩માં આંબાની ભેટ કલમો બનાવતા ખેડૂતો તેમજ નર્સરી સાહસિકોને ભલામણ કરવામાં આવે છે કે આંબાની ભેટ કલમો આખું વર્ષ સફળતાપૂર્વક બનાવી શકાય છે. **Approved with following suggestion/s:** 1. Recast the recommendation with adding “Uniform” instead of “higher.” (**Action:** Res. Scientist, Regional Horticulture Res. Station, ACHF, NAU, Navsari)
14.4.1.11	**Effect of time and dose of fertilizer application on yield and quality of sapota cv. Kallipati**
	The Farmers of South Gujarat Heavy Rainfall Agro-climatic Zone-I (AES–III) having a sapota orchard with adult trees of cv. Kalipatti are recommended to apply 100 per cent recommended dose of fertilizers @ 1000-500-500g NPK/tree/year in three splits i.e. 250-125-125g NPK/tree in June along with FYM @ 100kg/tree/year. Remaining 250-125-125g NPK/tree in October and 500-250-250g NPK/tree in February instead of two equal split i.e. in June and October. This treatment gives higher fruit yield of sapota with higher net realization in winter season in comparison to summer season. દક્ષિણ ગુજરાતનાં ભારે વરસાદવાળા ખેત આબોહવાકીય વિસ્તાર (પરિસ્થિતિ-3)માં ચીકુની કાલીપત્તી જાતના પુખ્ત વયના ઝાડોની વાડી ધરાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ચીકુના ઝાડને રસાયણિક ખાતર હાલની ભલામણ મુજબ ૧૦૦૦-૫૦૦-૫૦૦ ગ્રામ ના.ફો.પો. પ્રતિઝાડ બે સરખા હપ્તામાં જૂન અને ઓક્ટોબર માસમાં આપવાને બદલે ત્રણ હપ્તામાં ૨૫૦-૧૨૫-૧૨૫ ગ્રામ ના.ફો.પો.ની સાથે ૧૦૦ કિ.ગ્રા. પ્રતિઝાડ દીઠ છાણિયું ખાતર જૂન માસમાં, ફરીથી ૨૫૦-૧૨૫-૧૨૫ ગ્રામ ના.ફો.પો. ઓક્ટોબર માસમાં અને ૫૦૦-૨૫૦-૨૫૦ ગ્રામ ના.ફો.પો. ફેબ્રુઆરી માસમાં પ્રતિ ઝાડ મુજબ આપવાથી શિયાળાની ઋતુમાં ઉનાળાની ઋતુની સરખામણીમાં વધુ ઉત્પાદન સહિત વધુ નફો મળે છે. **Approved with following suggestion/s:** Recast the recommendation. (**Action:** Res. Scientist, Regional Horticulture Res. Station, ACHF, NAU, Navsari)
14.4.1.12	**Effect of pruning on sapota at normal spacing cv. Kalipatti**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone-I (AES–III) having sapota cv. Kalipatti orchards more than 30 years old are recommended to prune 1.0 m upper terminal growth once during December month for getting gradually higher yield and net returns. દક્ષિણ ગુજરાતનાં ભારે વરસાદવાળા ખેત આબોહવાકીય વિસ્તાર (પરિસ્થિતિ-3) માં ૩૦ વર્ષથી વધુ ઉંમરના ચીકુ કાલીપત્તી જાતના વાડી ધરાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ઝાડના ટોચના ૧ મીટર ભાગને એક વખત ડિસેમ્બર મહિના દરમ્યાન કાપીને દૂર કરવામાં આવે તો ક્રમશ: ઉત્પાદન અને ચોખ્ખી આવકમાં વધારો થાય છે. **Approved with following suggestion/s:** 1. Change the title as ‘Effect of pruning on sapota cv. Kalipatti at normal spacing'. 2. Recast the recommendation. (**Action:** Associate Research Scientist, Fruit Research Station, NAU, Gandevi)
14.4.1.13	**Effect of liquid manures on quality and productivity of banana and papaya grown under alternate row system.**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone-I (AES-III) growing banana and papaya under alternate row system are advised to apply 7.2 kg NADEP manure along with 2 lit./plant Jeevamrut and 2 lit./plant Amreetpani to each of banana and papaya crop for achieving higher yield and net return. **Detail management for banana and papaya alternate row system**

i. Planting: Prepare the pits at 2.4 m x 1.5 m distance. Sow plant by applying 2.4 kg of NADEP manure per plant along with *PSB* and *Azatobactor* biofertilizer and *Trichoderma* and *Pseudomonas* bio-pesticide 2 ml or g each/plant.
ii. 2.5 & 5 MAP: Apply 2.4 kg of NADEP manure per plant each time.
iii. Apply liquid manures Jeevamrut and Amreetpani @ 400 ml/plant at one month interval starting from planting in 5 equal splits.
iv. In banana, drench 500 ml 0.5% each of *Trichoderma* and *Pseudomonas* after one month of planting.
v. In papaya, drench 400 ml 0.5% each of *Trichoderma* and *Pseudomonas* at 30 and 60 days of planting.
vi. For plant protection measure, use the 40 fruit fly traps/ ha for control of fruit fly in papaya and alternate spray of cow urine 2 %, neem oil 0.02%, neem extract 0.5% for control of sucking pest and disease in the both crops as per need basis.

દક્ષિણ ગુજરાતનાં ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તાર-૧ (પરિસ્થિતિ-૩) માં સેન્દ્રિય ખેતીથી કેળ અને પપૈયા એકાંતરે હાર પધ્ધતિથી ઉગાડતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખું વળતર મેળવવા કેળ અને પપૈયાના દરેક છોડને ૭.૨ કિલોગ્રામ નાડેપ ખાતર તેમજ ૨ લી./છોડ જીવામૃત અને ૨ લી./છોડ અમૃત પાણી પણ આપવું.

કેળ અને પપૈયાની એકાંતરે હાર રોપણી પધ્ધતિ માટે વિગતે માવજતો:

• રોપણી સમયે: ૨.૪ મી × ૧.૫મીનાં અંતરે ખાડા કરવાં. છોડ દીઠ ૨.૪ કીગ્રા નાડેપ ખાતર સાથે પી.એસ.બી. અને એઝેટોબેકટર જેવાં જૈવિક ખાતર અને ટ્રાયકોડર્માં અને સ્યુડોમોનાસ જેવી જૈવિક જંતુનાશકર મિલી. અથવા ગ્રામ /છોડ પ્રમાણે નાંખી રોપણી કરવી.
• રોપણી બાદ ૨.૫ અને ૫ મહિને :દરેક વખતે છોડ દીઠ ૨.૪કીગ્રા નાડેપ ખાતર આપવું.
• રોપણીનાં એક મહિના બાદથી જીવામૃત અને અમૃત પાણી ૪૦૦ મીલી/છોડ લેખે પાંચ સરખા હપ્તામાં ૧મહિનાનાં આંતરે આપવું.
• કેળ પાકમાં, રોપણીનાં એક મહિના બાદ ૫૦૦મિલી ૦.૫ % ટ્રાયકોડર્માં અને સ્યુડોમોનાસનું દ્રાવણ રેડવું.
• પપૈયા પાકમાં રોપણીના ૩૦ અને ૬૦ દિવસે, ૪૦૦મિલી ૦.૫% ટ્રાયકોડર્માં અને સ્યુડોમોનાસનું દ્રાવણ રેડવું.

પાકમાં રોગ-જીવાત નિયંત્રણ માટે, પપૈયામાં પ્રતિ હેક્ટર ૪૦ ફ્રુટ ફ્લાય ટ્રેપ લગાવવા અને બંને પાકમાં ચૂસીયા પ્રકારની જીવાત અને રોગ નિયંત્રણ માટે જરૂરિયાત મુજબ વારાફરતી ગૌમૂત્ર ૨%, લીંબડાનું તેલ ૦.૦૨ %, લીંબોળીનો અર્ક ૦.૫ % છંટકાવ કરવો.

Approved.

(**Action:** Associate Research Scientist, ACSS, ACHF, NAU, Navsari)

14.4.1.14 Integrated Nutrient Management in cauliflower (*Brassica oleracea* var. Botrytis.)

The farmers of South Gujarat Agro-climatic Zone-I growing cauliflower are advised to apply 20 kg N+ 40 kg P_2O_5 along with 20 t/ha FYM and 5.70 t/ha bio compost as basal dose. The 20 kg nitrogen should be applied 30 DAT as top dressing to get higher yield and return.

દક્ષિણ ગુજરાતમાં ફૂલગોબીની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ૨૦ કિલો નાઈટ્રોજન + ૪૦ કિલો ફોસ્ફરસની સાથે ૨૦ ટન/હે છાણીયું ખાતર અને ૫.૭૦ ટન બાયોકમ્પોસ્ટ પાયાના ખાતર તરીકે આપવું. બાકી રહેતો ૨૦ કિલો નાઈટ્રોજન ફેરરોપણીના ૩૦ દિવસ બાદ આપવાથી વધુ ઉત્પાદન અને આવક મળે છે.

Approved with following suggestion/s:

Recast the recommendation.

(**Action:** Research Scientist, Dept. of Vegetable Science, ACHF, NAU, Navsari)

14.4.1.15 Response of okra to foliar application of Silicon

The farmers of South Gujarat growing summer okra are advised to spray silicon based liquid fertilizer@ 2 ml/l (silicon:0.79% w/v + boron:0.18% w/v - OSAB-Si+) at 30, 45 and 60 DAS to obtain higher yield and net income.

દક્ષિણ ગુજરાતમાં ઉનાળું ભીંડાની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, સિલિકોન બેઈઝ્ડ પ્રવાહી ખાતર ૨ મિલી/લી. મુજબ (સિલિકોન: ૦.૭૯ % + બોરોન ૦.૧૮ % - OSAB-Si+) વાવેતરના ૩૦,૪૫ અને ૬૦ દિવસ બાદ છંટકાવ કરવાથી વધુ ઉત્પાદન અને આવક મળે છે.

	Approved with following suggestion/s: 1. Recast the recommendation. (**Action:** Research Scientist, Dept. of Vegetable Science, ACHF, NAU, Navsari)
14.4.1.16	**Performance of grafted V/Snon-grafted brinjal during rainy season under South Gujarat conditions**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone-I (AES-III) are advised to adopt grafting technique using wild species (*Solanum torvum*) as rootstock and pink and purple *Surati Ravaiya* brinjal as scion for better plant survival during rainy season, better fruit set, comparatively less shoot and fruit borer infestation, extended life span, higher yield and net returns. દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકીય વિસ્તાર-૧ (એ.ઈ.એસ.-૩)માં વરસાદની ૠતુમાં સૂરતી રવૈયા રીંગણની ખેતી સાથે સંકળાયેલ ખેડૂતોને ભલામણ કરવામાં આવે છે કે, જંગલી રીંગણની પ્રજાતિ (સોલેનમ ટોરવમ)ના મૂળકાંડ અને ગુલાબી અને જાંબલી સૂરતી રવૈયા રીંગણનો ઉપરોપ તરીકે ઉપયોગ કરીને કલમ પદ્ધતિ દ્વારા બનાવેલ છોડમાં મરણનું પ્રમાણ ઓછું રહે છે, પાકનો જીવનકાળ વધે છે, વધુ ફળધારણ મળે છે, ડૂંખ અને ફળ કોરી ખાનાર ઈયળનો ઉપદ્રવ ઓછો થવાથી વધુ ઉત્પાદન અને આર્થિક નફો મળી શકે છે. **Approved with following suggestion/s:** Recast the recommendation. (**Action:** Research Scientist, Dept. of Vegetable Science, ACHF, NAU, Navsari)
14.4.1.17	**Comparative performance of different parthenocarpic cultivars of cucumber through vegetative propagation under poly house conditions**
	Farmers cultivating parthenocarpic cucumber varieties in greenhouse are advised to use newly pruned side shoots of current crop as propagating material for raising of successive crop without paying high price for seed which performs equally well to the crop raised from seeds and concurrently, excessive plants generated from pruned side shoots can be sold for additional income. ગ્રીનહાઉસમાં કાકડીની ખેતી સાથે સંકળાયેલ ખેડૂતોને ભલામણ કરવામાં આવે છે કે વાનસ્પતિક પ્રસર્જન દ્વારા ચાલુપાકમાં નવી છટણી કરેલ શાખાઓમાંથી તૈયાર કરેલ કટકા કલમ દ્વારા નવા છોડ તૈયાર કરી બીજનો ઊંચો ભાવ ચૂકવ્યા વિના ક્રમિક પાક ઉગાડી શકાય છે, જે બીજમાંથી ઉગાડવામાં આવતાં પાક જેવુંજ પ્રદર્શન કરે છે અને સાથે નવા પીલાઓમાંથી તૈયાર કરેલ વધારાના છોડનું વેચાણ કરી વધારાની આવક મેળવી શકાય છે. **Approved with following suggestion/s:** Recast the recommendation. (**Action:** Research Scientist, Dept. of Vegetable Science, ACHF, NAU, Navsari)
14.4.1.18	**Effect of plant growth regulators on growth, quality and yield of *Dendrobium* orchid under NVPH.**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone-I growing *Dendrobium* orchid under naturally ventilated polyhouse are advised to spray GA_3 @50 ppm (1 g/20 lit.) at every two months interval throughout the year for getting higher spike yield and net return. દક્ષિણ ગુજરાતના ભારે વરસાદીય ખેત આબોહવાકીય વિસ્તાર ૧માં ડેંડ્રોબીયમ ઓર્કિડની કુદરતી હવા ઉજાસ વાળા પોલીહાઉસમાં ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ૫૦ પીપીએમ (૧ ગ્રામ/૨૦ લીટર પાણીમાં) GA_3નો દર બે મહિનાના આંતરે છંટકાવ કરવાથી વધુ ઉત્પાદન અને આવક મેળવી શકાય છે. **Approved with following suggestion/s:** Recast the recommendation. (**Action**: Prof. & Head, Dept. of Flori. & Landscape Archi., ACHF, NAU, Navsari)
14.4.1.19	**Response of gladiolus cv. Sancerre to different levels of fertilizers (N & P) in respect to growth and yield parameters.**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone-1 (AES-III) cultivating gladiolus are advised to apply 125: 150: 200 kg NPK/ha along with FYM @ 8 t/ha during bed preparation and remaining dose of nitrogen *i.e.* 125 kg should be

	applied at 40 days after planting to produce higher yield and net return. દક્ષિણ ગુજરાતના ભારે વરસાદીય ખેત આબોહવાકીય વિસ્તાર-૧ માં (એ.ઈ.એસ.-૩) ગ્લેડીયોલસની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ૧૨૫: ૧૫૦: ૨૦૦કિગ્રા. ના.ફો.પો./હેક્ટર સાથે છાણિયું ખાતર ૮ ટન/હેક્ટર પાયાના ખાતર તરીકે આપવું તેમજ બાકીનો ૧૨૫ કી.ગ્રા નાઈટ્રોજનનો જથ્થો રોપણી બાદ ૪૦ દિવસે આપવાથી વધુ ઉત્પાદન અને આવક મેળવી શકાય છે. **Approved with following suggestion/s:** Recast the recommendation. (**Action**: Prof. & Head, Dept. of Flori. & Landscape Archi., ACHF, NAU, Navsari)
14.4.1.20	**Standardization of nitrogen and phosphorus levels in Chrysanthemum var 'Ratlam Selection**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone-I (AES-III), growing Chrysanthemum variety 'Ratlam Selection' are advised to apply 150-100-100 kg NPK / ha along with FYM @ 10 t/ha. Full dose of phosphorus, potassium and half dose of nitrogen should be applied as basal dose whereas, remaining half dose of nitrogen should be applied after 30 days of transplanting for obtaining higher yield and net return. દક્ષિણ ગુજરાતના ભારે વરસાદીય ખેત આબોહવાકીય વિસ્તાર ૧ (એ.ઈ.એસ.-૩) માં સેવંતીની રતલામ સિલેકશન જાત ઉગાડનાર ખેડૂતોને ભલામણ કરવામાં આવે છે કે, રાસાયણિક ખાતર તરીકે કુલ ૧૫૦:૧૦૦:૧૦૦ કિગ્રા. ના.ફો.પો./હેક્ટર તેમજ ૧૦ ટન છાણિયું ખાતર આપવું. ફોસ્ફરસ અને પોટાશનો સંપૂર્ણ જથ્થો અને નાઈટ્રોજનનો અડધો જથ્થો પાયાના ખાતર તરીકે તથા બાકીનો નાઈટ્રોજનનો અડધો જથ્થો ફેરરોપણી બાદ ૩૦ દિવસે આપવાથી વધુ ઉત્પાદન અને આવક મેળવી શકાય છે. **Approved with following suggestion/s:** Recast the recommendation. (**Action**: Prof. & Head, Dept. of Flori. & Landscape Archi., ACHF, NAU, Navsari)
14.4.1.21	**Effect of different growing conditions on growth and flowering of heliconia varieties.**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone-1 (AES-III) are advised to grow heliconia under 25 % green agro-shadenet house for getting higher yield and net return. દક્ષિણ ગુજરાતના ભારે વરસાદીય ખેત આબોહવાકીય વિસ્તાર-૧ (એ.ઈ.એસ.-૩) ના ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ૨૫ % છાંયડાવાળી લીલી એગ્રો શેડનેટ હાઉસમાં હેલીકોનીયાની રોપણી કરવાથી વધુ ઉત્પાદન અને આવક મેળવી શકાય છે. **Approved with following suggestion/s:** Recast the recommendation. (**Action**: Prof. & Head, Dept. of Flori. & Landscape Archi., ACHF, NAU, Navsari)
14.4.1.22	**Effect of foliar spray of polyamines and banana enriched sap on Rose (*Rosa hybrida* L.) under polyhouse conditions.**
	Farmers cultivating rose in polyhouse are advised to give foliar application of enriched banana psuedostem sap (Novel O.L.F. @ 200 ml/10 lit. of water) 2 times at 15 days interval from second week of November to obtain higher yield and net returns. ગુજરાતના ગ્રીનહાઉસમાં ગુલાબની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે નવેમ્બર માસના બીજા અઠવાડીયેથી છોડ પર કેળના થડનો રસ (નોવેલ ઓ.એલ.એફ. ૨૦૦ મીલી/૧૦ લીટર) બે વખત ૧૫ દિવસના અંતરે છંટકાવ કરવાથી વધુ ઉત્પાદન સાથે ચોખ્ખો નફો મેળવી શકાય છે. **Approved with following suggestion/s:** Recast the recommendation (**Action**: Prof. & Head, Dept. of Flori. & Landscape Archi., ACHF, NAU, Navsari)
14.4.1.23	**Standardization of suitable formulation for preparation of instant mango milk shake powder**
	Food processors are advised that instant mango milk shake powder can be prepared using 45 % of mango powder, 35 % of milk powder, 20 % sugar with 0.5 %

<table>
<tr><td></td><td>citric acid. The product packed in 200 gauge PP pouches (50 microns) found stable up to 6 months at room temperature.

આથી ફૂડ પ્રોસેસરને સલાહ આપવામાં આવે છે કે ૪૫ % મેંગો પાવડર, ૩૫ % મિલ્ક પાવડર અને ૨૦ % ખાંડ સાથે ૦.૫ % સાઈટ્રીક એસીડ ભેળવીને ઈન્સ્ટન્ટ મેંગો મિલ્ક શેક પાવડર બનાવી શકાય છે. તેને ૨૦૦ ગેજની પીપી થેલીમાં (૫૦ માઈક્રોન) પેક કરી ૬ માસ સુધી સામાન્ય તાપમાને સ્થિર જોવા મળેલ છે.

Approved with following suggestion/s:
1. Recast the recommendation.
2. Subject to approval in Agril. Engg. Subcommittee.
(Action: Prof. & Head, Dept. of Post-Harvest Technology, ACHF, NAU, Navsari)</td></tr>
<tr><td>14.4.1.24</td><td>Standardization of protocol for the extension of shelf life of fresh sapota fruit</td></tr>
<tr><td></td><td>Farmers and entrepreneurs are advised to extend the shelf life of sapota fruits by packing in CFB box (10 kg capacity) and pre-cooling at 10°C for 8 hours. The shelf life of pre-cooled sapota fruits can be extended up to 12 days at 11°C including 3 days transportation.
<table>
<tr><td>Harvesting</td></tr>
<tr><td>↓</td></tr>
<tr><td>Packaging in CFB 10kg box</td></tr>
<tr><td>↓</td></tr>
<tr><td>Pre-cooling at 10°C for 8 hours</td></tr>
<tr><td>↓</td></tr>
<tr><td>Transportation (3 days at ambient temperature)</td></tr>
<tr><td>↓</td></tr>
<tr><td>Storage at 11 $^{\circ}$C</td></tr>
</table>
ખેડૂતો અને ઉદ્યોગ સાહસિકોને સલાહ આપવામાં આવે છે કે, ચીકુની સંગ્રહ શક્તિ વધારવા માટે તેને સી.એફ.બી. ખોખા (૧૦ કિગ્રા ક્ષમતા)માં ભરી ૧૦° સે. તાપમાને ૮ કલાક સુધી પ્રિ-કુલીંગ કરવા જોઈએ. આ પ્રિકુલ કરેલ ચીકુના ફળની સંગ્રહ શક્તિ ૧૧° સે. તાપમાને ૩ દિવસના પરિવહન સાથે ૧૨ દિવસ સુધી વધે છે.

પધ્ધતિ -
લણણી
↓
સી એફ બી ખોખામા પેક કરવું (૧૦ કિગ્રા)
↓
પ્રી –કુલીંગ (૧૦° સે. ૮ કલાક માટે)
↓
પરિવહન (સામાન્ય તાપમાને ૩ દિવસ માટે)
↓
સંગ્રહ(૧૧° સે.)

Approved with following suggestion/s:
Subject to approval in Agril. Engg. Subcommittee.
(Action: Prof. & Head, Dept. of Post-Harvest Technology, ACHF, NAU, Navsari)</td></tr>
<tr><td>14.4.1.25</td><td>Exploration and evaluation of local weed flora for value addition through drying</td></tr>
<tr><td></td><td>People interested in cottage industry and entrepreneurs are advised to use weeds for making dry flower products. Leaves of Argyreia speciosa can be dried in 7 days, inflorescence of Celosia argentea and Setaria verticillata in 5 days, Cyperus rotundus and Dinebra arabica in 4 days and Eragrostis pilosa in 3 days through press drying method at room temperature for use in dry flower products up to 6 months.

લઘુ ઉદ્યોગમાં રુચિ ધરાવતા લોકો અને ઉદ્યોગ સાહસિકોને ભલામણ કરવામાં આવે છે કે નીંદામણનો ઉપયોગ સુકા ફૂલોની બનાવટો માટે કરી શકાય છે.ઉચ્ચ ગુણવત્તા મેળવવા અને લાંબા સમય સંગ્રહ કરવા માટે સમુદ્ર શોષના પાનને ૭ દિવસ, ઘાસલાંપડું અને બોદરીના ફૂલને ૫ દિવસ, ચીઢો અને ખારીયું ના ફૂલને ૪ દિવસ અને ભૂમસીના ફૂલને ૩ દિવસ માટે પ્રેસ ડ્રાઈંગ પધ્ધતિ દ્વારા સુકવણી કરી સુકા ફૂલોની ગોઠવણીમાં ૬ મહિના</td></tr>
</table>

	સુધી ઉપયોગ કરી શકાય છે. **Approved with following suggestion/s:** 1. Approved in 13th CJA Horticulture sub-committee at SDAU but deferred in Agril. Engg. Sub-committee. 2. Now approved in 14th CJA Agril. Engg. Sub-committee at JAU, after incorporation of necessary data. (**Action**: Prof. & Head, Dept. of Flori. & Landscape Archi., ACHF, NAU, Navsari)
14.4.1.26	**Growth and productivity of *Melia composita* Willd. under different spatial geometries**
	Farmers of South Gujarat Heavy Rainfall Agro-climatic Zone-I are recommended to grow *Melia composita* Syn. *M. dubia* (Malabar neem, Burma neem, nimbaro) at 2 x 2 m spacing for getting higher wood biomass and economic returns. દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તાર-૧ના ખેડૂતોને ભલામણ કરવામાં આવેછે કે મિલિયા કોમ્પોઝિટા, સમાનઅર્થી મિલિયા ડુબીઆ (બર્મા નીમ, મલબાર નીમ, નિમ્બારો) નુ વાવેતર ૨ x ૨ મી. ના અંતરે કરી વધારે બાયોમાસ અને આર્થિક લાભ લઈ શકે છે. **Approved.** (**Action**: Prof. & Head, Dept. of Silviculture & Agroforestry, ACHF, NAU, Navsari)
14.4.1.27	**Influence of weather parameters on foraging activity of stingless bees (*Tetragonula laeviceps*) near the nests**
	Farmers of South Gujarat Heavy Rainfall Agro-climatic Zone-I (AES-III) are advised to avoid application of pesticides during 13:00 to 15:00 hrs because of higher foraging activity (moving in and out of the nest) of stingless bees (*Tetragonula laeviceps*). દક્ષિણ ગુજરાતના ભારે વરસાદિય (ખેત આબોહવાકીય વિસ્તાર-૧) ના ખેડૂતોને સલાહ આપવામાં આવે છે કે બપોરે ૧ થી ૩ વાગ્યા દરમ્યાન કુચીમાખી (સ્ટીંગલેસ બી) વધારે કાર્યરત (અવર જવર) જોવા મળતી હોવાથી આ સમયગાળા દરમ્યાન જંતુનાશક દવાનો છંટકાવ ટાળવો. **Approved.** (**Action**: Prof. & Head, Dept. of Forest Product Uti., CoF, ACHF, NAU, Navsari)
14.4.1.28	**Nesting habitat and nest architecture of stingless bees (*Tetragonula laeviceps*) in South Gujarat condition**.
	While making the hive for the stingless bees (*Tetragonula laeviceps*), beekeepers are advised to keep entrance opening of hive in the range of 75 to 150 mm^2 with minimum hive volume of 1330 cm^3. મધમાખી પાલકોને કુચીમાખી (સ્ટીંગલેસ બી) માટેની મધપેટી બનાવતી વખતે તેમાં પ્રવેશદ્વારનું છિદ્ર ૭૫ થી ૧૫૦ ચોરસ મિલી મીટર તેમજ મધપેટીનું ન્યુનત્તમ કદ ૧૩૩૦ ઘન સેન્ટીમીટર રાખવાની સલાહ આપવામાં આવે છે. **Approved.** (**Action**: Prof. & Head, Dept. of Forest Product Uti., CoF, ACHF, NAU, Navsari)
**	**Following four recommendations were presented in other subcommittee and presented here for the information.**
	Effect of water application in different layers of soil on growth and yield of drip irrigated young mango plantation. Already presented in the crop production and NRM subcommittee and endorsed by the Horticulture & Agroforestry sub committee
	Study on combined effect of irrigation, fertigation and mulching levels on fruit yield and quality of water melon Already presented in the crop production and NRM subcommittee and endorsed by the Horticulture & Agroforestry sub committee
	Effect of rate and frequency of micronutrient application on production of banana under drip irrigation Already presented in the crop production and NRM subcommittee and endorsed by the Horticulture & Agroforestry sub committee
	Proposal for release of *Melia dubia* Cav. NAU-9/1 (Proposed name GNMD 1)
	Approved with following suggestion/s:

	It was presented in crop improvement subcommittee (**Action**: Prof. & Head, Dept. of Silvi. & Agroforestry, CoF, ACHF, NAU, Navsari)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

14.4.1.29	**Studies on the efficacy of different plant growing structure on growth and flower production of gerbera**
	Farmers of North Gujarat Agro-climatic Zone IV are advised to grow gerbera under 30 per cent green shade net house during December to May for higher yield and net return. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૪ ના ખેડૂતોને સલાહ આપવામાં આવે છે કે, ૩૦ ટકા છાંયડાવાળી લીલી શેડનેટમાં ડીસેમ્બર થી મે દરમ્યાન જર્બેરાની રક્ષિત ખેતી કરવાથી વધુ ઉત્પાદન અને આવક મેળવી શકાય છે. **Approved with following suggestion/s:** Recast the recommendation. **(Action:** Professor & Head, Dept. of Horticulture, CPCA, SDAU, SKNagar)
14.4.1.30	**Effect of spacing and fertility levels on growth, yield and quality of carrot cv. GDC 1**
	Farmer of North Gujarat Agro-climatic Zone–IV are advised to grow carrot at 15 cm row spacing with application of 80:40:40 kg NPK/hato get higher root yield and net return. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૪ ના ગાજર ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ૧૫ સે.મી. અંતરે હારમાં વાવણી કરી ૮૦:૪૦:૪૦ કિલોગ્રામ ના.ફો.પો./ હે રાસાયણિક ખાતર આપવાથી વધુ ઉત્પાદન અને નફો મેળવી શકાય છે. **Approved with following suggestion/s:** 1. Recast the recommendation. 2. Write leaves instead of tillers. **(Action:** Research Scientist, Seed Spices Research Station, SDAU, Jagudan)
14.4.1.31	**Effect of spacing and nitrogen fertilizer on growth and yield of chrysanthemum cv. IIHR 6**
	Farmers of North Gujarat Agro-climatic Zone-IV growing chrysanthemum are advised to follow the spacing of 45 cm × 30 cm and apply 250 kg/ha nitrogen. Nitrogen should be given in five split *i.e.* 20% dose of nitrogen (50 kg/ha) along with recommended dose of phosphorus and potash @ 50 kg/ha each as basal and remaining 80 % dose of nitrogen (200 kg/ha) in four equal split (50 kg/ha) as a top dressing at 30, 60, 90 and 120 days after transplanting should be applied to obtain higher yieldand net return. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૪ ના ગુલદાઉદીની ખેતી કરતા ખેડૂતોને સલાહ આપવામાં આવે છે કે, ગુલદાઉદીના રોપાની ફેરરોપણી ૪૫સે.મી. × ૩૦સે.મી. ના અંતરે કરવી અને ૨૫૦ કિલો/હેક્ટર નાઈટ્રોજન ખાતર આપવું. નાઈટ્રોજન ખાતર પાંચ સરખા હપ્તામાં આપવું. જે પૈકી નાઈટ્રોજન ખાતરનો ૨૦ % જથ્થો(૫૦કિલો/હેક્ટર) ભલામણ કરેલ ૫૦કિલો/હેક્ટર ફોસ્ફરસ અને ૫૦કિલો/હેક્ટર પોટાશ ખાતર સાથે પાયામાં અને બાકી રહેલ નાઈટ્રોજન ખાતરનો ૮૦ % જથ્થો (૨૦૦ કિલો/હેક્ટર) ચાર સરખા ભાગમાં (૫૦કિલો/હેક્ટર) ફેરરોપણીના ૩૦, ૬૦, ૯૦ અને ૧૨૦દિવસ પછી પૂર્તિ ખાતર તરીકે આપવાથી વધુ ઉત્પાદન અને આવક મેળવી શકાય છે. **Approved with following suggestion/s:** Recast the recommendation. **(Action:** Assistant Research Scientist, Fruit Research Station, SDAU, Dehgam)

14.4.2 RECOMMENDATION FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

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JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

14.4.2.1	**Estimation of effect of growing degree days (GDD) on phenology, flowering and yield on different mango varieties under Saurashtra Agro-climatic condition**
	It is observed that the growing degree days (GDD) have direct influence on BDS, flowering, fruit set and various fruit development stages, but not for the physical characters of fruits. The GDD requirements of different varieties were found unique and a mango variety Kesar requires low GDD for maturity with higher Heat Use Efficiency. **Approved.** **(Action:** Professor & Head, Dept. of Horticulture, CoA, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

14.4.2.2	**Screening of salt tolerant rootstock for mango from South Gujarat region**
	Genotype 73-2 was found better in terms of germination, seedling growth and survival at EC 4 to 5 dSm^{-1} salinity level. Scientists, those who are interested to work on salt tolerant rootstock of mango may take advantage in hybridization programme. **Approved with following suggestion/s:** 1. Initiate the trial with using salt tolerance rootstock 13-1 and Valliakolamban. 2. After comparison, prepare a proposal of salt tolerant rootstock and present in crop improvement and horticulture sub-committee. (**Action:** Professor & Head, Dept. of Horticulture, ACHF, NAU, Navsari)
14.4.2.3	**Screening and selection of Superior plant types in Comparison to Alphonso mango**
	Out of the total 148 trees screened, 30 regular bearing trees (Alternate bearing index >.25) were evaluated for sensory and biochemical analysis of fruits as per fruit descriptors for mango. Three selections (25, 29 and 30) were found promising in shape of fruit, less peel, colour of pulp, pulp percentage, taste and other biochemical parameters and can be further evaluated in block plantations. Incidence of spongy tissue was not found and there was no major incidence of pest and diseases on these plants. **Approved with following suggestion/s:** 1. Take the replicated trial of selected germplasm number 25, 29 and 30 with Alphanso and Sonpari as check. (**Action:** Research Scientist (Horti.), AES, NAU, Navsari)
14.4.2.4	**Determination of nutritional composition of minor fruits**
	Minor fruits (mentioned below) of South Gujarat are found rich in following parameters as compared to banana and sapota.

Fruits	Composition better than banana and sapota
Palmyra palm	K (3902 ppm), Ca (739 ppm), P (268 ppm) and Zn (2.79 ppm)
Jamun	Total phenol (241.6 mg/100g), Antioxidant activity (126.5 mg/100g), Ca (324 ppm) and Mg (241 ppm)
White wax apple	Antioxidant activity (16.4 mg/100 g)
Carambola	Vitamin-C (16.1 mg/100 g), Total phenol (20.8 mg/100 g), Antioxidant activity (28.4 mg/100 g), K (4099 ppm), Ca (657 ppm), Mn (3.01 ppm) and Cu (2.75 ppm)
Tamarind	Carbohydrates (62.8 %), Protein (2.81 %), Vitamin-C (18.9 mg/100 g), Total phenol (25.6 mg/100 g), Antioxidant activity (30.4 mg/100 g), K (12433 ppm), Ca (2759 ppm), Mg (1286 ppm), P (1099 ppm), Fe (154.3 ppm), Mn (6.47 ppm), Zn (7.11 ppm) and Cu (6.13 ppm)
Jackfruit	Total phenol (31.8 mg/100 g), Antioxidant activity (62.9 mg/100 g), K (5135 ppm), Ca (405 ppm), Mg (533 ppm) and Mn (5.12 ppm)
Star gooseberry	Protein (4.31 %), β carotene (100.7 μg/100 g), Vitamin-C (17.1), Total phenol (105.0 mg/100 g), Antioxidant activity (83.7 mg/100 g), K (4411 ppm), Ca (4933 ppm), Mg (1518 ppm), P (545 ppm), Fe (17.2 ppm) and Zn (3.94 ppm)

Lasoda	β carotene (62.7 μg/100 g), Total phenol (41.8 mg/100 g), Antioxidant activity (55.7 mg/100 g), K (4644 ppm), Ca (656 ppm), P (431 ppm), Mn (3.51 ppm) and Zn (2.06 ppm)
Kair	Protein (2.24 %), Total phenol (61.5 mg/100 g), Antioxidant activity (77.7 mg/100 g), K (7313 ppm), Ca (1011 ppm), Mg (723 ppm), P (999 ppm) and Zn (4.71 ppm)
Rayan	β carotene (87.63 μg/100 g), total phenol (157.4 mg/100 g), Antioxidant activity (92.6 mg/100 g), Ca (284 ppm) and P (321 ppm)

Approved.

(**Action:** Professor & Head, Dept. of Horticulture, ACHF, NAU, Navsari)

14.4.2.5 Evaluation of Eucalyptus Clones for growth and biomass

It is recommended that *Eucalyptus camaldulensis* clone T15 (IFGTBEC-1) grown in south Gujarat Heavy Rainfall Agro-climatic Zone-1, (AES II)I can be used for further breeding/ improvement programme for better productivity at 3 m x 1.5 m spacing.

Approved with following suggestion/s:

Mention the original name or code of T-15 collected from ICFRE-IFGTB, Coimbatore.

(**Action:** Professor & Head, Dept. of Forest Biology and Tree Improvement, ACHF, NAU, Navsari**)**

14.4.2.6 Mass propagation of *Acacia mangium* through axillary bud

Tissue culture scientists are informed to surface sterilize the axillary buds of *Acacia mangium* with absolute alcohol (100 %) for 1 min +mercuric chloride (0.1 %) for 6 min followed by thorough washing and culturing in MS media supplemented with combination 1.0 mg/l BAP + 0.1 mg/l Kin for shoot initiation and multiplication and further rooting the microshoots in ½ MS supplemented with 2.0 mg/l IBA. Vermiculite medium may be used for hardening of *in vitro* plantlets for large scale propagation of *A. mangium*.

Approved.

(**Action:** Professor & Head, Dept. of Forest Biology and Tree Improvement, ACHF, NAU, Navsari**)**

14.4.2.7 Effect of different salinity levels of irrigation water on young teak plants

Scientific community is hereby informed that the critical limit of irrigation saline water for teak clones *viz.*, CPT-262, CPT-266 and local is EC 4.0 dSm^{-1}.

Approved.

(**Action:** Professor & Head, Dept. of Natural Resource Mgmt., ACHF, NAU, Navsari**)**

14.4.2.8 Effect of different salinity levels of irrigation water on clones of *Casuarina equisetifolia*

Scientific community is hereby informed that, *Casuarina equisetifolia* cuttings could be grown successfully up to the EC 8.0 dSm^{-1} saline irrigation water, without any remarkable reduction in biomass. Among the tested clones, IFGTBCE-1 clone is found to be more salt tolerant and could be grown up to EC 12.0 $dSm^{-1}$of saline irrigation water. The critical limit of salinity of irrigation water, for *Casuarina equisetifolia* is recorded EC 16.0 dSm^{-1}.

Approved.

(**Action:** Professor & Head, Dept. of Natural Resource Mgmt., ACHF, NAU, Navsari**)**

14.4.2.9 Assessment of Land use / Land cover Changes in South Gujarat Using Remote Sensing and Geographical Information System

It is observed that Surat district recorded major shift (18.25 %) from forest area to orchards, plantations and gardens. Marshy lands have increased in Navsari (28.90%) and Bharuch (2.38%) district. Built up areas significantly increased in Navsari (69.09 %) followed by Narmada (44.40 %) district. The barren land may be planted with suitable forest / fruit species which will provide environmentally sustainable economic growth of the region. Therefore, policy makers, state Agriculture and Forest Departments are suggested to utilize the technique of Remote Sensing and GIS for assessing the changes in land use, at regular basis, to maintain the vegetative cover, essentially required to sustain the ecological balance of the

	region. **Approved.** **(Action:** Professor & Head, Dept. of Natural Resource Mgmt., ACHF, NAU, Navsari**)**

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

14.4.2.10	**Studies on Olive (*Oleae europaea* L.) based agrisilviculture under rainfed condition**
	In North Gujarat Agro-climatic Zone IV, the cowpea crop can be grown with early five year olive plants as inter crop to get additional income under rainfed condition. **Approved.** **(Action:** Research Scientist, Agro Forestry Research Station, SDAU, SKNagar)

14.4.3 NEW TECHNICAL PROGRAMMES

Chairman	Dr. C. J. Dangaria, Hon'ble Vice Chancellor, NAU, Navsari
Co-Chairmen	Dr. B. N. Patel, Principal & Dean, ACHF, NAU, Navsari Dr. R. R. Sankhela, Research Scientist, Agro Forestry, SDAU, SKNagar
Rapporteurs	Dr. N. D. Polara, Associate Professor, Dept. of Horticulture, JAU, Junagadh Dr. M. J. Patel, Associate Professor, Dept. of Horticulture, AAU, Anand Dr. Manmohan Dobriyal, Assoc. Professor (Silviculture), NAU, Navsari

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title	Suggestion/s and Action
14.4.3.1	Study on intercropping in aonla base cropping system	**Approved with following suggestion/s:** 1. Delete treatment T_5, T_6, T_7 and T_8. 2. Add 'Aonla + fenugreek' treatment. 3. Repetition 4 instead of 3. (**Action:** Prof. & Head, Department of Horticulture, BACA, AAU, Anand)
14.4.3.2	Effect of planting time and spacing on growth and flower yield in gaillardia cv. Local	**Approved.** (**Action:** Prof. & Head, Department of Horticulture, BACA, AAU, Anand)
14.4.3.3	Nutrient management through organics in broccoli (*Brassica oleracea* var. *italica* L.)	**Approved with following suggestion/s:** 1. Add 'Palam Samruddhi' variety in title with change instead of 'Pusa KTS-1' if seed is available. 2. Change the RDF as 100:50:50 NPK kg/ha. 3. Add observation of 'Beta-carotene' and stalk length. **(Action:** Principal, College of Horticulture, AAU, Anand)
14.4.3.4	Nutrient management through organic sources in vegetable Cluster bean cv. Pusa Navbahar	**Approved with following suggestion/s:** 1. Merge two objectives in to one. 2. Change the title as 'Nitrogen management through organic sources in vegetable cluster bean cv. Pusa Navbahar'. (**Action:** Research Scientist, Main Vegetable Research Station, AAU, Anand)
14.4.3.5	Effect of different thickness and level of IBA on hard wood cutting for multiplication of drumstick	**Approved with following suggestion/s:** 1. Take thickness of cutting as 15, 25, 35 mm. 2. Number of cutting will be 30 instead

		of 15 in each treatment. (**Action:** Principal, Polytechnic in Horticulture, Model Farm, AAU, Vadodara)
14.4.3.6	Effect of height of heading back and time of pruning on growth, flowering, yield and quality in old orchard of Aonla cv. Gujarat Aonla 1	**Approved with following suggestion/s:** In treatment: (a) Heading back should be 2 m, 2.5 m and 3 m from ground level. (**Action:** Principal, Polytechnic in Horticulture, Model Farm, AAU, Vadodara)
14.4.3.7	Effect of pruning time and level of pruning in *mogra* (*Jasminum sambac)* var. Local	**Approved with following suggestion/s:** 1. In treatment: (B) Pruning level should be20 cm, 40 cm and 60 cm. 2. Add observation on essential oil content of flower. (**Action:** Principal, Polytechnic in Horticulture, Model Farm, AAU, Vadodara)
14.4.3.8	Optimization of NPK requirement for growth and curd yield of broccoli (*Brassica oleracea* var. *italica* L.) under Middle Gujarat condition	**Approved with following suggestion/s:** 1. Treatment: N1:100 kg/ha, N2: 150 kg/ha and N3: 200 kg/ha. 2. P1: 50 kg/ha and P2: 75 kg/ha. 3. K1: 50 kg/ha and K2: 75 kg/ha. 4. Add observation on 'stalk length'. (**Action:** Prof. & Head, Dept. of Horticulture, College of Agriculture, AAU, Vaso)
14.4.3.9	Effect of fertigation levels and its frequency on production of banana	**Approved.** (**Action:** Principal, Agricultural Research Station, COA, AAU, Jabugam)
14.4.3.10	Effect of rooting media on propagation through herbaceous shoot tip cutting of African marigold (*Tagetes erecta* L.) cv. Calcutta selection under net house	**Approved.** (**Action:** Senior Scientist & Head, Krushi Vigyan Kendra, AAU, Devataj)
14.4.3.11	Efficacy of fertigation on yield, chemical composition and nutrients availability in root zone of cabbage	**Approved with following suggestion/s:** 1. In treatment T_5 add MoP. 2. Add the observation like plant height, number of leaves, head weight (g) and leaves weight. (**Action:** Assoc. Res. Sci, Agricultural Res. Station for Irrigated Crops, AAU, Thasara

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

Sr. No.	Title	Suggestion/s and Action
14.4.3.12	Performance of different grafted variety and mulching in Brinjal	**Approved with following suggestion/s:** 1. Add observations like survival percentage in field. 2. Crop duration, insect-pest & disease incidence. 3. Add V_5 -control non grafted 'GJB-3' V_6-control non grafted 'GAOB-2' and V7 -control non grafted '*Surtiravaiya.'* **(Action:** Professor & Head, Dept. of Horticulture, CoA, JAU, Junagadh
14.4.3.13	Effect of different mulching and integrated liquid organic nutrients on growth, yield and quality in banana cv.	**Approved with following suggestion/s:** 1. In treatment, panchgavya, sea weed and banana sap-foliar spray of 6 times instead

	Grand Naine	of 3 times. 2. Jivamrut, Amrutpani and biofetilizer-drenching monthly interval instead of 2 month. 3. Soil analysis before and after harvest. **(Action:** Professor & Head, Dept. of Horticulture, CoA, JAU, Junagadh)
14.4.3.14	Effect of organic manures, biofertilizers and biostimulants on growth and yield of drumstick (*Moringa oleifera* Lam.) cv. PKM-1	**Approved with following suggestion/s:** 1. Enriched banana pseudo stem sap 3 % instead of 5 %. 2. Soil analysis before and after harvest. **(Action:** Professor & Head, Dept. of Horticulture, CoA, JAU, Junagadh
14.4.3.15	Management of mealy bug (*Maconellicoccus hirsutus*) infesting custard apple	**Approved with following suggestion/s:** 1. Approved with subject to approval of plant protection subcommittee. **(Action:** Professor & Head, Dept. of Horticulture, CoA, JAU, Junagadh
14.4.3.16	Preparation and storage studies of Jamun juice	**Approved with following suggestion/s:** 1. Observation to be recorded at 15 days interval during storage for quality parameters and microbial count. 2. Approved with subject to approval of Agril. Engineering subcommittee. **(Action:** Professor & Head, Dept. of Horticulture, CoA, JAU, Junagadh
14.4.3.17	Effect of biofertilizer on seedling growth and bio-chemical changes of coconut (*Cocos nucifera* L).	**Approved with following suggestion/s:** 1. In treatment Note: 1st Application will be as 'Seed nut soaking for 24 hours before sowing'. 2. Add observation 'days to germination'. 3. Delete observation 'Protein'. **(Action:** Research Scientist (Horti.), Agril. Research Station (FC), JAU, Mahuva)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Sr. No.	Title	Suggestion/s and Action
14.4.3.18	Hybridization in Sapota	**Approved with following suggestion/s:** 1. Quality parameters to be recorded during winter season crop. 2. Mention 'start of bearing age'. (**Action:** Prof. & Head, Dept. of Fruit Science, ACHF, NAU, Navsari)
14.4.3.19	Effect of seed soaking and time of sowing on germination and seedling vigour on sapota	**Approved with following suggestion/s:** 1. Add treatment of scarification of 5 % H_2SO_4 for 10 min. 2. Days taken in germination. (**Action:** Prof. & Head, Dept. of Fruit Science, ACHF, NAU, Navsari)
14.4.3.20	Residues of paclobutrazol in mango and sapota fruits and its persistence in soil	**Approved with following suggestion/s:** 1. Add treatment PBZ @ 5.0g a.i. per hectare. 2. Take repetition 8 and design RBD. 3. Soil analysis at 270 days after treatment.

		(**Action:** In Charge, Food Testing Quality Lab., ACHF, NAU, Navsari)
14.4.3.21	Validation of Arka Saka Nivarak for prevention of spongy tissue in Alphonso mango	**Approved with following suggestion/s:** Add quality parameters like sugar & vitamin-C content. (**Action:** Research Scientist, Agriculture Experimental Station, NAU, Paria)
14.4.3.22	Effect of time of irrigation on yield and quality of cashew	**Approved with following suggestion/s:** 1. Add treatment 'irrigation in the month of November'. 2. Delete observation 1 & 9. (**Action:** Research Scientist, Agriculture Experimental Station, NAU, Paria)
14.4.3.23	Evaluation of Arka Microbial Consortium (AMC) for papaya	**Approved**. (**Action:** Assoc. Research Scientist, Fruit Research Station, NAU, Gandevi)
14.4.3.24	Effect of foliar application of liquid organic fertilizers on growth, yield and quality of strawberry (*Fragaria* × *ananassa* Duch.)	**Approved**. (**Action:** Asstt. Prof. & Head, Dept. Horti., CoA, NAU, Waghai)
14.4.3.25	Influence of rooting hormones and node number on propagation of little gourd through stem cutting	**Approved with following suggestion/s:** 1. Observation No. 5: Time will be 30 & 45 days. 2. Survival at 45 days. (**Action:** Professor & Head, Dept. of Vegetable Science, ACHF, NAU, Navsari)
14.4.3.26	Effect of boron and molybdenum on nodulation, growth and yield of cowpea (*Vigna unguiculata* Walp.)	**Approved**. (**Action:** Professor & Head, Dept. of Vegetable Science, ACHF, NAU, Navsari)
14.4.3.27	Response of okra to foliar application of Novel Organic Liquid Fertilizer and Micronutrients	**Approved with following suggestion/s:** Use micronutrient Grade-IV in treatment T_4, T_5& T_6. (**Action:** Professor & Head, Dept. of Vegetable Science, ACHF, NAU, Navsari)
14.4.3.28	Effect of sowing dates and spacing on off season okra	**Approved with following suggestion/s:** 1. Indicate week in treatment instead of date 2nd week of October. 2. 1st week of November. 3. 2nd week of November. (**Action:** Professor & Head, Dept. of Vegetable Science, ACHF, NAU, Navsari)
14.4.3.29	Effect of organic spray on growth, yield and quality of tomato (*Solanum lycopersicum* L.) under south Gujarat condition	**Approved with following suggestion/s:** Add number of picking in observation (**Action:** Professor & Head, Dept. of Vegetable Science, ACHF, NAU, Navsari)
14.4.3.30	Response of Tannia [*Xanthosoma sagittifolium* (L)] to different spacing and fertilizer doses	**Approved.** (**Action:** Professor & Head, Dept. of Vegetable Science, ACHF, NAU, Navsari)
14.4.3.31	Management of Collar rot disease in Elephant foot yam	**Approved with following suggestion/s:** Approved with subject to approval of plant protection subcommittee. (**Action:** Professor & Head, Dept. of Vegetable Science, ACHF, NAU, Navsari)

14.4.3.32	Effect of micronutrients to increase the flowering of Spider lily (*Hymenocallis littoralis*) during August to November month	**Approved with following suggestion/s:** **1.** Keep title as: Effect of foliar application of micronutrients to increase the flowering of Spider lily (*Hymenocallis littoralis*) during August to November month. 2. T_9- micronutrient grade-IV 0.2 %. 3. T_{10}- micronutrient grade-IV 0.4 %. (**Action:** Professor & Head, Dept. of Floriculture, ACHF, NAU, Navsari)
14.4.3.33	Effect of foliar application of nutrients on growth and flowering of Orchid (*Dendrobium*) under NVPH	**Approved with following suggestion/s:** Change design as CRD (factorial) instead of CRD. (**Action:** Professor & Head, Dept. of Floriculture, ACHF, NAU, Navsari)
14.4.3.34	Effect of IBA and seasons on rooting of marigold (*Tagetes erecta* L.) cv. Pusa Narangi Gainda cutting under poly tunnel	**Approved**. (**Action:** Professor & Head, Dept. of Floriculture, ACHF, NAU, Navsari)
14.4.3.35	Evaluation of different African marigold (*Tagetes erecta* L.) genotypes for the south Gujarat region	**Approved**. (**Action:** Professor & Head, Dept. of Floriculture, ACHF, NAU, Navsari)
14.4.3.36	Effect of different chemicals for increasing suckers in Haworthia pot plant	**Approved with following suggestion/s:** Keep title as 'Effect of different bio-chemicals for increasing suckers in *Haworthia* pot plant.' ((**Action:** Professor & Head, Dept. of Floriculture, ACHF, NAU, Navsari)
14.4.3.37	Development of Plant architecture in Adenium pot plant under soilless growing system	**Approved with following suggestion/s:** Keep title as Development of plant architecture through pinching and pruning in adenium pot plant under soilless growing system. (**Action:** Professor & Head, Dept. of Floriculture, ACHF, NAU, Navsari)
14.4.3.38	Effect of different growing media on fern and asparagus under benching system in polyhouse	**Approved with following suggestion/s:** Remove asparagus crop from title and objective. (**Action:** Professor & Head, Dept. of Floriculture, ACHF, NAU, Navsari)
14.4.3.39	Evaluation of selected adenium crosses	**Approved with following suggestion/s:** Approved with subject to approval of crop improvement sub-committee. (**Action:** Professor & Head, Dept. of Floriculture, ACHF, NAU, Navsari)
14.4.3.40	Effect of cycocel & saline irrigation water on African marigold (*Tagetes erecta*) cv. Pusa Narangi Gainda	**Approved with following suggestion/s:** 1. Delete saline water S4 treatment. 2. Add treatment GA_3 500 & 1000 ppm. (**Action:** Professor & Head, Dept. of Horti., NMCA, NAU, Navsari)
14.4.3.41	Standardization of process parameters for microwave assisted convective drying of bell peeper	**Approved with following suggestion/s:** Approved with subject to approval of Agricultural engineering sub-committee. (**Action:** Professor & Head, Dept. of Post-

		Harvest Tech., ACHF, NAU, Navsari)
14.4.3.42	Standardization of method for extraction of jackfruit (*Artocarpus heterophyllus* Lam.) juice	**Approved with following suggestion/s:** Approved with subjected to approval of Agricultural Engineering subcommittee. (**Action:** Professor & Head, Dept. of Post-Harvest Tech., ACHF, NAU, Navsari)
14.4.3.43	Standardization the process for preparation of IMF (Intermediate Moisture Food) from Jackfruit (*Artocarpus heterophyllus* Lam.)	**Approved with following suggestion/s:** Approved with subjected to approval of Agricultural Engineering subcommittee. (**Action:** Professor & Head, Dept. of Post-Harvest Tech., ACHF, NAU, Navsari)
14.4.3.44	Standardization of suitable treatments for preparation of intermediate moisture food (IMF) from mango (*Mangifera indica* L.) cvs. Kesar and Alphonso	**Approved with following suggestion/s:** Approved with subjected to approval of Agricultural Engineering subcommittee. (**Action:** Professor & Head, Dept. of Post-Harvest Tech., ACHF, NAU, Navsari)
14.4.3.45	Feasibility of organic farming in different crops	**Approved with following suggestion/s:** 1. Keep title as Feasibility of organic farming in different vegetable crops 2. Delete green gram treatment. (**Action:** Assoc. Prof., Soil, ACHF, NAU, Navsari)
14.4.3.46	Effect of Eucalyptus cultivation on soil fertility in south Gujarat	**Approved with following suggestion/s:** 1. Title: Effect of Eucalyptus plantation on soil fertility in south Gujarat. 2. Add observation allelo chemicals in soil of plantation. (**Action:** Prof. & Head, Silviculture and Agroforestry, CoF, ACHF, NAU, Navsari)
14.4.3.47	Integrated nutrient management of Brinjal (*Solanum melongena* L.) under Teak (*Tectona grandis* L.) based Silvi-horticultural system in South Gujarat region	**Approved**. (**Action:** Prof. & Head, Silviculture and Agroforestry, CoF, ACHF, NAU, Navsari)
14.4.3.48	Performance of cucurbitaceous vegetable crops under Teak based Silvi-Horticultural system in South Gujarat	**Approved with following suggestion/s:** Add the name of release varieties of bottle gourd, ridge gourd, cucumber and smooth gourd of AAU, Anand instead of local. (**Action:** Prof. & Head, Silviculture and Agroforestry, CoF, ACHF, NAU, Navsari)
14.4.3.49	Evaluation of Eucalyptus germplasm for growth and biomass	**Approved with following suggestion/s:** At the time of release present in crop improvement subcommittee. (**Action:** Prof. & Head, Forest Biology and Tree Impr., CoF, ACHF, NAU , Navsari)
14.4.3.50	Assessment of physical and anatomical properties of different bamboo species	**Approved**. (**Action:** Prof. & Head, Forest Products Utilization, ACHF, NAU, Navsari)
14.4.3.51	Mapping of degraded land using remote sensing and GIS technique in coastal region of Navsari	**Approved**. (**Action:** Prof. & Head, Natural Resource Management, CoF, ACHF, NAU Navsari)

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Sr. No.	Title	Suggestion/s and Action
14.4.3.52	Effect of various mulches on pomegranate cv. Bhagwa under different drip irrigation systems	**Approved with following suggestion/s:** Add observations of 'ascorbic acid' and termite infestation. (**Action:** Principal, College of Horticulture, SDAU, Jagudan)
14.4.3.53	Effect of different growing conditions on pomegranate, fig and noni	**Approved with following suggestion/s:** Record pest & disease incidence as well as bird damage infestation. (**Action:** Principal, College of Horticulture, SDAU, Jagudan)
14.4.3.54	Evaluation of chrysanthemum varieties under different growing conditions	**Approved with following suggestion/s:** 1. Add observation on number of cut flowers per plant, per plot and per hectare. 2. Delete observation on number of cut stems per plant and economics. (**Action:** Principal, College of Horticulture, SDAU, Jagudan)
14.4.3.55	Integrated nutrient management in Gladiolus	**Approved with following suggestion/s:** Mention dose of P_2O_5& K_2O. (**Action:** Principal, College of Horticulture, SDAU, Jagudan)
14.4.3.56	Studies on propagation of "*Leucophyllum frutescens*" through cutting	**Approved with following suggestion/s:** Write common name of *Leucophyllum* in title (**Action:** Principal, College of Horticulture, SDAU, Jagudan)
14.4.3.57	Performance of *Chinese sarson* under various growing conditions with different time of sowing on growth, yield and quality**.**	**Approved.** (**Action:** Principal, College of Horticulture, SDAU, Jagudan)
14.4.3.58	Effect of different plant growth regulators on growth, flowering and yield of Ridge gourd (*Luffa acutangula* L. Roxb.)	**Approved with following suggestion/s:** Delete treatment 1 and 2 i.e. IAA 50 and 100 ppm. (**Action:** Principal, College of Horticulture, SDAU, Jagudan)
14.4.3.59	Effect of GA_3 on growth, sex expression and yield of watermelon	**Approved.** (**Action:** Professor & Head, Dept. of Horticulture, CPCA, SDAU, SKNagar)
14.4.3.60	Drying of rose petals using renewable sources of energy	**Approved with following suggestion/s:** Approved with subjected to approval of Agricultural Engineering subcommittee. (**Action:** Professor & Head, Dept. of Horticulture, CPCA, SDAU, SKNagar)
14.4.3.61	Effect of different environmental conditions and IBA on propagation of desi rose (*Rosa indica*)	**Approved with following suggestion/s:** Use 50 % white shade net instead of green shade net. (**Action:** Professor & Head, Dept. of Horticulture, CPCA, SDAU, SKNagar)
14.4.3.62	Effect of different media on propagation of desi rose (*Rosa indica*)	**Approved.** (**Action:** Professor & Head, Dept. of Horticulture, CPCA, SDAU, SKNagar)

14.4.3.63	Propagation through cuttings of *Ficus benjamina* L as influenced by season and IBA under control condition	**Approved with following suggestion/s:** Number of cuttings per treatment will be 30 instead of 20 (**Action:** Professor & Head, Dept. of Horticulture, CPCA, SDAU, SKNagar)
14.4.3.64	Custard apple based agri-horti system (Custard apple + Green gram) as influenced by different spacing under rainfed condition	**Approved.** (**Action:** Research Scientist, Agro-Forestry Research Station, SDAU, SKNagar)
14.4.3.65	Evaluation of drumstick (*Moringa oleifera*) genotypes in arid and semi-arid region of Gujarat	**Approved with following suggestion/s:** Add observations of: 1. Record bearing age. 2. Pest and disease incidence. 3. Quality parameters Ca & Fe content in leaves and pod. 4. Add check 'PKM-1' in treatment. (**Action:** Research Scientist, Agro-Forestry Research Station, SDAU, SKNagar)
14.4.3.66	Evaluation of Carbon Sequestration Potential of Different Multipurpose Tree Species	**Approved.** (**Action:** Research Scientist, Agro-Forestry Research Station, SDAU, SKNagar)
14.4.3.67	Effect of plant growth regulators along with pinching on growth, yield and quality in African marigold *(Tagetes erecta* L.)	**Approved with following suggestion/s:** Mention the time of spray of PGRs (**Action:** Assistant Research Scientist., FRS, SDAU, Dehgam)
14.4.3.68	Performance of different varieties of gladiolus under North Gujarat condition	**Approved.** (**Action:** Assistant Research Scientist., Fruit Research Station, SDAU, Dehgam)
14.4.3.69	Effect of fertilizer levels and cow urine on growth, yield and quality of green chilli	**Approved.** (**Action:** Senior Scientist & Head, Krishi Vigyan Kendra, SDAU, Deesa)
14.4.3.70	Performance of rose in coloured shade net houses with different netting under South Gujarat conditions	Already presented in the crop production and NRM subcommittee and endorsed by the Horti. & Agroforestry sub committee

General Suggestions:

1. Common decision need to be taken regarding inclusion of name of JRF/SRF/RA in the team of investigation.
2. Any research related to Horticultural and Forestry crops should be presented and considered in Horticulture and Agro Forestry Subcommittee.

14.5 AGRICULTURAL ENGINEERING, FOOD PROCESSING TECH., DAIRY SCIENCE, AND AGRIL. INFORMATION TECH.

Chairman	Dr. N. C. Patel, Hpn'ble Vice Chancellor, AAU, Anand NAU, Navsari
Co-Chairman	Dr. D. C. Joshi, Principal & Dean, FPT, AAU, Anand
	Dr. N. K. Gontia, Dean, CAET, JAU, Junagadh
Rapporteurs	Dr. H. D. Rank, Professor, Dept. of SWCE, CAET, JAU, Junagadh
	Dr. A. K. Sharma, Professor & Head, Dept. of Food Engg., AAU, Anand
	Dr. R. S. Parmar, Professor, CAIT, AAU, Anand

Presentation of recommendations and technical programmes by Conveners of SAUs

SN	Name	Designation & University
1	Dr. D.R. Kathiria	Principal & Dean, CAIT, AAU, Anand
2	Dr. R. F. Sutar	Professor & Head, Dept. of Post Harvest Engg. & Tech, AAU, Anand
3	Dr. R. Yadav	Professor & Head, Dept. of Farm Engineering, CoA, JAU, Junagadh
4	Dr. S. N. Sengar	Assoc. Professor, College of Agril. Engineering, NAU, Dediyapada
5	Dr. R. N. Singh	Assoc. Director of Research, Directorate of Research, SDAU, SKNagar

Summary

Name of University	No. of Recommendations				New Technical Programmes	
	Farming Community		Scientific Community			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU, Anand	32	32	11	11	34	33
JAU, Junagadh	10	10	03	03	13	13
NAU, Navsari	06	06	04	04	08	08
SDAU, SKNagar	02	02	02	02	16	11
KU,Gandhinagar	-	-	-	-	1	1
Total	**50**	**50**	**20**	**20**	**72**	**66**

14.5.1 RECOMMENDATIONS FOR FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

14.5.1.1	**Development of a low cost planting unit for conventional plough**
	A low cost multi crop planting unit for bullock drawn conventional plough developed by Anand Agricultural University is recommended for farmers of the region for sowing of maize, pigeon pea, soybean and gram crops. It saves about 94 % time and 76 % cost of sowing operation for maize crop as compared to dibbling method. Also this method saves about 57 % seeds as compared to maize sowing by dropping seeds into funnel type seeding device connected to conventional plough. ખેડૂતોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસિત બળદ સંચાલિત હળ વડે ચલાવી શકાય તેવું ઓછી કિંમતનું બહુલક્ષી પાકો માટેનું પ્લાન્ટીંગ યુનિટ મકાઈ, તુવેર, સોયાબીન અને ચણાના પાકનું વાવેતર કરવા માટે ભલામણ કરવામાં આવે છે. આ યુનિટની મદદથી મકાઈનું વાવેતર કરવાથી દાણા થાણીને વાવવાની પદ્ધતિ કરતાં આશરે ૯૪ ટકા સમય તેમજ આશરે ૭૬ ટકા ખર્ચમાં બચત થાય છે તેમજ હળ સાથે ઓરણી જોડીને તેમાં મકાઈના દાણા ઓરવાની પદ્ધતિ કરતાં ૫૭ ટકા બિયારણમાં બચત થાય છે . **Approved.** **(Action: Principal, College of Agril. Engineering & Tech., AAU, Godhra)**

14.5.1.2	**Development of modified manual twin wheel weeder**
	The adjustable manual twin wheel weeder developed by Anand Agricultural University is recommended for farmers because of affordable cost and convenient operation. Field efficiency and weeding efficiency of the weeder were 97.81 % and 78.90 %, respectively. Effective field capacity was 0.093 ha/h. The approximate cost of the weeder was Rs 1500. આણંદ કૃષિ યુનિવર્સિટી દ્વારા જરૂરીયાત મુજબ ગોઠવી શકાય તેવી માનવ સંચાલિત બે પૈડાવાળી કરબડી વિકસાવવામાં આવેલ છે, જે બેહાર વચ્ચેથી નિંદણ દુર કરવા માટે ખુબજ ઉપયોગી માલુમ પડેલ છે .તેની કાર્યક્ષમતા ૦.૦૯૩ હેક્ટર પ્રતિકલાક, કાર્યદક્ષતા ૯૭.૮૧ % તેમજ નિંદણ દુર કરવાની ક્ષમતા ૭૮.૯૦ % કરતાં વધારે છે .તેની અંદાજે કિંમત રૂ.૧૫૦૦ જેટલી આવે છે. **Approved.** (**Action: Principal, College of Agril. Engineering & Tech., AAU, Godhra)**
14.5.1.3	**Modifications in existing hand operated Paddy thresher**
	It is recommended for farmers to use electric operated paddy thresher developed by Anand Agricultural University for stripping of pigeonpea plants. It can easily separatepods from pigeonpea plants. The stripping capacity of pods is found to be 183.32 kg/h, which is 3.62 times higher than manual beating. The stripping efficiency of the developed machine is 94.44 per cent. તુવેર પકવતા ખેડૂતો માટે ભલામણ કરવામાં આવે છે કે તુવેરમાંથી શીંગો છૂટી પાડવા માટે આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ વિદ્યુતથી ચાલતા ડાંગર થ્રેસરનો ઉપયોગ કરી શકાય. આ થ્રેસરનાં ઉપયોગથી શીંગો સરળતાથી છૂટી પાડી શકાય છે. આ થ્રેસરથી શીંગો છૂટી પાડવાની ક્ષમતા આશરે ૧૮૩.૩૨ કિ.ગ્રા./કલાક છે. જે માણસો દ્વારા ઝુડવાની/ ધોકાવવાથી ૩.૬૨ ગણી વધારે છે. થ્રેસરની કાર્યક્ષમતા ૯૪.૪૪ ટકા છે. **Approved.** (**Action: Principal, College of Agril. Engineering & Tech., AAU, Godhra)**
14.5.1.4	**Decision Support System for Plant Protection**
	Web based Decision Support System for Plant Protection developed by Anand Agricultural University provides the use of insecticides, fungicides and herbicides and plant growth regulator as per the Insecticide act 1968 in Gujarati language. It is recommended to be usedby the farmers of Gujarat state. આણંદ કૃષિ યુનિવર્સિટી દ્વારા બનાવવામાં આવેલ ડીસીશન સપોર્ટ સીસ્ટમ ફોર પ્લાન્ટ પ્રોટેક્શન જંતુનાશકો, ફૂગનાશકો, નિંદણનાશકો અને વૃધ્ધિવર્ધક નિયંત્રકોના વપરાશની માહિતી "કીટનાશક કાયદો ૧૯૬૮" પ્રમાણે ગુજરાતી ભાષામાં પૂરી પાડે છે .તેથી ખેડૂતોને ડીસીશન સપોર્ટસીસ્ટમ ફોર પ્લાન્ટ પ્રોટેક્શનનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે. **Approved.** (**Action: Director, IT, AAU, Anand)**
14.5.1.5	**Determination and analysis of vibrationlevels on mini farm tractors**
	All stake holders associated with single cylinder mini tractors are recommended to place the vibration isolation elastomeric pad with lining of rubber sheet below the tractor seat to reduce the longitudinal, lateral and vertical vibrations as a whole. Further it is recommended to use cork pad for getting maximum reduction in the vertical vibrations caused by engine operation. મીની ટ્રેકટર સાથે સંકળાયેલા હિતધારકોને સીંગલ સીલીન્ડર મીનીટ્રેકટરની સીટના વાઇબ્રેશન ઘટાડવા માટે સીટની નીચે વાઈબ્રેશન આઈસોલેશન પેડ અને રબરશીટનુ કમ્બાઈંડ પેડ બેસાડવા ભલામણ કરવામાં આવે છે .વધુમાં એન્જીન ઓપરેશનથી ઉત્પન્ન થતા વર્ટીકલ

	(ઉભા) વાઈબ્રેશન ઘટાડવા માટે કોર્કપેડનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. **Approved.** (**Action: Principal, College of Agril. Engineering & Tech., AAU, Godhra)**
14.5.1.6	**Development of appropriate harvest and post-harvest technology for custard apple for tribal area of Gujarat**
	It is recommended to store the matured harvested custard apple fruit in 100 gauge polypropylene bags (15.24 mm x 20.32 mm and 3-fruits in each bag) at 13 °C temperature for increasing the shelf life up to 8-10 days for maximum overall acceptability with minimum weight lossand higher retention of vitamin-C. આથી ભલામણ કરવામાં આવે છે કે પાકેલાં સીતાફળને ૧૦૦ ગેજ પોલીપ્રોપીલીન બેગ (૧૫.૨૪ મીમી x ૨૦.૩૨ મીમી) દીઠ ત્રણ ફળ ભરીને ૧૩°સેંટીગ્રેડ તાપમાને સંગ્રહ કરવામાં આવે તો તેને ૮ થી ૧૦ દિવસ સુધી વધુ સારી ગુણવતા સાથે સાચવી શકાય છે અને સંગ્રહ દરમ્યાન તેના વજનમાં ઓછો ઘટાડો અને વિટામિન-સીનું પ્રમાણ વધારે જળવાઇ રહે છે. **Approved.** (**Action: Principal, College of Agril. Engineering & Tech., AAU, Godhra)**
14.5.1.7	**Development of biomass combustion based drying systems for ginger and turmeric**
	The agro processors and entrepreneurs are recommended to use the biomasscombustor based dryerof 100 kg capacity developed by Anand Agricultural Universityfor drying of ginger and turmeric. The dryer should be operated with fuel consumption rate of 1 kg/h and air flow rate of 400 m^3/h to dry ginger and turmeric using saw dust briquettes to attain maximum combustor efficiency 73.50 %. The drying takes 276min (for ginger from initial 81.41 to 8 % wb final moisture content) and 807 min (for turmeric from initial 94.60 to 9 % wb final moisture content) drying time with a hot air temperature of 47-48 ºC generated using saw dust briquettes. એગ્રો પ્રોસેસર્સ અને ઉદ્યોગ સાહસિકોને આદુ અને હળદર સુકવવા આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ ૧૦૦ કિલો સુકવણીની ક્ષમતા ધરાવતા બાયોમાસ કમ્બસ્ટર આધારિત ડ્રાયરનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે. આ ડ્રાયરને સુકવણી યંત્રમાં ૪૦૦ ઘનમીટર પ્રતિ કલાક હવાના પ્રવાહ દરનો ઉપયોગ કરી આદું અને હળદર ની સુકવણી કરવા માટે ૧ કિલોગ્રામ પ્રતિ કલાક લાકડાના વેરની બ્રીકેટસનાં વપરાશથી મહતમ કમ્બસ્ટર કાર્યદક્ષતા (૭૩.૫૦ %) મળે છે. લાકડાના વેરની બ્રિકેટ્સનો બળતણ તરીકે ઉપયોગ કરતાં ૪૭-૪૮ ડિગ્રી સેન્ટિગ્રેડ તાપમનવાળી ઉત્પન્ન થતી ગરમ હવાથી ૨૭૬ મિનિટ (આદુ માટેપ્રારંભિક ૮૧.૪૧ થી ૮ % અંતિમ ભેજ લાવવા) અને ૮૦૭ મિનિટ (હળદર માટે પ્રારંભિક ૯૪.૬૦ થી ૯ %અંતિમ ભેજ લાવવા) જેટલો સુકવણી સમય લાગે છે. **Approved.** (**Action: Principal, College of Agril. Engineering & Tech., AAU, Godhra)**
14.5.1.8	**Development of Technology for Carbonated Lime Whey Beverage**
	A technology for preparing carbonated lime whey beverage has been developed by Anand Agricultural University, Anand using de-fatted, lactose hydrolyzed *paneer* whey through addition of 4.5% lime juice (Brix/Acid ratio of 1.3), 8-10 % sugar and subjected to carbonation at 1.5 kg/cm^2. Table salt @ 0.5 % and ginger powder @ 0.5 % served as flavour enhancers. The carbonated lime whey beverage added with 100 ppm of sodium benzoate, packed in PET bottles had a shelf life of 75 days and 21 days when stored at 7±2°C and 37±2°C, respectively.

	આણંદ કૃષિ યુનિવર્સિટી દ્વારા કાર્બોનેટેડ લાઇમ વ્હે-બેવરેજ બનાવવાની પધ્ધતિ વિકસાવેલ છે. જેમા ડી-ફેટેડ, લેક્ટોઝહાઈડ્રોલાઈઝડ વ્હેમાં ૪.૫ % લાઇમનો રસ (બ્રીક્ષ/એસીડનું પ્રમાણ ૧.૩) તથા ૮ થી ૧૦ % ખાંડના ઉપયોગની ભલામણ કરવામાં આવે છે. ઉપરાંત કાર્બોનેટેડ લાઇમ વ્હે-બેવરેજનાં સ્વાદમાં સુધારો કરવા માટે તેમાં ૦.૫ % મીઠું તથા ૦.૫ % આદુનો પાવડર ઉમેરી ૧.૫ કિગ્રા/સેમી² ના દબાણે કાર્બોનેશન કરવાની પણ ભલામણ કરવામાં આવે છે. ભલામણ મુજબ બનાવેલ કાર્બોનેટેડલાઇમ વ્હે-બેવરેજને પેટ (PET) બોટલમાં ૧૦૦ પી.પી.એમ. સોડીયમ બેન્ઝોએટ પ્રિઝર્વેટીવ ઉમેરી ફ્રીજના તાપમાને (૭±૨ °સે) ૭૫ દિવસ અને ૩૭±૨ °સે તાપમાને ૨૧ દિવસ સુધી સાચવણી કરી શકાય છે. **Approved.** **(Action: Prof. & Head, Dept. of Dairy Technology, AAU, Anand)**
14.5.1.9	**Development of *Peth*a (Ash gourd sweetmeat) ice cream**
	A technology has been developed by Anand Agricultural University, Anand for preparing value added novel **'Lemon flavoured *Petha* Ice cream'** in which it is recommended to utilize sucrose @ 13.0 %, lemon flavouring @ 0.7 ml/L of mix and disc shaped *Petha* particulates @ of 8.0 % by weight of ice cream mix. આણંદ કૃષિ યુનિવર્સિટી દ્વારા મૂલ્ય વર્ધિત નવીન લીંબુ ફ્લેવર્ડ પેઠા આઈસ્ક્રીમ બનાવવાની પધ્ધતિ વિકસાવેલ છે. જેમાં આઈસ્ક્રીમ મિક્ષના વજનના ૧૩ % ખાંડ, ૦.૭ મિ.લી./લી. લીંબુનું સુંગંધિત દ્રવ્ય અને ૮.૦ % પેઠાના પતીકા ઉમેરવાની ભલામણ છે. **Approved.** **(Action: Prof. & Head, Dept. of Dairy Technology, AAU, Anand)**
14.5.1.10	**Deveiiopment of cereal based *burfi***
	A method for preparing *ravaburfi* has been standardized at Anand Agricultural University, Anand. *Rava burfi* prepared using small particle grade *rava* of durum wheat, *khoa* and liquid glucose contains about 1.0 % fiber, 9.5 % Protein and 18.5 % Fatand has calorific value of 404 kcal/100 g.The shelf life of *rava burfi* when packed in polyethylene box and placed in pre-sterilized composite polyethylene terephthalate /low density polyethylene film (50μm) pouch is 9 and 35 days when stored at 30±2 °C and 7±2 °C, respectively. આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા રવા બરફી બનાવવાની પદ્ધતિ વિકસાવવામાં આવેલ છે. આ પદ્ધતિ દ્વારા ડ્યુરમ (ભાલીયા પ્રકારના ઘઉં) નો સ્મોલ પાર્ટીકલ ગ્રેડરવો, માવો અને પ્રવાહી ગ્લુકોઝનો ઉપયોગ કરીને બનાવેલ રવા બરફીમાં આશરે ૧ % રેસા, ૯.૫ % પ્રોટીન, ૧૮.૫ % ફેટ તથા ૪૦૪ કેલરી પ્રતિ ૧૦૦ ગ્રામ રહેલ છે. આ રવા બરફીને અગાઉથી જીવાણું રહિત કરેલ પોલીથીન બોક્ષમાં મૂકી પોલીઇથીલીન/લો ડેન્સીટી પોલીઇથીલીન કમ્પોઝીટ પાઉચમાં પેક કરી ૩૦±૨ °સે તાપમાને ૯ દિવસ સુધી તથા ૭±૨ °સે તાપમાને ૩૫ દિવસ સુધી સંગ્રહી શકાય છે. **Approved.** **(Action: Prof. & Head, Dept. of Dairy Technology, AAU, Anand)**
14.5.1.11	**Development of a nutri-rich *Chakka* based dip fortified with *Moringa***
	A method is developed by Anand Agricultural University for manufacturing *chakka* based *Moringa* dip fortified with 5 % *Moringa* pod powder (100 mesh). The taste of the product could be improved by addition of spice blend (mixture of mango powder, mint, dry ginger and pepper powder) added @ 0.5 % by weight of dip. The product has a shelf life of 15 days when stored at 4±2 ^{o}C in re-closable polypropylene co-polymer cups. આણંદ કૃષિ યુનિવર્સિટી દ્વારા ચક્કા આધારિત સરગવાની ડીપ (ચટણી) બનાવવાની

	એક પદ્ધતિ વિકસાવવામાં આવી છે, જેમાં ૫ % લેખે સરગવાનાં સિંગનો પાઉડર (૧૦૦ મેશ) ઉમેરવામાં આવેલ છે. ચક્કા આધારિત સરગવાની ડીપનો સ્વાદ ૦.૫ % મસાલાના મિશ્રણ (આમચૂર પાઉડર, ફૂદીનો, આદુ તથા મરી પાઉડરનો મિશ્રણ) ઉમેરીને સુધારી શકાય છે. ચક્કા આધારિત સરગવાની ડીપને રીક્લોઝેબલ પોલીપ્રોપીલીન કો-પોલીમર કપમાં ભરી ૪±૨ °સે. તાપમાને ૧૫ દિવસ સુધી સાચવણી કરી શકાય છે. **Approved.** **(Action: Prof. & Head, Dept. of Dairy Technology, AAU, Anand)**
14.5.1.12	**Evaluation of selected additives for the manufacture of low fat chhana**
	The production of reduced fat *chhana* developed at Anand Agricultural University, Anand is beneficial in obtaining *chhana* having 33 % lower fat, 20 % higher proteinin which addition of 0.2 % WPC and 0.05 % Lecithin is recommended. The product is affordablypriced as compared to regular *chhana*. The developed reduced-fat *chhana* is comparable with regular *chhana* with respect to its sensory characteristics. આણંદ કૃષિ યુનિવર્સિટી દ્વારા ઓછી ચરબીવાળા છન્ના બનાવવાની પદ્ધતિ વિકસાવવામાં આવેલ છે, જેમાં ૦.૨ % WPC અને ૦.૦૫ % લેસીથીન ઉમેરવાની ભલામણ છે. આ પ્રમાણે બનાવેલ છન્નામાં, સામાન્ય છન્નાના પ્રમાણમાં, ૩૩ % ઓછી ચરબી અને ૨૦ % વધારે પ્રોટીન હોય છે. **સદર** છન્ના, સામાન્ય છન્નાની સરખામણીએ સસ્તો પડે છે તેમજ તેનો સ્વાદ સામાન્ય છન્ના જેવોજ હોય છે. **Approved.** **(Action: Prof. & Head, Dept. of Dairy Technology, AAU, Anand)**
14.5.1.13	**Evaluation of common culinary spices as natural antioxidant for ghee**
	Among the common culinary spices (black pepper, cardamom, cinnamon, clove, coriander, cumin, fennel, fenugreek, ginger, nutmeg and turmeric), addition of nutmeg in melted butter @ 0.5 % of the expected yield of ghee or @0.4 % in butter containing 80% fat is most effective in reducing oxidative deterioration of ghee. સામાન્ય રીતે રસોઈમાં વપરાતા મસાલા (કાળા મરી, એલચી, તજ, લવિંગ, ધાણા, જીરું, વરિયાળી, મેથી, આદું, જાયફળ અને હળદર) પૈકી જાયફળ, ઘીની અપેક્ષિત ઉપજના ૦.૫ ટકા લેખે, પીગળેલ માખણમાં અથવા ૦.૪ ટકા લેખે ૮૦ ટકા ફેટ ધરાવતા માખણમાં ઉમેરવાથી ઓક્સિડેશનથી થતો ઘીનો બગાડ ઓછો કરવામાં સૌથી વધુ અસરકારક છે. **Approved.** **(Action: Prof. & Head, Dept. of Dairy Chemistry, AAU, Anand)**
14.5.1.14	**Development of whey based medium for biomass production of lactic acid bacteria**
	Cheddar cheese whey based medium for producing biomass of lactic acid bacteria (*Lactobacillus helveticus* MTCC 5463 and *Streptococcus thermophilus* MTCC5461) has been developed. This medium yields biomass of 5.51 and 2.56 g/L of *Lactobacillus helveticus* MTCC 5463 and *Streptococcus thermophiles* MTCC 5461, respectively when fermented for 12h at 37 °C in a 5L capacity fermenter. The performance of the said biomass is found satisfactory in preparation of dahi and butter milk. The developed process for preparation of whey based medium is given in the flow chart. Cheddar cheese whey is heated at 75 °C for 10 min. ↓ WPC-70 is added @ 0.5 %. ↓ Proteolysis by papain @ 0.5 % at 50 °C for 4 h

↓

Heated to 95 °C for 10 min.

↓

Addition of $MnSO_4$ (0.01 %) and oleic acid (0.1 %)

↓

Medium is sterilized by autoclaving.

ચેડાર ચીઝ વ્હેનો ઉપયોગ કરી લેકટિક એસિડ બેકટેરીયા (લેકટોબેસીલસ હેલવેટીકસ MTCC 5463 અને સ્ટ્રેપ્ટોકોકસ થર્મોફિલસ MTCC5461) ના બાયોમાસના ઉત્પાદન માટેનું માધ્યમ વિકસાવવામાં આવેલ છે.આવા માધ્યમનો ઉપયોગ કરીને, ૫ લીટર ક્ષમતાવાળા ફર્મેન્ટરમાં, ૩૭ ૦સે.તાપમાને, ૧૨ કલાકમાં લેકટોબેસીલસ હેલવેટીકસMTCC 5463 અને સ્ટ્રેપ્ટોકોકસ થર્મોફિલસ MTCC 5461 નો અનુંક્રમે ૫.૫૧ અને ૨.૫૬ ગ્રામ/લીટર બાયોમાસ ઉત્પાદન કરી શકાય છે. આ બાયોમાસ દહી અને છાશ બનાવવા માટે સંતોષકારક માલુમ પડેલ છે. વિકસાવેલ પધ્ધતિની વિગત નીચેના ફ્લો ચાર્ટમાં દર્શાવેલ છે.

ચેડાર ચીઝ વ્હેને ૭૫ ॰સે. તાપમાને ૧૦ મિનિટ માટે ગરમ કરવું

↓

ડબલ્યુપીસી (**WPC-**૭૦) ને ૦.૫ % ના દરે ઉમેરવું

↓

પ્રોટીયોલીસિસ કરવા પેપેનના (૦.૫ %) ના દ્રાવણ સાથે ૫૦ ॰સે. તાપમાને ૪ કલાક માટે રાખવું

↓

ત્યારબાદ ૯૫ ॰સે. તાપમાને ૧૦ મિનિટ માટે ગરમ કરવું

↓

મેંગેનિઝ સલ્ફેટ (**$MnSO_4$**, ૦.૦૧%) અને ઓલિક એસિડ (**Oleic acid**, ૦.૧ %) નેઉમેરવા

↓

માધ્યમને ઓટોક્લેવ દ્વારા સ્ટેરીલાઈઝ કરવું

Approved.

(Action: Prof. & Head, Dept. of Dairy Chemistry, AAU, Anand)

14.5.1.15 Optimization of selected qualitative tests for detection of common adulterants in milk

Qualitative tests modified by Anand Agricultural University, Anand are recommended for detection of common adulterants in milk. The use of such tests have advantages like ease in judgment about result of the test, improved sensitivity (limit of detection), reduction in risk of health hazards as well as environmental pollution and/or elimination of certain prohibited chemicals. The adulterants and tests for their detection are listed in the table below.

Sr. No.	Adulterants	Test modified at Anand Agricultural University
1.	Detergent	Methylene blue test Paradkar *et al*. (2000)
2.	Urea	DMAB test (FSSAI, 2015)
3.	Ammonium salts	Phenol test (FSSAI, 2015)
4.	Sucrose	Seliwanoff test (Srivastava, 2010)
5.	Glucose	Barfoed test (Barfoed, 1873)
6.	Maltodextrin	Iodine test (Sharma *et al*., 2012)
7.	Starch	Iodine test (BIS, 1960)
8.	Gelatin	Picric acid test (DGHS, 2005)
9.	Salt	Chromate test (FSSAI, 2015)
10.	Nitrate	Diphenylamine test (FAO, 1986)
11.	Sulphate	Barium chloride test (FSSAI, 2015)
12.	Hydrogen peroxide	*p*-Phenylenediamine (Draaiyer *et al*., 2009)

13.	Formaldehyde	(1) Leach test (BIS, 1961) (2) Hehner test (Draaiyer *et al*., 2009)
14.	Neutralizers	(1) Rosolic acid test (DGHS, 2005) (2) Methanol test (Davies, 1938)

દૂધમાં ભેળસેળ કરવા માટે વપરાતા સામાન્ય પદાર્થોને ગુણાત્મક કસોટીઓ દ્વારા તપાસવા માટે આણંદ કૃષિયુનિવર્સિટી દ્વારા સુધારેલ પદ્ધતિઓ વાપરવા માટે ભલામણ કરવામાં આવે છે. આ પદ્ધતિઓનો ઉપયોગ કરવાથી કેટલાક મહત્વના ફાયદા થાય છે જેવાકે કસોટીના પરિણામ બાબતે નિર્ણય લેવામાં સરળતા, કસોટીની સંવેદન શીલતામાં સુધારો (ન્યૂનતમ મર્યાદામાં ઘટાડો), સ્વાસ્થ્ય માટે કેટલાક હાનીકારક તેમજ પર્યાવરણને પ્રદુષિત કરતા રસાયણોનો ઉપયોગ નિવારી શકાય અને/અથવા પ્રતિબંધિત રસાયણોનો ઉપયોગ નિવારી શકાય છે. ભેળસેળ કરવા માટે વપરાતા પદાર્થો અને તેમને તપાસવા માટેની કસોટીઓની યાદી ટેબલમાં દર્શાવેલ છે.

Sr. No.	Adulterants	Test modified at Anand Agricultural University
1.	Detergent	Methylene blue test Paradkar *et al*. (2000)
2.	Urea	DMAB test (FSSAI, 2015)
3.	Ammonium salts	Phenol test (FSSAI, 2015)
4.	Sucrose	Seliwanoff test (Srivastava, 201)
5.	Glucose	Barfoed test (Barfoed, 1873)
6.	Maltodextrin	Iodine test (Sharma *et al*., 2012)
7.	Starch	Iodine test (BIS, 1960)
8.	Gelatin	Picric acid test (DGHS, 2005)
9.	Salt	Chromate test (FSSAI, 2015)
10.	Nitrate	Diphenylamine test (FAO, 1986)
11.	Sulphate	Barium chloride test (FSSAI, 2015)
12.	Hydrogen peroxide	*p*-Phenylenediamine (Draaiyer *et al*., 2009)
13.	Formaldehyde	(1) Leach test (BIS, 1961) (2) Hehner test (Draaiyer *et al*., 2009)
14.	Neutralizers	(1) Rosolic acid test (DGHS, 2005) (2) Methanol test (Davies, 1938)

Approved.

(Action: Prof. & Head, Dept. of Dairy Chemistry, AAU, Anand)

14.5.1.16 Utilization of paneer whey in synbiotic *Sherbet candy*

Anand Agricultural University has developed a method for the preparation of *synbiotic sherbet can*dy using 44 % of paneer whey, 4 % fructo oligosacaharide, 15 % sucrose, 10 % liquid glucose, 3 % fructose, 0.07 % carrageenan, 0.10 % locust bean gum, 0.13 % pectin, 15 % mango pulp and probiotic culture *Lactobacillus rhamnosus* and *Lactobacillus paracasei* (in 1:1 ratio) added @ of 0.03 % mix. The product packed in biaxially oriented polypropylene material has shelf life of 4 months when stored at -18±2 °C.

આણંદ કૃષિ યુનિવર્સિટી દ્વારા સીનબાયોટીક સરબત કેન્ડીની તાંત્રિકતા વિકસાવેલ છે. જેમાં ૪૪ % પનીર વ્હે, ૪ % ફ્રુકટોઓલીગોસેકેરાઈડ, ૧૫ % ખાંડ,૧૦ % પ્રવાહી ગ્લુકોઝ, ૩ % ફ્રુક્ટોઝ, ૦.૦૭ % કેરાગીનન, ૦.૧૦ % લોક્સ્ટબીનગમ, ૦.૧૩ % પેક્ટીન, ૧૫ % કેરીનો પલ્પ અને પ્રોબાયોટીક કલ્ચર *લેક્ટોબેસીલસ રામનોસસ* અને *લેક્ટોબેસીલસ પેરાકેસીઈ* (૧:૧પ્રમાણે) @ ૦.૦૩ % મીશ્રણ પ્રમાણ ઉપર ઉમેરવામાં આવેલ છે. આ કેન્ડી બાયએક્ષીઅલી ઓરીએન્ટેડ પોલીપ્રોપિલીન મટીરીયલમાં પેક કરીને -૧૮±૨ °સે તાપમાને ૪ મહિના સુધી સંગ્રહી શકાય છે.

Approved.

(Action: Prof. & Head, Dept. of Dairy Chemistry, AAU, Anand)

14.5.1.17	**Development of value added fermented milk containing drumstick**
	Moringa based *lassi*, prepared from standardized milk added with 1.63 % *Moringa* pod powder as an ingredient, has been developed at Anand Agricultural University, Anand. The product was found to contain Vitamin A, Vitamin C, calcium, iron, fiber and potassium. The product had a shelf life of 30 days when stored under refrigerated (7±2 °C) conditions in pre-sterilized PET bottles. આણંદ કૃષિ યુનિવર્સિટી દ્વારા, સ્ટાન્ડર્ડ દૂધમાં સરગવાની સિંગના પાવડરને ૧.૬૩ % પ્રમાણે ઘટક તરીકે ઉમેરીને લસ્સી બનાવવામાં આવેલ છે. આ લસ્સી વિટામીન એ, વિટામીનસી, કેલ્શિયમ, લોહ તત્વ, પોટેશિયમ અને રેસા ધરાવે છે. આ લસ્સીને રેફ્રીજરેટર તાપમાને (૭±૨ °સે) જીવાણું વિહીન કરેલી PET બોટલમાં ૩૦ દિવસ સુધી સંગ્રહી શકાય છે. **Approved.** **(Action: Prof. & Head, Dept. of Dairy Microbiology, AAU, Anand)**
14.5.1.18	**Engineering interventions for commercial production of *Doodhpak***
	Dairy Industry and Entrepreneurs are recommended to adopt method developed by Anand Agricultural University for manufacture of in-container sterilised (121 ˚C for 15 min) *Doodhpak*. It is made from standardized milk (4.5 % fat & 8.5 % SNF) concentrated to 1.6 times concentration level using scraped surface heat exchanger (SSHE) and added with scented rice and sugar at the rate of 2.2 % and 11 % of concentrated milk respectively. The product has a shelf life of 75 days at room temperature (35±2 °C) and 105 days at refrigeration temperature (5±2 °C). ડેરી ઉદ્યોગ અને ઉદ્યોગ સાહસીકોને, ઈન-કન્ટેનર સ્ટરિલાઇઝ્ડ (૧૨૧ °સે/૧૫ મિનિટ) દુધપાકના ઉત્પાદન માટે, આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ પદ્ધતિ અપનાવવાની ભલામણ કરવામાં આવે છે. આ દુધપાક, સ્ટાન્ડર્ડાઇઝ્ડ દૂધને (૪.૫ % ફેટ અને ૮.૫ % એસ.એન.એફ.), સ્ક્રેપ્ટસરફેસ હીટ એક્સ્ચેંજર (એસ.એસ.એચ.ઈ.) દ્વારા ૧.૬ ઘણું ઘટ્ટ કરીને, તેમાં સુગંધિત ચોખા અને ખાંડ અનુક્રમે @૨.૨ % અને ૧૧ % ઘટ્ટ દૂધના પ્રમાણમાં ઉમેરીને બનાવેલ છે. આ દુધપાક સમાન્ય તાપમાને (૩૫±૨ °C) ૭૫ દિવસ અને રેફ્રિજરેટેડ તાપમાને (૫±૨ °C) ૧૦૫ દિવસ સુધી સારો રાખી શકાય છે. **Approved.** **(Action: Prof. & Head, Dept. of Dairy Engineering, AAU, Anand)**
14.5.1.19	**Technology for manufacture of extended shelf-life *Basundi***
	A commercial process technology to manufacture extended shelf-life *Basundi* has been developed by Anand Agricultural University, Anand. The standardized process involves manufacture of *Basundi* by vacuum (60 mmHG) concentration followed by in-bottle heat processing using rotary sterilizer at 110 °C for 15 minutes. The heat processed *Basundi* has a shelf life of 90 days when stored at 37±2 ^{o}C. આણંદ કૃષિ યુનિવર્સિટી દ્વારા લાંબી સંગ્રહક્ષમતા ધરાવતી બાસુંદી બનાવવાની પધ્ધતિ વિકસાવેલ છે. આ પ્રક્રિયામાં શૂન્યાવકાશમાં (૬૦ એમ.એમ. Hg.) બાસુંદીને ઘટ્ટ કરી બોટલમાં ભરીને રોટરી સ્ટરીલાઈઝરમાં ૧૧૦ °સે. તાપમાને ૧૫ મિનીટ સુધી ગરમ કરવામાં આવે છે. ઉપરોક્ત પ્રક્રિયાથી બનાવેલ બાસુંદી ૩૭±૨ °સે. તાપમાને ૯૦ દિવસ સુધી સંગ્રહી શકાય છે. **Approved.** **(Action: Prof. & Head, Dept. of Dairy Technology, AAU, Anand)**
14.5.1.20	**Eco-friendly Mobile Vending cum Storage System for Fruits and Vegetables**
	Fruits & vegetables vendors are advised to use “Eco-friendly Solar Powered Vending Cart” developed by the Anand Agricultural University.The average temperature and RH inside the storage chamber (14.12 cu.ft.) is maintained at 22±2.86 °C and 82 ±3.28 %, respectively, during summer months. This cart is useful to reduce the losses at retailer level, increases the shelf-life and also preserve the freshness of

	fruits and vegetables. ફળ અને શાકભાજીના છુટક વેપારીઓને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ "સુર્ય-શક્તિથી સંચાલીત ઇકો-ફ્રેન્ડલી હાથ-લારી" નો ઉપયોગ કરવા ભલામણ છે. આ હાથ-લારીમાં ઉનાળાના મહીનાઓ દરમિયાન સંગ્રહપેટી (૧૪.૧૨ ઘન ફૂટ) ની અંદરનુ તાપમાન ૨૨± ૨.૮૬ °C અને ભેજ ૮૨ ± ૩.૨૮ % જળવાઇ રહે છે, જેથી ફળ અને શાકભાજીને લાંબો સમય સાચવી, તાજા રાખીને છુટક વેચાણના ધોરણે થતું નુકશાન ઘટાડવામાં મદદરૂપ થાય છે. **Approved.** **(Action: Prof. & Head, Dept. of Post Harvest Engg. & Tech,, AAU, Anand)**
14.5.1.21	**Development of whey based RTS beverage from muskmelon and lime**
	The entrepreneurs interested in the production of dairy whey basedready to serve (RTS) beverage from muskmelon and lime are recommended to adopt processing technology developed by the Anand Agricultural University. The technology involves formulation of ingredients (milk whey 51.35 ml, musk melon juice 40 ml and lemon juice 6.19 ml) and thermal processing (hot filled at 85 °C in 200 ml glass bottle, crown corked and processed at 95 °C for 15 min) of prepared beverage. The developed beverage can be stored safely for 3 months at the ambient temperature. ડેરી વ્હે આધારીત, શક્કરટેટી અને લીંબુના રસનો ઉપયોગ કરીને બનાવેલ તૈયાર પીણાનાં ઉત્પાદનમાં રસ ધરાવતા ઉદ્યોગકારો/સાહસિકોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ પ્રોસેસિંગ તાંત્રિકતાનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. આ તાંત્રિકતામાં પીણું બનાવવા માટેની ફોરમ્યુલેશનમાં સમાવેશ કરવામાં આવેલા તત્વો (ડેરી વ્હે ૫૧.૩૫ મિલિ, શક્કરટેટીનું જ્યૂસ ૪૦ મિલિ અને લીંબુનો રસ ૬.૧૯ મિલી) અને થર્મલ પ્રોસેસીંગનો (૨૦૦ મિલિગ્રામ ગ્લાસ બોટલમાં ૮૫ °સે તાપમાને પીણાને હોટ ફીલિંગ કરી સીલ કરી ૯૫ °સે તાપમાન વાળા પાણીમાં ૧૫ મિનીટ માટે પ્રોસેસિંગ કરવાનું) સમાવેશ થાય છે. આ રીતે તૈયાર થતાં પીણાને ત્રણ મહિના સુધી સામાન્ય તાપમાને સંગ્રહી શકાય છે. **Approved.** **(Action: Prof. & Head, Dept. of Post Harvest Engg. & Tech,, AAU, Anand)**
14.5.1.22	**Production of high quality powder with maximum retention of essential oil using cryogenic grinding of cardamom**
	Entrepreneurs and agro-processing units involved in grinding of cardamom seed are recommended to use the technology of cryogenic grinding developed by the Anand Agricultural University for the production of superior quality cardamom powder with higher retention of volatile oil as compared to conventional grinding.The operating parameters were kept as temperature -40 °C, feed rate 7 kg/h and sieve size 1.5 mm. ઇલાઇચીના પાઉડરનું ઉત્પાદન કરતા ઉદ્યમ સાહસિકો તથા ઉદ્યોગકારોને ઉત્તમ ગુણવત્તાવાળા પાવડરનું ઉત્પાદન કરવા માટે આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ ક્રાયોજેનિક ગ્રાઇન્ડિગની તાંત્રિકતા વાપરવાની ભલામણ કરવામાં આવે છે. આ તાંત્રિકતાથી બનાવેલ ઇલાઇચી પાઉડરમાં, સાદી દળવાની પધ્ધતિની સાપેક્ષે, ઉંચી ગુણવત્તા સહિત, બાષ્પશીલ તૈલીય પદાર્થ વધૂ પ્રમાણમાં જળવાઇ રહે છે. આ માટે જરૂરી તાપમાન -૪૦ °સે., વહનક્ષમત્તા ૭ કિ.ગ્રા. પ્રતિ કલાક અને ૧.૫ મીમીના છીદ્ર ધરાવતી જાળીનો ઉપયોગ કરવાનો રહે છે. **Approved.** **(Action: Prof. & Head, Dept. of Post Harvest Engg. & Tech,, AAU, Anand)**

14.5.1.23	**Standardization of drying technique for *Moringa Oleifera* leaves**
	The entrepreneurs and food processors interested in production of dried Moringa leaves with the maximum retention of beta-carotene and Vitamin C can utilize the drying technique standardized by the Anand Agricultural University. The moringa leaves can be dried using vacuum dryer operated at 45 °C for 3½ hour and vacuum as 450 mm of Hg. The product retained 93.6 % of Beta-carotene and 22 % of Vitamin C. સરગવાના પાનની ગુણવત્તા યુક્ત સુકવણી કરવા ઈચ્છતા ઉદ્યોગ સાહસિકો અને ફૂડ પ્રોસેસરોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ સુકવણીની તાંત્રિકતાનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે .આ તાંત્રિકતા મુજબ વેક્યુમ ડ્રાયરમાં ૪૫ °સે તાપમાને ૩.૫ કલાક સુધી ૪૫૦ મીમી મર્ક્યુરી દબાણે શૂન્યવકાસમાં સુકવેલાં સરગવાનાં પ્રતિ ૧૦૦ ગ્રામ પાનમાં બીટા-કેરોટીન અને વિટામીનસી અનુક્રમે ૨૬.૯૮ મી.ગ્રા. (૯૩.૬ %) અને ૧૮૬.૬૩ મી.ગ્રા. (૨૨ %) સચવાયેલા જોવા મળે છે. **Approved.** **(Action: Prof. & Head, Dept. of Post Harvest Engg. & Tech,, AAU, Anand)**
14.5.1.24	**Accelerated drying of Aonla using pulsed osmotic microwave vacuum dehydration.**
	The entrepreneurs and fruit processors interested in production of osmotically dehydrated Aonla segments are recommended to use the processing technology developed by the Anand Agricultural University. The technology involves microwave vacuum (400 mmHg) assisted osmotic dehydration of Aonla segments in sugar syrup (50 ^{o}Brix) followed by microwave vacuum (500 mmHg) drying. It results in good quality sweetened dehydrated Aonla segments which retains more than 80 % of the ascorbic acid present in the fresh sample. ઓસ્મોટિક પ્રક્રિયાથી નિર્જળીકરણ કરેલ આમળાની કેંડીના ઉત્પાદનમાં રસ ધરાવતા ઉધોગ સાહસિકો અને ફળફળાદીના પ્રોસેસરોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ ટેક્નોલોજીનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે .આ તાંત્રિકતા દ્વારા ખાંડની ચાસણી (૫૦ °બ્રિક્સમાં) માઇક્રોવેવ વેક્યુમની મદદથી આમળાના ચીરીયાનું ઓસ્મોટિક પ્રક્રિયાથી નિર્જળીકરણ કર્યા બાદમા ઇક્રોવેવ વેક્યુમથી સુકવણી કરવામાં આવે છે .આ પ્રક્રિયાના પરિણામે કાચા આમળામાં રહેલ ૮૦ % થી વધુ એસ્કોર્બિક એસિડને જાળવી રાખવા સહિત સારી ગુણવત્તાવાળી મિઠાશ ધરાવતી નિર્જળીત આમળાની કેંડી મેળવી શકાય છે. **Approved.** **(Action: Prof. & Head, Dept. of Food Engineering, AAU, Anand)**
14.5.1.25	**Design and development of SSHE for *kajukatli* manufacturing**
	Entrepreneurs interested in manufacture of *Kajukatri* production are recommended to use the SSHE machine for continuous cooking and cooling developed by the Anand Agricultural University. The operating conditions for the SSHE required are 5 kg/cm^2 steam pressure, 14 rpm scrapper speed and 10 kg/h feed rate. The steam and electricity consumption during manufacturing of *Kajukatri* is 1.52 kg/kg of water evaporated and 0.14 kWh/kg of product, respectively. The cost of SSHE is about ₹ 76,125/- while the processing cost of *Kajukatri* is ₹ 9.21/kg. કાજુ કતરીના બહોળા ઉત્પાદનમાં રસ ધરાવતા ઉધોગ સાહસિકોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ કૂકિંગ અને કૂલિંગ સિસ્ટમ ધરાવતી મશીનનો ઉપયોગ કરવા ભલામણ કરવામા આવે છે .આ કૂકિંગ અને કૂલિંગ મશીનને, ૫ કિ.ગ્રા./ ચો.સે.મી .વરાળનું દબાણ, ૧૪ આર.પી.એમ. સ્ક્રેપરની ઝડપથી ચલાવવાથી ૧૦ કિ.ગ્રા/.કલાક કાજુ કતરી બનાવી શકાય છે. એસ.એસ.એચ.ઈ .માં કાજુ કતરી બનાવતી વખતે, ૧ કિગ્રા પાણી બાષ્પીભૂત કરવા ૧.૫૨

	કિગ્રા જેટલી વરાળ વપરાય છે, જ્યારે ૧કિગ્રા કાજુકતરી બનાવવા માટે ૦.૧૪ કિલોવોટ વીજળીનો વપરાશ થાય છે .આ મશીનની અંદાજીત કિંમત રૂ .૭૬,૧૨૫ થાય છે અને આ પદ્ધતિ મુજબ કાજુકતરી બનાવવાનો ખર્ચ રૂ .૯.૨૧/ કિ.ગ્રા .આવે છે. **Approved.** **(Action: Prof. & Head, Dept. of Food Engineering, AAU, Anand)**
14.5.1.26	**Development and performance evaluation of continuous rolling, sheeting and cutting system for *Kajukatli* production**
	Entrepreneurs interested in manufacturing of continuous rolling, sheeting and cutting system for *Kajukatri* production are recommended to use the machine developed by the Anand Agricultural University. This machine can continuously roll, sheet and cut the produce in diamond shaped (30x30x5 mm) *Kajukatri*. The fabrication cost of the machine is about ₹ 1,10,100/- while the operating cost is Rs.5.46/- per kg. કાજુ કતરીના ઉત્પાદનમાં રસ ધરાવતા ઉધોગ સાહસિકોને આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા વિકસાવેલ રોલિંગ, શીટિંગ અને કટિંગનો ઉપયોગ કરવા ભલામણ કરવામા આવે છે. આ મશીનથી ડાયમંડ આકાર (૩૦×૩૦×૫મીમી) ની કાજુકતરીને રોલિંગ, શીટિંગ અને કટિંગ કરી શકાય છે. આ મશીનની અંદાજીત કિંમતરૂ. ૧,૧૦,૧૦૦/- થાય છે જ્યારે પ્રક્રિયાની કિંમત રૂ. ૫.૪૬ પ્રતિ કિ.ગ્રા. થાય છે . **Approved.** **(Action: Prof. & Head, Dept. of Food Engineering, AAU, Anand)**
14.5.1.27	**Development of juice extraction process of wood apple fruit**
	The entrepreneurs and food processors interested in production of juice from wood apple fruits are recommended to use the technology developed by the Anand Agricultural University. This technology involves steaming (6 min), enzymatic treatment [with mixture of pectinase: cellulase (7:3) at the rate of 30 mg/100 g pulp for 6 h at 40 °C] and juice extractionwith maximum recovery with maximum total soluble solid in juice from wood apple fruit. Thermally processed (80 °C for 9 min) wood apple juice is microbiologically stable and acceptable on sensory basis for 5 months storage at ambient temperature (37±2 °C). કોઠામાંથી જ્યુસ બનાવવામાં રસ ધરાવતા ઉદ્યોગ સાહસિકને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ ટેકનોલોજી ઉપયોગ કરવા માટે ભલામણ કરવામાં આવે છે. આ ટેકનોલોજી મુજબ, કોઠાના ગરને વરાળથી ૬ મિનેટ સુધી બાફવું અને ઉત્સેચક (પેક્ટીનેસ: સેલ્યુલેઝ (૭:3) મિશ્રણ, ૩૦ ગ્રામ/૧૦૦ ગ્રામ પલ્પના દરે ૬ કલાક માટે ૪૦ °સે) દ્વારા પ્રાથમિક પ્રક્રિયા આપીને જ્યુસ એકસટ્રેકટર વડે રસ કાઢવામાં આવે છે. જેથી રસ અને તેમાં રહેલ દ્રાવ્ય ઘનપદાર્થનું મહત્તમ પ્રમાણમાં મળી રહે. ૮૦ °સે ૯ મીનિટસુધી ગરમ કરેલ કોઠાનું આ જ્યુસ સામાન્ય તાપમાને (૩૭ °સે) ૫ મહિના સૂધી જીવાણુમુકત રાખી શકાય છે. **Approved.** **(Action: Prof. & Head, Dept. of Food Precessing Technology, AAU, Anand)**
14.5.1.28	**Utilization of pumpkin carotenoid in food products**.
	The entrepreneurs and food processors interested in production of carotenoid fortified ice cream and low fat spread are recommended to use the technology developed by the Anand Agricultural University. (1) The ice cream can be fortified by carotenoid extract obtained by Super Critical Fluid Extraction of vacuum dried pumpkin powder @ 450 mg/100 g of ice cream mix. The ice cream thus obtained, contained 93.22 mg of β-carotene per 100 g of product. (2) The low fat spread can be fortified by carotenoid extract obtained By Super

Critical Fluid Extraction of vacuum dried pumpkin powder @ 150 mg/100 g of spread. The low fat spread thus obtained contained 35.26 mg of β-carotene per 100 g of product.

આઈસ્ક્રીમ અને લોફેટ સ્પ્રેડ બનાવનાર ઉદ્યોગ સાહસિકો કેરોટીનોઇડ ફોર્ટિફાઇડ આઈસ્ક્રીમ અને લો ફેટ સ્પ્રેડ ઉત્પાદન કરવા માટે આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ તાંત્રિકતાના ઉપાયોગની ભલામણ કરવામાં આવે છે.

(૧)કેરોટીનોઇડ ફોર્ટિફાઇડ આઈસ્ક્રીમ ઉત્પાદન કરવા માટે આ ટેકનોલોજીમાં શૂન્યાવકાશમાં સુકવણી કરેલ કોળાના પાઉડરમાંથી સુપર ક્રિટિકલ દ્રાવક નિષ્કર્ષણ કરી, ઉત્પાદિત કરેલ કેરોટીનોઇડ, ૪૫૦ મિ.ગ્રા/૧૦૦ ગ્રામ આઈસ્ક્રીમ મિક્ષમાં ઉમેરીને આઈસક્રીમ બનાવી શકાય. આ રીતે ઉત્પાદન કરેલ આઈસ્ક્રીમમાં β-કેરોટિન ૯૩.૨૨ મિ.ગ્રા/૧૦૦ ગ્રામ મળે છે.

(૨) કેરોટીનોઇડ ફોર્ટિફાઇડ લોફેટ સ્પ્રેડ ઉત્પાદન કરવા માટે આ તાંત્રિકતામાં શૂન્યાવકાશમાં સુકવણી કરેલ કોળાના પાઉડરમાંથી સુપર ક્રિટિકલ દ્રાવક નિષ્કર્ષણ કરી, ઉત્પાદિત કરેલ કેરોટીનોઇડ ૧૫૦ મિ.ગ્રા/૧૦૦ ગ્રામ સ્પ્રેડમાં ઉમેરીને લો ફેટ સ્પ્રેડ બનાવી શકાય. આ રીતે ઉત્પાદન કરેલ લો ફેટ સ્પ્રેડમાં β-કેરોટિન ૩૫.૨૬ મિ.ગ્રા./૧૦૦ ગ્રામ મળી રહે છે.

Approved.

(Action: Prof. & Head, Dept. of Food Precessing Technology, AAU, Anand)

14.5.1.29 Development of preservation technique for *idli* batter for enhanced shelf life

The entrepreneurs and food processers interested to store *idli* batter are recommended to use preservation technique developed by Anand Agricultural University. The packaging of *idli* batter prepared with selective cultures under controlled condition in 60 µm poly laminated pouch with N_2 flushing and stored at 7±2 °C is recommended for its shelf-life of upto 8 days. The sonication treatment (100 µm amplitude exposure for 15 minute) of the *idli* batter packed in 60µm poly laminated pouch with N_2 flushing and stored at 7±2 °C is recommended for its shelf-life upto 15 days.

ઇડલીના ખીરાને સાચવવા ઇચ્છતા ઉદ્યોગસાહસિકોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ તાંત્રિકતાનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે. ખાસ પ્રકારના મેળવળ વડે નિયંત્રિત આથવણથી બનાવેલ ઈડલીના ખીરાને ૬૦ µm પોલીલેમીનેટેડ પાઉચમાં નાઈટ્રોજન ગેસની સાથે પેક કરી ૭±૨°સે.તાપમાને રાખવાથી ૮ દિવસ સુધી સાચવી શકાય છે.પસંદ કરેલા સુક્ષ્મજીવાણુંઓ વડે નિયંત્રિત આથવણથી તેમ ઈડલીના ખીરાને ૧૦૦ µm કંપન વિસ્તારની સોનીકેશન પ્રક્રિયા ૧૫ મિનીટ સુધી આપી, તેને ૬૦ µm પોલીલેમીનેટેડ પાઉચમાં નાઈટ્રોજન ગેસની સાથે પેક કરી ૭±૨°સે. તાપમાને રાખવાથી ૧૫ દિવસ સુધી સાચવી શકાય છે.

Approved.

(Action: Prof. & Head, Dept. of Food Quality Assurance, AAU, Anand)

14.5.1.30 Bioethanol production from potato processing starch waste by thermotolerant strain of *Saccharomyces cerevisiae* ETGS1

Entrepreneurs interested in bioconversion of potato processing waste into ethanol are advised to use amylolytic *Sacharomyces cerevisiae* ETGS1 strain and process developed by the Anand Agricultural University. This technology enables ethanol production with 0.45 g product per g substrate yield and 88.53 % fermentation efficiency from potato processing effluent and gelatinised potato waste with minimum input by consolidated bioprocessing.

બટાટાનાં પ્રોસેસિંગ દરમિયાન ઉત્પાદિત થતા બાઇ-પ્રોડકટમાંથી ઈથેનોલ બનાવવામાં

	રસ ધરાવતા ઉદ્યોગ સાહસિકોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસિત એમાયલોલાઈટીક *Sacharomyces cerevisiae* ETGS1 કલ્ચર અને પ્રકિયાનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે .આ તાંત્રિકતા દ્વારા ઓછા ઇનપુટ સાથે બટાટા પ્રોસેસિંગના પ્રવાહી અને જિલેટીનાઇઝડ બટેટાના વેસ્ટના બાયોપ્રોસેસિંગથી ૦.૪૫ ગ્રામ પ્રોડક્ટ / ગ્રામ સબસ્ટ્રેટની ઉપજ અને ૮૮.૫૩ % આથવણની પ્રકિયાની કાર્યક્ષમતાથી ઇથેનોલનું ઉત્પાદન કરવા સક્ષમ છે. **Approved.** **(Action: Prof. & Head, Dept. of Food Quality Assurance, AAU, Anand)**
14.5.1.31	**Development of technology for productionof bio-manure granules From digested slurry of biogas plant.**
	Small capacity biogas plant owners are recommended to adopt a simple technology using Jute sack with stand for separation of liquid from digested slurry developed at Anand Agricultural University for easy handing and transportation. With 70 % separated sludge, 20 % dried poultry manure and 10 % wood ash combination bio manure granules prepared are safe for storage and further use as manure. નાની ક્ષમતા વાળા બાયોગેસ પ્લાન્ટ ધરાવતા લોકોને આણંદ કૃષિ યુનિવર્સીટી, આણંદ દ્વારા વિકસાવેલ કંતાણબોરા તથા સ્ટેન્ડનાં ઉપયોગથી બાયોગેસ પ્લાન્ટની ડાયજેસ્ટેડ સ્લરીમાંથી પાણી અને ગદ્દ છુટો પાડવાની તકનીકનું પ્રયોગ, એમના સારા નિકાલ માટે કરવાની ભલામણ છે. ભેજ શોષી શકે એવી વસ્તુઓ જેવી કે મરઘાનું સૂકુહગાર (૨૦ %) લાકડાની રાખ (૧૦ %) અને ગદ્દ (૭૦ %) સાથે મિશ્રણ કરીને બાયોમેન્યુર ગ્રેન્યુઅલ્સ બનાવી સંગ્રહ કરી શકાય છે. **Approved.** **(Action: Prof. & Head, Dept. of Bio Energy, AAU, Anand)**
14.5.1.32	**Development of high fiber bakery products using Aonla and carrot pomace after juice extraction**
	1. A satisfactory high fiber bread can be prepared by adding 2.5 % Aonla Pomace Powder replacing the refind wheat flour.The bakery industry and entrepreneurs interested in production of high fiber bread are recommended to use the technology developed by Anand Agricultural University. ૧.આમળાનો રસ કાઢ્યા બાદ રહી ગયેલા માવાનો પાઉડર ૨.૫ ટકાના દરે ઉમેરી સંતોષકારક હાઈ ફાયબર બ્રેડનું ઉત્પાદન કરવા બેકરી વાનગીઓના ઉત્પાદકો અને ઉદ્યોગ સાહસિકોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવાયેલ ટેકનોલોજીનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે. 2. A satisfactory high fiber biscuit can be prepared by adding 12 % Aonla Pomace Powder using technology developed by the Anand Agricultural University. The product duly packed in aluminum foil will have safe storage life of about two months .The bakery industry and entrepreneurs interested in production of high fiber biscuit are recommended to follow the same. ૨.આમળાનો રસ કાઢ્યા બાદ રહી ગયેલા માવાનો પાઉડર ૧૨ ટકાના દરે ઉમેરી સંતોષકારક હાઈ ફાયબર બિસ્કીટનું ઉત્પાદન કરવા બેકરી વાનગીઓના ઉત્પાદકો અને ઉદ્યોગ સાહસિકોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવાયેલ ટેકનોલોજીનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે .આવા હાઈ ફાયબર બિસ્કીટ સામાન્ય વાતાવરણમાં એલુમિનિયમ ફોઇલમાં ૨ મહિના સુધી સંગ્રહી શકાય છે. 3. A satisfactory high fiber bread can be prepared by adding 4% Carrot Pomace Powder using technology developed by the Anand Agricultural University. The bakery industry and entrepreneurs interested in production of high fiber bread are

	recommended to follow the same. 3.ગાજરનો રસ કાઢ્યા બાદ રહી ગયેલા માવાનો પાઉડર ૪ ટકાના દરે ઉમેરી સંતોષકારક હાઈફાયબર બ્રેડનું ઉત્પાદન કરવા બેકરી વાનગીઓના ઉત્પાદકો અને ઉદ્યોગ સાહસિકોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવાયેલ ટેકનોલોજીનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે. 4. A satisfactory high fiber biscuit can be prepared by adding 20% Carrot Pomace Powder using technology developed by the Anand Agricultural University. The product duly packed in plastic container and aluminum foil will have safe storage life of about two and half months .The bakery industry and entrepreneurs interested in production of high fiber biscuit are recommended to follow the same. ૪.ગાજરનો રસ કાઢ્યા બાદ રહી ગયેલા માવાનો પાઉડર ૨૦ ટકાના દરે ઉમેરી સંતોષકારક હાઈફાયબરબિસ્કીટનું ઉત્પાદન કરવા બેકરી વાનગીઓના ઉત્પાદકો અને ઉદ્યોગ સાહસિકોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવાયેલ ટેકનોલોજીનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે .આવા હાઈફાયબર બિસ્કીટ સામાન્ય વાતાવરણમાં પ્લાસ્ટિક કન્ટેઈનર તેમજ એલ્યુમિનિયમ ફોઇલમાં ૨½ મહિના સુધી સંગ્રહી શકાય છે. **Approved.** **(Action: Prof. & Head, Dept. of Horticulture, AAU, Anand)**

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14.5.1.33	**Enzymatic Pre-treatment in the Processing of Pigeon pea.**
	The pulse processing enterpreneurs are recommended to give enzymatic pre-treatment at specific concentration, time and temperature to get higher recovery and to reduce the dhal making time. આથી કઠોળના પ્રોસેસીંગ સાથે સંકળાયેલ ઉદ્યોગકારોને તુવેરની દાળ બનાવવા તુવેરને ઉત્સેચકોની પ્રક્રીયા, ચોકકસ સાંદ્રતા, નિર્ધારીત તાપમાને અને સમય માટે આપવાની ભલામણ કરવામાં આવે છે. આ પ્રક્રીયાથી દાળની રીકવરી વધારે મળે છે, તથા દાળ બનાવવાના સમયમાં યોગ્ય ઘટાડો થાય છે. **Approved.** **(Action: Prof. & Head, Dept. of Processing & Food Engg., CAET, JAU, Junagadh)**
14.5.1.34	**Irrigation scheduling of wheat under high discharge drip irrigation.**
	Farmers of South Saurashtra Agro-climatic Zone growing wheat in medium black soil are recommended to adopt the drip irrigation system having spacings of 1.8m lateral to lateral and 1m emmiter to emmiter of 14 liters per hour to irrigate at 150 cbar soil moisture tension to get higher net return with 21.04 % water saving and 4 % energy saving. For this, farmers are advised to irrigate the crop with following schedule.

Month	Number of Irrigation	Time of operation	Irrigation Interval
November	1	Flood irrigation	Post sowing
December	3	4 hours and 45 minute	10 Days
January	5	3 hours and 40 minute	6 Days
February	3	5 hours and 40 minute	9 Days

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના મધ્યમ કાળી જમીનમાં ઘઉંનુ વાવેતર કરતા ખેડૂતોને ભલામણ કરવામા આવે છે કે, ઘઉંના પાકમાં લેટરલથી લેટરલ વચ્ચે ૧.૮ મીટર અને ૧૪ લિટર પ્રતિ કલાક ના પ્રવાહ દર ના ડ્રીપર થી ડ્રીપર વચ્ચે ૧.૦ મીટર અંતર રાખી ટપક પિયત પધ્ધતિ દ્વારા ૧૫૦ સેન્ટીબાર જેટલા તણાવે પિયત આપવાથી ઘઉંના પાકમાં ૨૧.૦૪ % પાણી તથા ૪ % ઉર્જાની બચત સાથે વધુ ચોખ્ખી આવક મેળવી શકાય છે. જે માટે

ટપક પદ્ધતિને નીચેની વિગત પ્રમાણે ચલાવવી.

માસ	પિયત સંખ્યા	ચલાવવાનો સમય	બે પિયત વચ્ચેનું અંતર
નવેમ્બર	૧	બેઠું પિયત	વાવણી કર્યા પછી તરત
ડીસેમ્બર	૩	૪ કલાક ૪૫ મિનીટ	૧૦ દિવસ
જાન્યુઆરી	૫	૩ કલાક ૪૦ મિનીટ	૬ દિવસ
ફેબ્રુઆરી	૩	૫ કલાક ૪૦ મિનીટ	૯ દિવસ

Approved.

(Action: Prof. & Head, Dept. of Soil & Water Consr. Engg., CAET, JAU, Junagadh)

14.5.1.35 Evaluation of on stream check dam groundwater recharge technique for Junagadh region

It is recommended to farmers, NGOs and line departments of Government on-stream check dam groundwater recharge technique is a cost effective groundwater recharge technique. In Junagadh region, it results 0.15 cum groundwater recharge per square meter of catchment area at the cost of₹ 1.02 per cum as per prevailing cost.

ખેડુતો, સ્વૈછિક સંસ્થાઓ અને સરકારી વિભાગોને આથી ભલામણ કરવામાં આવે છે કે ઝરણાં ઉપર બાંધવામાં આવતાં ચેકડેમ અસરકારક રીચાર્જ ટેકનીક છે, જેનાથી જૂનાગઢ વિસ્તારમાં ૦.૧૫ ઘન મીટર ભુગર્ભ જળ રીચાર્જ પ્રતિચોરસ મીટર કેચમેંટ એરીયા પ્રમાણે કરી શકે છે જેનો ખર્ચ પ્રવર્તમાન કિંમત પ્રમાણે રૂ. ૧.૦૨ પ્રતિ ઘ.મી. થાય છે.

Approved.

(Action: Prof. & Head, Dept. of Soil & Water Consr. Engg., CAET, JAU, Junagadh)

14.5.1.36 Evaluation of groundwater recharge basin technique for Junagadh region

It is recommended to farmers, NGOs and line departments of Government that recharge basin is a cost effective recharge technique.In Junagadh region, itresults in recharge about 0.13 cum. groundwater per square meter of catchment area at the cost of ₹ 0.27 per cum.

ખેડુતો, સ્વૈછિક સંસ્થાઓ અને સરકારી વિભાગોને આથી ભલામણ કરવામાં આવે છે કે રીચાર્જ બેઝિન ખુબ જ ફાયદામંદ ભુગર્ભજળ રીચાર્જ ટેકનીક છે, જેના દ્વારા જૂનાગઢ વિસ્તારમાં ૦.૧૩ ઘન મીટર ભુગર્ભજળ રીચાર્જ પ્રતિ ચો.મી. કેચમેંટ એરીયા પ્રમાણે કરી શકે છે, જેનો ખર્ચ પ્રવર્તમાન કિંમત પ્રમાણે રૂ. ૦.૨૭ પ્રતિ ઘ.મી. થાય છે.

Approved.

(Action: Prof. & Head, Dept. of Soil & Water Consr. Engg., CAET, JAU, Junagadh)

14.5.1.37 Evaluation of roof water harvesting recharge technique for Junagadh region

It is recommended to citizens, farmers, NGOs and line departments of Government that roof water harvesting is an effective groundwater recharge technique. In Junagadh region,it results in groundwater recharge of 0.22 cum out of potential runoff of 0.73 cum per sq. m of roof area, which may be done through tube well recharge and remaining 0.51 cum may be stored in a sump with a cost of ₹ 34 per cum at prevailing cost. The annual runoff coefficient of 0.71 for roof top is recommended for designing the roof water harvesting system.

નાગરીકો, ખેડુતો, સ્વૈછિક સંસ્થાઓ અને સરકારી વિભાગોને આથી ભલામણ કરવામાં આવે છે કે રૂફ વોટર હાર્વેસ્ટીગ ખુબજ અસરકારક રીચાર્જ ટેકનીક છે. જેનાથી જૂનાગઢ વિસ્તારમાં પ્રતિ ચો. મી. રૂફ વિસ્તારની ૦.૭૩ ઘ.મી. રનઓફ ક્ષમતામાથી ૦.૨૨ ઘ.મી. ભુગર્ભ જળ રીચાર્જ અને ૦૫૧ ઘ.મી. ટાંકામા સંગ્રહ થાય છે, જેનો ખર્ચ પ્રવર્તમાન કિંમત પ્રમાણે ₹ ૩૪ પ્રતિ ઘ.મી. થાય છે અને રૂફ વોટર હાર્વેસ્ટીગ સીસ્ટમ ડીઝાઇન કરવા માટે વાર્ષિક ૦.૭૧ રૂફ વોટર રનઓફ કોએફિસીએંટ ભલામણ કરવામા આવે છે.

Approved.

(Action: Prof. & Head, Dept. of Soil & Water Consr. Engg., CAET, JAU, Junagadh)

14.5.1.38	**Estimation of irrigation demand for different crops of ozat river basin using remote sensing and GIS**
	The irrigation department and planners of Ozat river basin are recommended that based on remote sensing technology, 9 irrigations should be applied for wheat crop in basin apart from pre sowing irrigation at 16, 31, 40, 50, 62, 72, 80, 89 and 96 days after sowing with irrigation depths of 33, 38, 32, 37, 45, 43, 37, 44 and 35 mm, respectively. ઓઝત બેજીનમાં કાર્યરત સિંચાઇ વિભાગ અને પ્લાનર/આયોજકોને રિમોટ સેન્સીંગ ટેકનોલોજી દ્વારા ગણતરી કર્યા અનુસાર ઘઉંના પાકમાં ૯ પિયત અનુક્રમે વાવેતર કર્યા પછી ૧૬, ૩૧, ૪૦, ૫૦, ૬૨, ૭૨, ૮૦ ,૮૯ અને ૯૬ દિવસે ૩૩, ૩૮, ૩૨, ૩૭, ૪૫, ૪૩, ૩૭, ૪૪ અને ૩૫ મીમી ઉંડાઈના પિયત અને એક વાવણી પૂર્વેનું પિયત આપવાની ભલામણ કરવામાં આવે છે. **Approved.** **(Action: Prof. & Head, Dept. of Soil & Water Consr. Engg., CAET, JAU, Junagadh)**
14.5.1.39	***In-situ* moisture conservation in rainfed stressed regions for increasing productivity of cotton crop.**
	The farmers of North Saurashtra Agro-climatic Zone growing Bt. cotton G. Cot Hy-8 (BG-II) at the distance of 120 x 45 cm are advised to prepare ridge and furrow OR broad bed with 2 rows(180 cm width) and furrow (60 cm) at 20 days after sowing and apply plastic mulch (25 micron) OR straw mulch @ 5 t/ha at withdrawal of monsoon in the month of September (38 to 39 Std. week) for obtaining higher productivity and maximum net returns as well as maximum *in-situ* moisture conservation and rain water use efficiency under dry farming conditions. ઉત્તર સોરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારનાં સુકી ખેતી પરિસ્થિતિમાં બીટી કપાસ ગુ.કપાસ શંકર–૮(બોલ ગાર્ડ–II)નું ૧૨૦ x૪૫ સે.મી.ના અંતરે વાવેતર કરતા ખેડૂતોને વધારે ઉત્પાદન અને મહત્તમ આર્થિક વળતર તેમજ મહત્તમ જમીનમાં ભેંજ સંગ્રહ કરવા અને વરસાદના પાણીના વપરાશની કાર્યક્ષમતા મેળવવા માટે વાવેતર બાદ ૨૦ દિવસે ધોરીયા અને પાળા **અથવા** ૬૦ સે.મી. ના ધોરીયા અને બે હાર સાથે૧૮૦ સે.મી.ના પહોળા કયારા બનાવવા અને સપ્ટેમ્બર માસમાં ચોમાસાની વિદાય સમયે કાળું પલાસ્ટીક (૨૫ માઈક્રોન)નું **અથવા** પ્રતિ હેકટરે ૫ ટન ભુસાનું આવરણ કરવાની ભલામણ કરવામાં આવે છે. **Approved.** **(Action: Res. Sci. (Dry Farming), Main Dry Farmng Res. Stat., JAU, Targhadia)**
14.5.1.40	**Development and performance evaluation of tractor drawn cultivator cum spiked roller.**
	The farmers of South Saurashtra Agro-climatic Zone and manufacturers are recommended to use Junagadh Agricultural University developed tractor drawn cultivator cum spiked roller for seed bed preparation. It saves 68.31 per cent cost of operation as compared to traditional method. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ખેડ્તો અને ઉત્પાદકોને વાવણી લાયક જમીન તૈયાર કરવા માટે જૂનાગઢ કૃષિ યુનિવર્સીટી, જૂનાગઢ દ્વારા વિકસાવેલ ટ્રેક્ટર સંચાલિત દાંતી સાથેનો સ્પાઇકડ રોલર ઉપયોગમાં લેવાની ભલામણ કરવામાં આવે છે .આ ઓજારના ઉપયોગથી રૂઢિગત સાધનોની સરખામણીમાં ૬૮.૩૧ %જેટલા ખર્ચની બચત કરી શકાય છે. **Approved.** **(Action: Professor & Head, Dept. of Farm Engineering, CoA, JAU, Junagadh)**
14.5.1.41	**Effect of coloured plastic mulches on cultivation of tomato crop.**
	Farmers of South Saurashtra Agro-climatic Zone are recommended to adopt silver/black or red/black plastic mulch (20 µm) with drip irrigation and raised bed for cultivation of tomato during *rabi* season. This plastic mulch diminishes the infestation of insects/pests and diseases in the crop, controls weeds and results higher crop yield and income. આથી દક્ષિણ સૈારાષ્ટ્ર કૃષિ આબોહવાકીય વિસ્તારનાં ટમેટા ઉગાડતા ખેડુતોને શીયાળાની ઋતુમાં ગાદી કયારા અને ટપક પધ્ધતિ સાથે ૨૦ માઈક્રોન જાડાઈના સીલ્વર બ્લેક અથવા રેડ બ્લેક કલરના પ્લાસ્ટીક મલ્ચનો ઉપયોગ

કરવાની ભલામણ કરવામાં આવે છે. આ પ્લાસ્ટીક મલ્ચના ઉપયોગથી પાકમાં રોગ–જીવાતનો ઉપદ્રવ ઘટાડી શકાય છે નિંદામણનુ નિયંત્રણ થાય છે તેમજ પાકની વધુ ઉત્પાદકતા અને આવક મેળવી શકાય છે.

Approved.

(Action: Prof. & Head, Dept. of Renewable Energy Engg., CAET, JAU, Junagadh)

14.5.1.42 Development and performance evaluation of low cost plastic mulch cum drip lateral laying machine

Tractor mounted plastic mulch cum drip lateral laying low cost machine (₹60,000) developed by Junagadh Agricultural University is recommended for farmers' use and for farm machinery manufacturers. It can be used for laying plastic film with width ranging from 900 to 1500 mm (3 to 5 ft.) along with two lines of drip lateral at a time. It saves about 97.23 % time and 46.03 % cost of laying plastic mulchand drip lateralas compared to conventional manual laying method.

જૂનાગઢ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ ટ્રેકટર સંચાલીત ઓછી કિંમતનુ પ્લાસ્ટીક મલ્ચ કમ ડ્રીપ લેટરલ પાથરવાનું યંત્ર ખેડૂતોને વાપરવા તેમજ ખેતયંત્ર ઉત્પાદકો માટે ભલામણ કરવામાં આવે છે. જેના વડે ૯૦૦ થી ૧૫૦૦ મી.મી. (૩ થી ૫ ફુટ) સુધીની પહોળાઈનાં પ્લાસ્ટીક મલ્ચની સાથે સાથે ડ્રીપ લેટરલ ની બે લાઈન એકી સાથે પાથરી શકાય છે. આ યંત્ર વાપરવાથી માનવ દ્વારા મલ્ચ અને ડ્રીપ લેટરલ પાથરવાની સરખામણીએ ૯૭.૨૩ % સમયમાં તેમજ ૪૬.૦૩ % ખર્ચમાં બચત કરી શકાય છે.

Approved.

(Action: Prof. & Head, Dept. of Farm Machinery & Power Engg., CAET, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

14.5.1.43 Development of integrated rainwater resource management (iRaM) module for coastal areas of South Gujarat

Farmers of South Gujarat coast are reccommonded to construct ponds in lower depressions of their field, to harvest rain water for improving ground water quality along with rearing of fresh water fish (Grass carp, Catla, Rohu and Mrigal). The pond may be constructed in 10 % area with 3.0 m depth including 0.5m free board. They may rear fresh water fish even by collecting rain water or excess canal water by adopting "iRaM"
(Integrated rainwater resource management) model.

દક્ષિણ ગુજરાતના કાંઠાવિસ્તારના ખેડૂતોને ભુગર્ભ જળની ગુણવત્તા સુધારવા તેમજ મીઠા પાણીની માછલીઓના ઉછેર માટે ખેતરના નીચાણમાં હોઈ તેવા આશરે ૧૦ મા ભાગમાં ૦.૫ મીટર ફ્રી બોર્ડ સાથે ૩.૦ મીટર ઊંડી ખેત તલાવડી બનાવવાની ભલામણ કરવામાં આવે છે. જેથી ખેડૂતો સંકલીત વરસાદીય પાણી વ્યવસ્થાપન (iRaM) માળખા દ્વારા વરસાદી અથવા નહેરના વધારના પાણીનો સંગ્રહ કરી ખેત તલાવડીમાં મીઠા પાણીની માછલીઓ (ગ્રાસક્રાપ, કટલા, રોહુ અને મ્રુગલ) નો ઉછેર કરી શકે છે.

Approved.

(**Action:** Principal, College of Fisheries, NAU, Navsari)

14.5.1.44 Irrigation scheduling of teak seedlings grown in nurseries

It is recommended to farmers/state forest department raising teak stump in net house nurseries to irrigate the seedlings on every alternate day, for getting seedlings with superior growth. The approximate quantity of water application (ml) in poly-bags of 10 kg size, during different months should be as follows:

Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
300	200	200	300	300	400	400	300

ખેડૂતો તથા રાજય વન વિભાગના અધિકારીઓને ભલામણ કરવામાં આવે છે કે, નેટ હાઉસમાં સાગના રોપાઓની સારી ગુણવત્તા માટે એકાંતરે પાણી આપવું. અંદાજીત દર મહિને ૧૦ કિ.ગ્રા બેગમાં પાણીની માત્રા (ml) નીચે મુજબ આપવી.

નવેમ્બર	ડિસેમ્બર	જાન્યુઆરી	ફેબ્રુઆરી	માર્ચ	એપ્રિલ	મે	જુન
૩૦૦	૨૦૦	૨૦૦	૩૦૦	૩૦૦	૪૦૦	૪૦૦	૩૦૦

	Approved. (**Action:** Principal, College of Forestry, NAU, Navsari)
14.5.1.45	**Testing and modification of sugarcane planter.**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone (AES-III) are advised to adopt IISR, Lukhnow make automatic planter with minor adjustment (i.e.30^0 enlargement in angle of covering device) for easy planting of sugarcane in heavy black soil. By adopting this, it can reduce fuel consumption, saves in cost of cutting and covering sets and increase higher cane yield with more net income as compared to other local make planters. આથી દક્ષિણ ગુજરાતના ભારે વરસાદ વાળા કૃષિ આબોહવાકીય વિભાગ (કૃષિ આબોહવાકીય પરિસ્થિતી –૩) ના ખેડૂતોને ભલામણ કરવામાં આવે છે કે આઈ.આઈ.એસ.આર., લખનૌ દ્વારા નિર્મિત ઓટોમેટીક શેરડી રોપણી યંત્રમાં સામાન્ય સુધારો (એટલે કે ઢાંકવાના સાધનમાં ૩૦° ખૂણાનો વધારો) કરી ભારે કાળી જમીનમાં શેરડીની રોપણી કરવામાં આવે તો બીજા દેશી બનાવટના યંત્ર કરતા સરળ કાર્ય, ઓછા ઈંધણનો વપરાશ ઉપરાંત શેરડીના ટુકડાની કાપણી અને ઢાંકવાની કિંમતમાં બચતની સાથે સાથે ચોકસાઈ ભર્યા કાર્ય દ્વારા વધારે ઉત્પાદન તથા વધારે સારી આવક મેળવી શકાય છે. **Approved.** (**Action:** Prof. & Head, Deptt. of Agril. Engg., NMCA, NAU, Navsari)
14.5.1.46	**Packaging and storage studies of drumstick '*Moringa oleifera*' and its pulp.**
	1. Farmers, processors, and entrepreneurs are recommended to preserve the drumstick pod pieces by packing in glass bottle and 'A-1 tall tin can' with 2 % brinesolution and steam retorting at 115 °C temperature for 15 min and cooling. Thus, bottled and canned drumstick pod pieces can be stored safely and utilized up to 8 and 12 months, respectively. 2. Farmers, processors, and entrepreneurs are recommended to preserve the drumstick pulp in glass bottle and 'A-1 tall tin can' after sterilization and steam retorting at 121 °C temperature for 10 min and cooling. Thus, bottled and canned drumstick pulp can be stored safely and utilized up to 8 and 12 months, respectively. ૧. ખેડુતો, પ્રસંસ્કરણકારો અને ઉદ્યોગ સાહસીકો ને ભલામણ કરવામાં આવે છે કે સરગવાની સીંગોના ટુકડાને કાચની બાટલી અને 'એ–૧ ટોલ' ડબ્બામાં સંગ્રહ કરવા માટે ૨ % મીઠાનું દ્રાવણ ભરી અને વરાળમાં ૧૧૫ °સે. તાપમાને ૧૫ મીનીટ માટે રીટોરટીંગ કરી અને ઠંડુ કરવું. આ રીતે બાટલીબંધ અને ડબ્બાબંધ કરેલ સરગવાની સીંગોને અનુક્રમે ૮ અને ૧૨ માસ સુધી સંગ્રહીત કરી વાપરી શકાય છે. ૨. ખેડુતો, પ્રસંસ્કરણકારો અને ઉદ્યોગ સાહસીકોને ભલામણ કરવામાં આવે છે કે, સરગવાની સીંગોના ગરને કાચની બાટલી અને 'એ–૧ ટોલ' ડબ્બામાં સંગ્રહ કરવા માટે સ્ટરીલાઈઝ કરી, વરાળમાં ૧૨૧°સે. તાપમાને ૧૦ મીનીટ માટે રીટોરટીંગ કરી અને ઠંડુ કરવું. આ રીતે બાટલીબંધ્ધ અને ડબ્બાબંધ કરેલ સરગવાની સીંગોના ગરને અનુક્રમે ૮ અને ૧૨ માસ સુધી સંગ્રહીત કરી વાપરી શકાય છે. **Approved.** (**Action:** Incharge, CE on PHTC, NAU, Navsari)
14.5.1.47	**Technology for utilization of Orange Peel and Seed.** **Sub-title: Standarization of drying parameters for orange peel and seed**
	Processors and entrepreneurs are recommended to dry the sweet orange peel and seed below 7 % final moisture content using tray dryer operated at 50°C drying air with tray load of 4.6 kg/m^2 and 2.7 kg/m^2 for 32 h and 21 h, respectively to extract highest orange oil with optimum d- limonene cotent. પ્રસંસ્કરણ કરતા અને ઉદ્યોગ સાહસિકોને ભલામણ કરવામાં આવે છે કે નારંગીની છાલ અને બીજને ૭% થી નીચે ભેજ સુધી સુકવણી કરવા માટે ટ્રે–ડ્રાયરમાં અનુક્રમે ૪.૬ કિગ્રા/મી² અને ૨.૭ કિગ્રા/મી² ના દરથી પાથરી, ૫૦°સે. ઉષ્ણતામાનવાળી હવામાં અનુક્રમે ૩૨ કલાક અને ૨૧ કલાક મુકવાથી ડી–લીમોનીનનું મહત્તમ પ્રમાણ વાળુ નારંગીનું તેલ વધુ પ્રમાણમાં કાઢી શકાય છે . **Approved with following suggestion/s:** Advised to takeup work on solvent extraction considering solvent types, particle sizes and solvent ratios. (**Action:** Incharge, CE on PHTC, NAU, Navsari)

14.5.1.48 Development and studies of sapota (chikoo) powder based value added product (pasta) using semolina (Suji) and maida

The processors and entrepreneurs are recommended to prepare sapota powder blended pasta by replacing 20 % of maida with sapota (chikoo) powder and by adding water @ 31% of total weight for extrusion followed by dring at 50 °C temperature to attain moisture content 6.0±1.0 %. Dried pasta can be safely stored in 200 micron thick HDPE bags up to six months at ambient temperature.

આથી પ્રોસેસર્સ અને ઉદ્યોગસાહસિકોને ભલામણ કરવામાં આવે છે કે ચીકુ પાવડર ભેળવીને પાસ્તા બનાવવા માટે ૨૦ % મેદાની જગ્યાએ ચીકુ પાવડર બદલી કુલ વજનના ૩૧ % ભેળવી ઉત્તોદન પ્રક્રીયા કર્યા બાદ ૫૦ °સે. તાપમાને સુકવણી કરવાથી ૬±૧ % ભેજનું પ્રમાણ મેળવી શકાય છે. સુકવેલા પાસ્તાને ૨૦૦ માઈક્રોન જાડી એચડીપીઈ બેગમાં છ મહીના સુધી સામાન્ય તાપમાને સલામત રીતે સંગ્રહ કરી શકાય છે.

Approved.

(**Action:** Dean, College of Agril. Engg. & Tech., NAU, Dediapada)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

14.5.1.49 Evaluation of different resource conservation equipment for sustainable crop production under rain fed condition.

The farmers of North Gujarat Agro-climatic Zone IV growing cluster bean under rainfed condition are recommended to use roto till drill for sowing clusterbean to get higher seed yield, monetary returns and rain water use efficiency.

ઉત્તર ગુજરાત ખેત હવામાનના વિસ્તાર ૪ માં વરસાદ આધારીત ખેતી કરતા ખેડુતોને ગુવારનું વધારે ઉત્પાદન, વળતર અને વરસાદી પાણીની ઉત્પાદન ક્ષમતામા મેળવવા માટે રોટો ટીલ ડ્રીલથી વાવણી કરવા ભલામણ કરવામાં આવે છે. વધુમાં રોટો ટીલ ડ્રીલથી વાવણી કરતા ભેજના વધુ સંચય થકી વરસાદી પાણીની ઉત્પાદન ક્ષમતામાં વધારો થાય છે.

Approved.

(Action: Res. Scientist, Centre for Natural Resource Mgmt., SDAU, SKNagar)

14.5.1.50 Effect of land configuration and mulches on growth, yield and economics of cotton under rain fed condition

The farmers of North-West Gujarat Agro-climatic Zone V growing *desi* cotton under dry land condition are recommended to open the furrow at 3.6 m interval and apply castor shell or mustard straw mulch @ 10 t/ha after last inter culturingfor getting higher seed cotton yield and monetary returns.

ઉત્તર પશ્ચિમ ગુજરાત ખેત હવામાન વિસ્તાર ૫ ની સુકીખેતી પરીસ્થિતીમા દેશી કપાસની ખેતી કરતા ખેડુતોને કપાસનુ વધારે ઉત્પાદન અને વધુ વળતર મેળવવા માટે વાવણી સમયે ૩.૬ મી. ના અંત્તરે ચાસ ખોલવા અને છેલ્લી આંતરખેડ પછી હેકટરે ૧૦ ટન દિવેલાની અથવા રાયડાની ફોતરીનું આવરણ કરવું.

Approved.

(Action: Res. Scientist, Centre for Natural Resource Mgmt., SDAU, SKNagar)

14.5.2 RECOMMENDATION FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

14.5.2.1 Evaluating canal scheduling approaches for optimumproductivity in Panam irrigation command area

Recommendation: I

The irrigation engineers, reservoir operators and planners of Panam Canal Command for three distributaries **(27-R, 28-R and 29-R) of Panam Canal Command** are recommended to promote 50% of CCA under cultivation and to follow full canal supply at least for 60 days with optimised cropping pattern (Table 1) given below to enhance WUE and canal performance to acceptable level (Table 2).

Table 1: Optimised Cropping Pattern (ha)

Crops	**Distributory**		
	27-R	**28-R**	**29-R**
Wheat	405.0	136.2	364.0

Maize	162.0	34.1	364.0
Fodder	81.0	13.6	36.4
Other	81.0	22.4	47.1
Castor	-	-	1.8
Cotton	-	-	1.8
Fallow Land	890.3	437.4	1004.9

Table 2: Canal Performance Indices

Performance Indicators	**Existing**	**Acceptable**
Adequacy	>0.57	>0.90
Efficiency	>0.91	>0.85
Dependability	>0.64	<0.10
Equity	>0.39	<0.10

Recommendation:II

The irrigation engineers, reservoir operators and planners of Panam Canal Command for three distributaries (27-R, 28-R and 29-R) of Pannam Canal Command are recommended to promote the following cropping pattern and to allow full canal supply for 120 days for attaining higher profit.

Table 1: Optimised Cropping Pattern (ha)

Crops	**Distributory**		
	27-R	**28-R**	**29-R**
Wheat	810.0	374.6	728.0
Maize	324.0	102.2	819.0
Fodder	243.0	54.5	36.4
Other	243.0	8.8	36.4
Castor	-	-	145.0
Cotton	-	-	10.7
Fallow Land	0.0	141.1	44.5

Approved.

(**Action: Principal, College of Agril. Engg. & Tech. , AAU, Godhra)**

14.5.2.2 Daily and monthly rainfall forecasting using Extreme Learning Machines (ELMs), ANN with genetic algorithm (GANN) in the middle region of Gujarat

The Planners, NGOs, & irrigation specialists in Anand region are recommended to adopt a novel soft computing technique maximum overlap discrete wavelet transformation based extreme learning machine (MODWT-ELM) for daily and monthly rainfall forecasting with two lags of climatic inputs. For daily rainfall forecasting principal component based artificial neural network (PCA-ANN) or MODWT-ELM models with five lags of inputs are recommended.

Approved.

(**Action: Principal, College of Agril. Engg. & Tech. , AAU, Godhra)**

14.5.2.3 Design and development of Delta Robot for handling of food product

For the development of automation and robotic system for handling food products, the arduino powered delta robotsusing code developed by Anand Agricultural University is recommended to be used for higher accuracy and precision they may use high precision industrial grade actuators with the same code.

Approved.

(Action: Prof. & Head, Dept. of Food Engineering, AAU, Anand)

14.5.2.4 Development of Web Based AGRESCO Projects Information & Monitoring Management System

Web based AGRESCO Projects Information & Tracking Management System developed by Anand Agricultural University automates and tracks the progress of the

	AGRESCO Projects. It is recommended to be used at SAU's of Gujarat. **Approved.** **(Action: Director, IT, AAU, Anand)**
14.5.2.5	**Web Based Information Management System For Planning and Budget Processes**
	Scientists of Anand Agricultural University are recommended to use Web Based Information System for Planning and Budget Processes which manages expenditure details of nonrecurring and recurring items. **Approved.** **(Action: Director, IT, AAU, Anand)**
14.5.2.6	**Web Based Complain Management System for IT Related Services at AAU**
	Scientists and users of Anand Agricultural University are recommended to use Web Based Complain Management System for IT Related Services which provides a common platform for complain management and tracking of different live IT projects of AAU. **Approved.** **(Action: Director, IT, AAU, Anand)**
14.5.2.7	**Web Based System For Enrolment of Post Graduate Students(Campus Form) – Adding A New Module in Post Graduate Information System**
	Web Based Module has been developed by Anand Agricultural University for Enrolment of Post Graduate Students. The module provides Graphical User Interface (GUI) to store and manage PG Students' details for generation of campus form. This is integrated with PG Students' Information Management System.(URL : stud.aau.in) **Approved.** **(Action: Director, IT, AAU, Anand)**
14.5.2.8	**GEA – Mobile App – Emergency Alert Mobile Application for Hostelite Girl Students of SAU'S of Gujarat**
	Hostelite girl Students of SAUs of Gujarat are recommended to use Android based GEA – Mobile App developed by AAU. The App which provides an emergency alerts and calling to the specified hierarchy and tracks the student current location via GPS technology. **Approved.** **(Action: Director, IT, AAU, Anand)**
14.5.2.9	**Develop attendance and result module for polytechnic courses and integrate in student corner**
	Web based Polytechnic Module of Student Corner developed by Anand Agricultural University is useful for storing attendance, results and fees collection details of Polytechnic Colleges of Anand Agricultural University. The system is useful to Course Teachers, Academic in-charges, Principals, Registrar and Administrative Officers to carry out various academic activities of Anand Agricultural University and is recommended for use in SAUs. **Approved.** **(Action: Concerned PI via HOD/Principal, AAU, Anand)**
14.5.2.10	**Development of technology for the production of ACE inhibitory bioactive peptides through fermentation of soy milk and bovine milk'**
	A technology is developed by Anand Agricultural University for the production of peptides from fermented skim milk and soy milk rich in ACE inhibitory activity by supplementing 2 % calcium caseinate in skim milk and 1.5 % whey protein concentrate in soy milk fermented by *Lactobacillus rhamnosus* MTCC5945 and *Streptococcus thermophilus* MTCC5460 at the rate of 2 % for 24 h at 37 ^{0}C. **Approved.** **(Action: Prof. & Head, Dept. of Dairy Microbiology, AAU, Anand)**

14.5.2.11	***Invitro* evaluation of *Lactobacillus helveticus* MTCC 5463 against selected skin pathogens and potential effect on skin lightening**
	Anand Agricultural University's probiotic culture *Lactobacillus helveticus* MTCC 5463 was found to possess properties which can be explored to use it for cosmetic applications. It possesses anti-microbial ability towards skin pathogens *viz.*, *Staphylococcus aureus, Staphylococcus epidermidis* and *Propionibacterium acnes.* It also possesses tyrosinase enzyme inhibition property and copper chelating ability needed for potential effect on skin lightening effect. **Approved.** **(Action: Prof. & Head, Dept. of Dairy Microbiology, AAU, Anand)**

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

14.5.2.12	**Ambient temperature trend analysis for the south saurashtra region in view of climate change**
	The Scientists/ Policy makers in the field of breeding/ climate change adaption are advised to use the following mathematical models to predict the day maximum and day minimum temperature for future period in Junagadh region.

Season	Day Maximum Temperature(°C)		Day Minimum Temperature (°C)	
	Model	**R^2**	**Model**	**R^2**
Winter	T_{max} = 0.0209*Year - 8.8495	0.75	T_{min} = 0.0318*Year - 49.781	0.78
Summer	T_{max} = 0.0191*Year - 0.1754	0.84	T_{min} = 0.0321*Year - 42.693	0.84
Monsoon	T_{max} = 0.0211*Year - 8.0849	0.71	T_{min} = 0.0532*Year - 81.855	0.94

Approved.
(Action: Prof. & Head, Dept. of Soil & Water Consr. Engg., CAET, JAU, Junagadh)

14.5.2.13	**Estimation of irrigation demand for different crops of ozat river basin using remote sensing and GIS**
	The Planners, NGOs, Field Officers and Government Departments are recommended to use the following relationships to find out crop coefficients of wheat crop with remote sensing images (Landsat) based vegetation indices like Soil Adjusted Vegetation Index (SAVI) and Normalized Difference Vegetation Index (NDVI) for the estimation of crop water requirement. K_c = 1.2588 SAVI + 0.4347 K_c = 1.6741 NDVI + 0.5387 Where, K_c = Crop coefficient of Wheat crop, NDVI = Normalized Difference Vegetation Index, SAVI = Soil Adjusted Vegetation Index **Approved.** **(Action: Prof. & Head, Dept. of Soil & Water Consr. Engg., CAET, JAU, Junagadh)**
14.5.2.14	**Evaluation of rainfall erosivity index and soil erodibility factor in medium black soil under different cropping systems.**
	Maximum runoff and soil loss was observed in sole cotton cropping system and cultivated follow respectively, Minimum runoff with soil loss was observed in absolute fellow followed by sole groundnut cropping system. Soil erosivity factor (45.74) and soil erodibility factor (0.41) were observed in cultivated fellow in medium black soil. **Approved.** **(Action: Res. Sci. (Dry Farming), Main Dry Farming Res. Stat., JAU, Targhadia)**

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

14.5.2.15	**Developing program for online tour approval for NAU.**
	The online tour approval system developed by Navsari Agricultural University can be adopted by employees of Navsari Agricultural University. **Approved.**

	(**Action:** Principal, Aspee Agri. Business Mgmt. Institute, NAU, Navsari)
14.5.2.16	**Developing mobile App for the APMC operations.**
	Anandroid based Mobile App for APMC operations developed by Navsari Agricultural University can be used for dissemination of APMC data to the farming community. **Approved.** (**Action:** Principal, Aspee Agri. Business Mgmt. Institute, NAU, Navsari)
14.5.2.17	**Developing web portal for the farmers of South Gujarat Region**
	A web portal developed by Navsari Agricultural University for the farmers of South Gujarat Region can be used for agricultural information dissemination to the farming community. **Approved.** (**Action:** Principal, Aspee Agri. Business Mgmt. Institute, NAU, Navsari)
14.5.2.18	**Development of integrated rainwater resource management (iRaM) module for costal areas of South Gujarat**
	The scientists are recommended to use the Chandra and Sexena (1975) estimation equation for ground water regharge in Navsari cost. $Rr = 3.984(P - 40.64)^{0.5}$ Where, Rr = Recharge to the groundwater (cm) P = Monthalyprecipitation (cm)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

14.5.2.19	**Development of Passive Scrubber for Removal of CO2 from biogas**
	Passive water scrubbing method for biogas purification by using fresh water improves about 19 percent methane output and reduces similar percentage of carbon dioxide. The system takes about 42 minutes for purification of 1 cubic meter of biogas. Approximately 440 litres of water is required to obtain 1 cubic meter of purified biogas. pH of scrubbed water found to be decreased by about 11 percentage. **Approved.** **(Action: Dean, College of Renewable Energy & Environ. Engg., SDAU, SKNagar)**
14.5.2.20	**Enhancing RWUE of castor with use of hydrogel under dry land condition**
	The application of hydrogel for moisture conservation was not found effective due to poor water releasing capacity in North Gujarat Agro Climatic Zone (AES I) under rain fed condition for castor crop. **Suggestions : Approved** **(Action: Res. Scientist, Centre for Natural Resource Mgmt., SDAU, SKNagar)**

Recommendation from other subcommittees

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

1	**Incorporation of *Cucurbita pepo* (pumpkin) pulp for the prepartion of value added flavoured buffalo milk**
	Recommendation deferred for next year. Advised for raw and product composition including nutritional analysis during storage study. Also advised to consult and incorporate scientist from processing and food engineering department for refining work. **Approved.** Information to Veterinary Science & Animal Husbandry Sub-committee **(Action: Asst. Professor & Head, Dept of Livestock Products Technology, CVS & AH, JAU, Junagadh)**

2	**Standardization of suitable formulation for preparation of instant mango milk shake powder**
	It is recommended that instant mango milk shake powder can be prepared using 45 % of mango powder, 35 % of milk powder, 20 % sugar and in addition to 0.5 % citric acid. The product packed in 200 gauge PP pouches (50 microns) found stable upto 6 months at room temperature on the basis of physico-chemical and sensory qualities. આથી ભલામણ કરવામાં આવે છે કે ૪૫ % મેંગો પાવડર, ૩૫ % મિલ્ક પાવડર, ૨૦ % ખાંડ અને ૦.૫ % સાઈટ્રીક એસીડ ભેળવીને ઈન્સ્ટન્ટ મેંગો મિલ્ક શેક પાવડર બનાવી શકાય છે. તેને ૨૦૦ ગેજની પીપી થેલીમાં (૫૦ માઈક્રોન) પેક કરી સંવેદનાત્મક અને ભૌતિક-રસાયણિક ગુણવત્તાના આધારે ૬ માસ સુધી સામાન્ય તાપમાને સ્થિર જોવા મળેલ છે. **Approved.** Information to Horticulture and Agroforestry Sub-committee. **(Action: Professor & Head, Dept. of Post-Harvest Tech., ACHF, NAU, Navsari)**
3	**Standardization of protocol for the extension of shelf life of fresh sapota fruit**
	Farmers and entrepreneurs are recommended to extend the shelf life of sapota fruits by packing in CFB box (10 kg capacity) and pre-cooling at 10 ^{o}C for 8 hours. The shelf life of pre-cooled sapota fruits can be extended up to 12 days (including 3 days transportation at ambient condition) at 11 ^{o}C. ખેડૂતો અને ઉદ્યોગ સાહસિકોને ભલામણ કરવામાં આવે છે કે, ચીકુની આવરદા વધારવા માટે તેને સી.એફ.બી. ખોખા (૧૦ કિગ્રા ક્ષમતા)માં ભરી, ૧૦ °સે. તાપમાને ૮ કલાક સુધી પ્રિ-કુલીંગ કરવા જોઈએ. આ પ્રિકુલ કરેલ ચીકુના ફળની આવરદા ૧૧ °સે. તાપમાને ૧૨ દિવસ સુધી વધે છે (જેમાં સામાન્ય તાપમાને ૩ દિવસના પરિવહન સામેલ છે). **Approved.** Information to Horticulture and Agroforestry Sub-committee. **(Action: Professor & Head, Dept. of Post-Harvest Tech., ACHF, NAU, Navsari)**
4	**Exploration and evaluation of local weed flora for value addition through drying**
	People interested in cottage industry and entrepreneurs are advised to use weeds for making dry flower products. Leaves of *Argyreia speciosa* can be dried in 7 days, inflorescence *of Celosia argentea* and *Setaria verticillata* in 5 days, *Cyperus rotundus* and *Dinebra arabica* in 4 daysand *Eragrostis pilosa* in 3 days through press drying method at room temperature for use in dry flower products up to 6 month. **લઘુ ઉદ્યોગમાં રુચિ ધરાવતા લોકો અને ખેડૂતોને ભલામણ કરવામાંઆવે છે કે નીંદામણનો ઉપયોગ સુકા ફૂલોની બનાવટો માટે કરી શકાય છે. ઉચ્ચ ગુણવત્તા મેળવવા અને લાંબા સમય સંગ્રહ કરવા માટે સમુદ્ર શોષના પાનને ૭ દિવસ, ઘાસલાંપડું અને બોદરીના ફૂલને ૫ દિવસ, ચીઢો અને ખારીયુંના ફૂલને ૪ દિવસ અને ભૂમસીના ફૂલને ૩ દિવસ માટે પ્રેસ ડ્રાઈંગ પધ્ધતિ દ્વારા સુકવણી કરી સુકા ફૂલોની ગોઠવણીમાં ૬ મહિના ઉપયોગ કરી શકાય છે.** **Approved.** Information to Horticulture and Agroforestry Sub-committee. **(Action: Prof. & Head, Dept. of FLA, ACHF, NAU, Navsari)**
5	**Assessment of land use / land cover changes in South Gujarat using remote sensing and geographical information system**
	It is observed, from 2000 to 2010, that Surat district recorded major shift (18.25 %) from forest area to Orchards, plantations and gardens. Marshy lands have increased in Navsari (28.90 %) and Bharuch (2.38 %) district.Built up areas significantly increased in Navsari (69.09 %) followed by Narmada (44.40 %) district. The barren land may be planted with suitable forest / fruit species which will provide environmentally sustainable economic growth of the region. Therefore, policy makers, state Agriculture and Forest departments are suggested to utilize the technique of Remote Sensing and GIS for assessing the changes in land use, at regular basis, to maintain the vegetative cover, essentially required to sustain the ecological balance of the region. **Approved.** **(Action: Principal, College of Forestry, NAU, Navsari)**

14.5.3 NEW TECHNICAL PROGRAMMES

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title	Suggestion/s and Action
14.5.3.1	Quality assessment of water samples (pre and post monsoon season) of open wells of CAET campus	**Approved.** **(Action: Principal, College of Agril. Engg. & Tech. , AAU, Godhra)**
14.5.3.2	Design and development of reciprocating sprayer	**Approved.** **(Action: Principal, College of Agril. Engg. & Tech. , AAU, Godhra)**
14.5.3.3	Online Leave Management System	**Approved.** **(Action: Principal, College of Agril. Engg. & Tech. , AAU, Godhra)**
14.5.3.4	Estimation of evapotranspiration using MODIS and Landsat-8 dataset in a selected semi-arid region of middle Gujarat.	**Approved.** **(Action: Principal, College of Agril. Engg. & Tech. , AAU, Godhra)**
14.5.3.5	Biomass combustor based drying system for beetroot (*Beta vulgaris L.*) and tomatoes (*Lycopersicum esculentum*) drying	**Approved with following suggestion/s:** 1. House suggested to change title as - Drying of beetroot (*Beta vulgaris L.*) and Tomatoes (*Lycopersicum esculentum*). 2. Change objective no 2 as: To study drying characteristics of beetroot and tomato slices under different drying condions. 3. Change objective no 3 as: Quality charectiziation of dried material. 4. In experimental design repalce maize cob with sowdust briquettes. **(Action: Principal, College of Agril. Engg. & Tech. , AAU, Godhra)**
14.5.3.6	Development of solar assisted power source/vehicle for various farm operations	**Not Approved.** House advised to take filler trials and present in next year. **(Action: Principal, Polytechnic in Agril. Engg., AAU, Dahod)**
14.5.3.7	Evaluation of different seedbed practices for wheat crop in Bhal agro climatic condition	**Approved.** **(Action: Principal,** KVK, AAU, Arnej**)**
14.5.3.8	Microsoft Office Word and Power Point Add-in for managing various built in templates of AAU	**Approved.** **(Action: Director, IT, DIT, AAU, Anand)**
14.5.3.9	Student Information Management System (SIMS) for School of Bakery	**Approved.** **(Action: Principal, College of Agril. Information Tech., AAU, Anand)**
14.5.3.10	Asset Mapping of Anand Agricultural University (Geo-tagging)	**Approved.** **(Action: Principal, College of Agril. Information Tech., AAU, Anand)**
14.5.3.11	Effect of magnetic field on germination and seedling growth of onion	**Approved.** **(Action: Principal, College of Agril. Information Tech., AAU, Anand)**
14.5.3.12	Effect of magnetic field on germination and	**Approved with following**

	seedling growth of cumin	**suggestion/s:** 1. Replace cumin with garlic. **(Action: Principal, College of Agril. Information Tech., AAU, Anand)**
14.5.3.13	Evaluating mango leather as a natural adjunct flavouring for 'Mango Tid-bit ice cream'	**Approved.** **(Action: Prof. & Head, Dept. of Dairy Tech., AAU, Anand)**
14.5.3.14	Technology for manufacture of milk based multigrain *Ladoo*	**Accepted with following suggestion:** Add observations on iron and calcium content. **(Action: Prof. & Head, Dept. of Dairy Tech., AAU, Anand)**
14.5.3.15	Process Optimization for Manufacture of Ready-To Reconstitute *Kheer*	**Approved.** **(Action: Prof. & Head, Dept. of Dairy Tech., AAU, Anand)**
14.5.3.16	Technology for manufacture of carrot *Kheer*	**Approved.** **(Action: Prof. & Head, Dept. of Dairy Tech., AAU, Anand)**
14.5.3.17	Development of nitrogen distribution based approach to detect adulteration of milk with non-protein nitrogenous compounds	**Approved.** **(Action: Prof. & Head, Dept. of Dairy Chemistry, AAU, Anand)**
14.5.3.18	Evaluation of selected herbs as natural antioxidant for ghee	**Approved.** **(Action: Prof. & Head, Dept. of Dairy Chemistry, AAU, Anand)**
14.5.3.19	Evaluating selected spices for extending shelf life of cultured butter milk	**Approved.** **(Action: Prof. & Head, Dept. of Dairy Chemistry, AAU, Anand)**
14.5.3.20	Utilization of whey in common bakery products	**Approved.** **(Action: Prof. & Head, Dept. of Dairy Chemistry, AAU, Anand)**
14.5.3.21	Isolation and Purification of ACE-inhibitory peptides derived from fermented Goat Milk	**Approved** **(Action: Prof. & Head, Dept. of Dairy Microbiology, AAU, Anand)**
14.5.3.22	Development of ready to reconstitute coffee powder	**Approved.** **(Action: Prof. & Head, Dept. of Dairy Engg., AAU, Anand)**
14.5.3.23	Technology for manufacture of extended shelf-life Dietetic *Basundi*	**Approved.** **(Action: Prof. & Head, Dept. of Dairy Tech., AAU, Anand)**
14.5.3.24	Effect of gamma radiation on peanut storage and its oil quality	**Approved.** **(Action: Prof. & Head, Dept. of Food Engg., AAU, Anand)**
14.5.3.25	Production technology for clarified wood apple juice	**Approved.** **(Action: Prof. & Head, Dept. of Food Process. Tech., AAU, Anand)**
14.5.3.26	Development of fruit beverage with lactose hydrolyzed milk solids	**Approved.** **(Action: Prof. & Head, Dept. of Food Process. Tech., AAU, Anand)**
14.5.3.27	Technology for production of Indian gooseberry (Aonla) murabba	**Approved.** **(Action: Prof. & Head, Dept. of Food Process. Tech., AAU, Anand)**
14.5.3.28	Development of production technology for vegetable based juice from carrot and tomato	**Approved.** **(Action: Prof. & Head, Dept. of Food Process. Tech., AAU, Anand)**

14.5.3.29	Evaluation of combined effect of gamma irradiation and edible coating on shelf-life of sapota fruit	**Approved.** **(Action: Prof. & Head, Dept. of Food Quality Assua., AAU, Anand)**
14.5.3.30	Performance evaluation and optimization of feed forward neural network for detection of palm oil adulteration in groundnut oil using FTIR spectra	**Approved.** **(Action: Prof. & Head, Dept. of Food Quality Assua., AAU, Anand)**
14.5.3.31	Study on co-digestion of potato processing effluent with cattle dung for biogas production.	**Approved.** **(Action: Prof. & Head, Dept. of Bio Energy, AAU, Anand)**
14.5.3.32	Evaluation of quality of silver foil used on sweets in rural area	**Approved.** **(Action: Prof. & Head, Dept. of Food Quality Assua., AAU, Anand)**
14.5.3.33	Development of high fiber bakery products viz. bun, cookie, bread and cake using *Madhuka indica* flowers	**Approved.** **(Action: HoD, Dept. of PFSHE, AAU, Anand)**
14.5.3.34	Development of high fiber Cookies using Tomato pomace	**Approved.** **(Action: HoD, Dept. of PFSHE, AAU, Anand)**

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

Sr. No.	Title	Suggestion/s and Action
14.5.3.35	Design and development of low cost on-farm sesame dehuller	**Approved with following suggestion/s:** Change objective no 3 as: To work out economics of developed low cost on-farm sesame dehuller. (**Action: Prof. & Head, Dept. of Process. & Food Engg., CAET, JAU, Junagadh**)
14.5.3.36	TValue addition in sesame: Standardization of technology for preparation of Sani jiggery based crushed sesame	**Approved.** (**Action: Prof. & Head, Dept. of Process. & Food Engg., CAET, JAU, Junagadh**)
14.5.3.37	Design and development of pomegranate juice extractor.	**Approved.** (**Action: Prof. & Head, Dept. of Process. & Food Engg., CAET, JAU, Junagadh**)
14.5.3.38	Wheat crop performance under different methods of farm yard manure application	**Approved with following suggestion/s:** Chage title as: Performance evalution of farm yard manure applicator for wheat crop. (**Action: Research Scientist (Agril. Engg.), RTTC, JAU, Junagadh**)
14.5.3.39	Soilless cultivation of tomato in greenhouse.	**Approved with following suggestion/s:** Change objective no 4 as: To evaluate cost of soilless cultivation of tomato in green house. (**Action: Prof. & Head, Dept. of Renewable Energy Engg., CAET, JAU, Junagadh**)
14.5.3.40	**T**Effect of packaging on storage behavior of chickpea grain	**Approved with following suggestion/s:** Change objective no 3 as: To evaluate cost of different packaging material for storage of chickpea grain. (**Action: Prof. & Head, Dept. of Renewable Energy Engg., CAET, JAU, Junagadh**)

14.5.3.41	Studies on crop cultivation under solar photovoltaic power plant panels.	**Approved.** (**Action: Prof. & Head, Dept. of Renewable Energy Engg., CAET, JAU, Junagadh**)
14.5.3.42	Studies on bio-char production and gaseous fuel for thermal application through open-core gasification of biomass	**Approved.** (**Action: Professor & Head, Department of RE&RE, CAET, JAU, Junagadh**)
14.5.3.43	**T**Assessment and management planning of groundwater resources of uben river basin.	**Approved.** (**Action: Prof. & Head, Dept. of Soil & Water Consr. Engg., CAET, JAU, Junagadh**)
14.5.3.44	Soil moisture based irrigation water management in canal command using Remote Sensing Technology	**Approved.** (**Action: Prof. & Head, Dept. of Soil & Water Consr. Engg., CAET, JAU, Junagadh**)
14.5.3.45	Influence of crop cultivation method and slope on runoff and soil loss under natural rainfall condition	**Approved with following suggestion/s:** Consult satatician for experiment design. (**Action: Prof. & Head, Dept. of Soil & Water Consr. Engg., CAET, JAU, Junagadh**)
14.5.3.46	River flow simulations integrating satellite data in a forested catchment.	**Approved.** (**Action: Prof. & Head, Dept. of Soil & Water Consr. Engg., CAET, JAU, Junagadh**)
14.5.3.47	Catchment-storage-command area relationship for enhancing water productivity in micro-watershed	**Approved.** (**Action: Research Scientist (Dry Farming), Main Dry Farming Research Station, JAU, Targhadia)**

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Sr. No.	**Title**	**Suggestion/s and Action**
14.5.3.48	Modification and development of banana bunch harvesting tool.	**Approved.** (**Action:** I/C, CE on PHT, NAU, Navsari)
14.5.3.49	Development of tea extract based hard boiled candy.	**Approved** (**Action:** I/C, CE on PHT, NAU, Navsari)
14.5.3.50	Standardization of process parameters for microwave assisted convective drying of bell pepper	**Approved.** (**Action:** I/C, CE on PHT, NAU,Navsari)
14.5.3.51	Design and development of battery operated NSKE sprayer	**Approved.** (**Action:** Prof. & Head, Deptt. of Agril. Engg. NMCA, NAU,Navsari
14.5.3.52	Performance evaluation of 30 kW and 35 kW Grid-connected roof top solar photo voltaic system.	**Approved with following suggestion/s:** 1. Change the title as: Study on effect of SPV roof top power plant on space cooling under roof. 2. Change the objectives accordingly. (**Action:** Dean, College of Agril. Engg. & Tech., NAU, Dediapada)
14.5.3.53	Development of dynamic mobile app to rectify the updation of Kisan Mitra app of NAU.	**Approved.** (**Action:** Principal, Aspee Agri. Business Mgmt. Insti., NAU, Navsari)

14.5.3.54	Evaluation of irrigation interval for rice crop in respect to irrigation depth	**Approved with following suggestion/s:** Change the title as: Evaluation of irrigation interval for summer rice crop. (**Action:** Res. Scientist, Soil & Water Mgmt. Research Unit, NAU, Navsari**)**
14.5.3.55	**Title:** Development of multipurpose biomass based water heating and cooking system	**Approved with following suggestion/s:** Type of feedstock to be specified. (**Action:** Principal, College of Agriculture, NAU, Bharuch)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

Sr. No.	Title	Suggestion/s and Action
14.5.3.56	Design and development of hand operated power weeder for customized weeding operation.	**Approved with following Suggestion/s:** Change the title as **"**Design and development of hand operated power weeder". **(Action:** Principal, College of Renewable Energy & Envir. Engg., SDAU, SKNagar**)**
14.5.3.57	Development of eco-friendly pot making machine	**Approved.** **(Action:** Principal, College of Renewable Energy & Envir. Engg., SDAU, SKNagar**)**
14.5.3.58	Study of air pollution tolerance index of tree species for green belt development.	**Approved.** **(Action:** Principal, College of Renewable Energy & Envir. Engg., SDAU, SKNagar**)**
14.5.3.59	Development of agriculture residue based low cost throat less downdraft gasifier.	**Approved with following Suggestion/s:** Change title as "Fabrication and evaluation ofagriculture residue based low cost throat less downdraft gasifier" **(Action:** Principal, College of Renewable Energy & Envir. Engg., SDAU, SKNagar**)**
14.5.3.60	Development of solar powered insect trap	**Approved.** **(Action:** Principal, College of Renewable Energy & Envir. Engg., SDAU, SKNagar**)**
14.5.3.61	Irrigation scheduling of drip irrigated potato using tensiometer under North Gujarat condition	**Approved with following Suggestion/s:** Change title as "Drip irrigation scheduling for potato crop. **(Action:** Res. Sci., Centre for Natural Resource Mgmt., SDAU, SKNagar**)**
14.5.3.62	Irrigation scheduling of sprinkler irrigated potato using tensiometer under North Gujarat condition	**Approved with following Suggestion/s:** Change title as "Sprinkler irrigation scheduling for potato crop. **(Action:** Res. Sci., Centre for Natural Resource Mgmt., SDAU, SKNagar**)**
14.5.3.63	Development of technology for manufacture of Jamun ice cream	**Approved with following Suggestion/s:** Concern scientist should recast and reconduct the experiment in consultation with Dean, RE & RE. **(Action:** Principal, Shri. G.N.P. College of Dairy Science and Food

		Tech., SDAU, SKNagar**)**
14.5.3.64	Development and Evaluation of antioxidant potential of protein enriched whey - fruit beverage	**Not approved.** Due to non availability of experiment detail. **(Action:** Principal, Shri. G.N.P. College of Dairy Science and Food Tech., SDAU, SKNagar**)**
14.5.3.65	Development of *Lassi* fortified with Noni juice	**Not approved.** Due to non availability of experiment detail. **(Action:** Principal, Shri. G.N.P. College of Dairy Science and Food Tech., SDAU, SKNagar**)**
14.5.3.66	Technology development for preserve guava fruit juice at ambient temperature by using class-I preservative	**Not approved.** Due to non availability of experiment detail. **(Action:** Principal, Shri. G.N.P. College of Dairy Science and Food Tech., SDAU, SKNagar**)**
14.5.3.67	Development of processing technology for antioxidant property enriched dahi with custard apple	**Not approved.** Due to non availability of experiment detail. **(Action:** Principal, Shri. G.N.P. College of Dairy Science and Food Tech., SDAU, SKNagar**)**
14.5.3.68	Development of potato gulab jamun recipe	**Approved.** **(Action:** Prof. & Head, Dept. of Food Sci. & Nutrition, College of Home Sci. & Nutrition, SDAU, SKNagar**)**
14.5.3.69	Development of fiber rich bread using carrot powder	**Not approved.** Recommendation of same type of experiment has been approved for AAU, Anand **(Action:** Prof. & Head, Dept. of Food Sci. & Nutrition, College of Home Sci. & Nutrition, SDAU, SKNagar**)**
14.5.3.70	Standardization of drying and packaging method for dried lemon slices	**Approved with following Suggestion/s:** Concerned scientist should recast and reconduct the experiment in consultation with Dean, RE & RE. **(Action:** Prof. & Head, Dept. of Post Harvest Technology, College of Horticulture, SDAU, Jagudan**)**
14.5.3.71	Development and optimization of carrot candy	**Approved with following Suggestion/s:** Change treatment as 1) Syrup strength; 50° Brix, 60° Brix, 70° Brix.

		2) Cube size; 1:5 cm X 1.5 cm, 2 X 2 cm, 2.5 X 2.5 cm. 3) Syrup ratio; 2.0 kg/ kg of carrot, 1.5 kg/kg of carrot, 1 kg/ kg of carrot. 4) Syrip temperature 30°C, 40°C, 50°C 5) Include this ß-carotine, vitamin, textural in observation. **(Action:** Prof. & Head, Dept. of Post Harvest Technology, College of Horticulture, SDAU, Jagudan**)**

KAMDHENU UNIVERSITY, GANDHINAGAR

Sr. No.	Title	Suggestion/s
14.5.3.72	Identification of "signature sequence" associated with raw milk quality and safety of dairy products: A metagenomics approach	**Approved.** **(Action: Professor & Head, Dept. of Dairy Micro Bio-logy, College of Dairy Science, KU, Amreli)**

New Technical Programmes from other Subcommittees

ANAND AGRICULTURAL UNIVERSITY, ANAND

SN	Title	Suggestion/s
1	Development of flavoured milk prepared with tulsi and turmeric	**Approved with following suggestion:** Referred from Animal Production sub-committee. **(Action: Prof. & Head, Dept. of Livestock Products Tech., College of Vet. Sci. & A.H., AAU, Anand)**

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

2	Preperation and storage studies of Jamun Juice.	**Approved with following suggestion/s:** 1. Experiment was referred from Horticultural and Agro Forestry sub committee. 2. Refine experiment in consultation with HOD, PFE. (**Action: Professor & Head, Dept. of Horticulture, CoA, JAU, Junagadh**

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

3	To standardize process for preparation of IMF (Intermidiate Moisture Food) from jackfruit (*Artosrpus heterophyllus* Lam.).	**Approved with following suggestion/s:** 1. Experiment was referred from Horticultural and Agro Forestry sub committee. 2. Temperature of pasteurization to be specified. (**Action:** Principal, Polytechnic in Horticulture, NAU, Navsari)
4	Standardization of method extraction of jackfruit (*Artosrpus heterophyllus* Lam.) juice.	**Approved.** Experiment was referred from Horticultural and Agro Forestry sub committee. (**Action:**Principal, Polytechnic in Horticulture, NAU, Navsari)

5	Standardizion of suitable treatment for preparation of intermediate moiusture food (IMF) from mango (*Mangifera indica* L.) cvs. Kesar and Alphonso	**Approved with following suggestion/s:** Experiment was referred from Horticultural and Agro Forestry sub committee. 1. Specify stage of maturity. 2. Give size of slice. 3. Give duration, temperatre and concentration of osmotic solution. (**Action:** Prof. & Head, Dept. of PHTS, ASPEE Horti. & Forestry College , NAU, Navsari)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

6	Drying of rose petals using renewable source of energy.	**Approved.** Experiment was referred from Horticultural and Agro Forestry sub committee. **(Action: Dr. Piyus Varma, Assoc. Professor)**

14.6 SOCIAL SCIENCE

Chairman	Dr. K. A. Thakkar, DEE, SDAU, Sardarkrushinagar
Co-Chairmen	Dr. G. R. Patel, DEE, NAU, Navsari
	Dr. H. B. Patel, ADEE, AAU, Anand
Rapporteurs	Dr. K. P. Thakar, Prof., SDAU, Sardarkrushinagar
	Dr. N. B. Jadav, Sr. Sci., JAU, Pipalia
Statistician	Dr. S. M. Upadhyay, Prof. & Head, JAU, Junagadh

Presentation of recommendations and technical programmes by Conveners of SAUs

Sr. No.	Name	Designation & University
1	Dr. N. B. Chauhan	Prof. & Head, Dept. of Extension Education, BACA, AAU., Anand
2	Dr. S. M. Upadhyay	Prof. & Head, Dept. of Agril. Statistics, CoA, JAU, Junagadh
3	Dr. J. J. Makadia	Prof. & Head, Dept. of Agril. Economics, NMCA,NAU, Navsari
4	Dr. V. T. Patel	Prof. & Head, Dept. of Extension Edu., CPCA, SDAU, SKNagar

Summary

Name of University	No. of Recommendations				NewTechnical Programmes	
	Farming Community		Scientific Community			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU, Anand	-	-	02	02	48+1*	48+1*
JAU, Junagadh	-	-	08	03	26+2*	26+2*
NAU, Navsari	01	00	01	01	23+2*	23+2*
SDAU,SKNagar	01	00	04	02	41+2*	41+2*
Total	**02**	**00**	**15**	**08**	**138+7***	**138+7***

*** Common programme as suggestion made in the house.**

14.6.1 RECOMMENDATION FOR FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

------------------------- Nil -----------------------------------

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

------------------------- Nil -----------------------------------

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

14.6.1.1	**Bio security management levels of commercial poultry farmers in South Gujarat region**
	Message for Commercial Poultry Farmers: The Influencing factors for adoption of bio-security management practices are education, annual income of poultry farmers, area of poultry farm, no of poultry farm gate and capacity of poultry birds in poultry house plays major role to commercial poultry farmers in South Gujarat **વ્યવસાયલક્ષીમરઘાપાલકો માટેનો સંદેશો:** દક્ષિણ ગુજરાતના વ્યવસાયલક્ષી મરઘાપાલકોમાં જૈવિક સુરક્ષા વ્યવસ્થાપનને અપનાવવામાં અસર કરતા વિવિધ પરિબળો પૈકી શિક્ષણ, વાર્ષિક આવક, મરઘા ઘરનો વિસ્તાર, મરઘા ઘરનો શેડ, મરઘા ઘરમાં દાખલ થવાના દરવાજાની સંખ્યા તથા મરઘા ઘરમાં પક્ષીઓની સમાવવાની સંખ્યા મહત્વની ભૂમિકા ભજવે છે. **Suggestion:** **The house suggested for further statistical analysis to get precise message.** **(Action: Asstt. Professor, Vet. Ext., VCVS & AH, Navsari)**

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

14.6.1.2	**Attitude and Perception of farmers regarding rearing of kankrej cow** As per the perception of farmers of Banaskantha and Patan district of North Gujarat, the *Kankarej* cow possesses higher conception rate, disease resistance and heat tolerance. Its milk yield also persists throughout the year especially in summer. *Kankarej* cow needs minimum health and management care and hence economically viable. Therefore the farmers of North Gujarat are suggested to rear *Kankarej* cow ઉત્તર ગુજરાતના પાટણ અને બનાસકાંઠા વિસ્તારના ખેડૂતોની સમજ પ્રમાણે કાંકરેજ ગાયનો ગર્ભધારણ દર, રોગપ્રતિકારક શક્તિ, ગરમી સામે સહનશીલતા સારી છે .વર્ષ દરમ્યાન ખાસ કરીને ગરમીની ઋતુમાં પણ દૂધ ઉત્પાદન જાળવી રાખે છે. તેની સારસંભાળ તથા માવજત પાછળ ખર્ચ પણ ઓછો હોવાથી આર્થિક રીતે પોષણક્ષમ છે તેથી આ વિસ્તારના ખેડૂતોને કાંકરેજ ગાય ઉછેરવા માટે ભલામણ છે. **Suggestion: Not Approved.** **Not approved by the house due to insufficient data.** **(Action: Asstt. Prof., Polytechnic in A.H., SDAU, Sardarkrushinagar)**

14.6.2 RECOMMENDATION FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

14.6.2.1 Scale to measure attitude of women towards Kitchen Gardening

Sr. No	Statements	SA	A	UD	DA	SDA
1	Kitchen garden provides an opportunity to make a positive environmental impact. (+)	5	4	3	2	1
2	I visualize limited scopes of kitchen gardening. (-)	1	2	3	4	5
3	Kitchen gardening provides opportunity to get fresh vegetables in all the seasons. (+)	5	4	3	2	1
4	I think kitchen gardening is tedious job. (-)	1	2	3	4	5
5	I think kitchen gardening helps in saving money. (+)	5	4	3	2	1
6	Kitchen gardening is hypocrisy than reality.(-)	1	2	3	4	5
7	Kitchen gardening is an ideal medium to give experience of nature to children. (+)	5	4	3	2	1
8	Kitchen gardening promotes inter-personal conflict among family members. (-)	1	2	3	4	5
9	Kitchen garden helps in promoting family fitness.(+)	5	4	3	2	1
10	Kitchen garden promotes greenery near residential areas .(+)	5	4	3	2	1
11	Kitchen gardening is constructive approach to convert leisure time in to productive one. (+)	5	4	3	2	1

Scoring technique: For application of the scale, the researcher can collect information against each **11 statements** in five point continuum *viz.*, 'Strongly agree', 'Agree', 'Undecided', 'Disagree' and 'Strongly disagree' with weighted score of 5,4,3,2 and 1 for positive and reverse to negative statements.

Approved by the house.

(Action: Professor and Head, DoEE, BACA, AAU, Anand **)**

14.6.2.2 Scale to measure attitude of farmers towards Agricultural Produce Market Committee (APMC)

Sr.	Statements	SA	A	UD	DA	SDA
1	I endorse that APMC is farmers' friendly approach to sale farm products. (+)	5	4	3	2	1

2	APMC is inadequate system to help farmers to sale farm products appropriately. (-)	1	2	3	4	5
3	APMC is the best system to secure farmers exploited by intermediaries. (+)	5	4	3	2	1
4	Payment system of farm produces adopted under APMC is inappropriate. (-)	1	2	3	4	5
5	APMC serves as a system to stop harsh conditions created by traders for farmers. (+)	5	4	3	2	1
6	APMC does not help farmers in getting higher returns of produces when consumer prices are high. (-)	1	2	3	4	5
7	APMC ensures effective mode of payment for agricultural produce sold by farmers. (+)	5	4	3	2	1
8	APMC is not a long-term solution to the problems of price inflation. (-)	1	2	3	4	5
9	APMC prevents distress sale of farm produces. (+)	5	4	3	2	1
10	APMC does not give chance to the farmers to access larger markets to get benefits.(-)	1	2	3	4	5
11	APMC checks monopoly of agro-traders. (+)	5	4	3	2	1
12	APMC protects price-crash.(+)	5	4	3	2	1

Scoring Technique: : For application of the scale, the researcher can collect information against each 12 statements in five point continuum *viz*., 'Strongly agree', 'Agree', 'Undecided', 'Disagree' and 'Strongly disagree' with weighted score of 5,4,3,2 and 1 for positive and reverse to negative statements.

Approved by the house.

(Action : Professor and Head, DoEE, BACA, AAU, Anand**)**

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

14.6.2.3	**Export performance of marine products from India**
	To overcome price risk and instability the export stabilization fund needs to be created in the marine sector. Sustained focus need to be given on value added marine products, which in turn can lead to diversification in products as well as of markets. For expanding growth and reducing instability in marine products, the exporters may be facilitated to enter into long term contracts with the international buyers. India's maritime export policy needs to be focused big on multilateral negotiations to check the disproportionate or biased use of SPS or TBT measures. **Approved by the house.** **(Action: Professor & Head, Dept. of Agril. Economics, CoA, JAU, Junagadh)**
14.6.2.4	**Utilization Pattern and Trends in Non-Performing Assets of Crop Loan in Junagadh district**
	Farmers should be encouraged to adopt modern farm technology, mixed farming and micro irrigation system to enhance their repayment capacity. The banks should strongly consider farmers' characteristics such as literacy index, size of farm, irrigation facilities and sources of other income for determining creditworthiness of farmers. **Approved by the house.** **(Action: Principal & Dean, PG Institute of ABM, JAU, Junagadh)**
14.6.2.5	**Weather based forecasting of wheat productivity in Junagadh district**
	It is advised that to forecast wheat productivity in the Junagadh district before 6 weeks of harvest, the model based on week wise approach using original weather variables can be used with 12 weeks and 23 years data to have 93.00 % accuracy. The variables affecting the productivity are X_{1W48}, X_{1W49}, X_{1W5} (Maximum Temperature) of 48th week, 49th week and 5th week, respectively, X_{2W49} (Minimum Temperature) of 49th week, X_{5W50}, X_{5W52}, X_{5W3} (Bright Sun Shine Hours) of 50th

	week, 52nd week and 3rd week. Recommended model is: **Model with 12 weeks and 23 years data** $Y = 12800.97 – 104.92\ X_{1W48} – 84.98\ X_{1W49} – 104.94\ X_{1W5} + 53.92\ X_{2W49} + 361.10\ X_{5W50} +139.47\ X_{5W52} – 547.67\ X_{5W3}$ ($\bar{R}^2$= 0.93) **Approved by the house.** **(Action: Professor & Head, Dept. of Agril. Statistics, CoA, JAU, Junagadh)**
14.6.2.6	**Training needs assessment of livestock farmers, paravets and veterinarians in animal husbandry practices**
	1. It is recommended that institutions may give prime importance to conduct training for livestock farmers in the areas of construction of low cost animal shed, methods of heat detection, time of insemination, balanced feeding and symptoms of common diseases to fulfill most preferred training needs of livestock farmers. 2. To fulfill most preferred training needs of paravets, institutions may give prime importance to conduct training in the areas of pregnancy diagnosis, preventive and control measures and capacity building. 3. It is recommended that institutions may give prime importance to conduct training for veterinarians in the areas of ultrasonography diagnostic techniques, handling of obstetrical cases and caesarian sections to fulfill most preferred training needs of veterinarians. 4. Training of farmers to update knowledge and skills, recognizing and encouraging progressive farmers to act as extension agents, organization of animal health camps at field level and create awareness through extension activities are most effective mode of transfer of technology at field level. **Suggestion:** **Not approved by the house due to insufficient data.** **(Action: Assoc. Prof. & Head, Dept. of A.H. Ext. Edu., College of V. Sc. & A.H., JAU, Junagadh)**
14.6.2.7	**Knowledge of farmers about use of bio-fertilizer and bio-pesticides in Bt. cotton**
	Policy makers are suggested that biopesticides should be made available which is more water soluble with increase shelf life. For higher adoption, biopesticides and biofertilizer should be provided at local level. **Suggestion:** **Not approved by the house due to insufficient data.** **(Action: Senior Scientist & Head, KVK, JAU, Pipalia (Rajkot))**
14.6.2.8	**Training needs of dairy farm women with respect to animal husbandry practices in Rajkot district of Saurashtra region**
	Extension personnel are suggested that more training programme should be organized in the areas of animal nutrition and animal breeding practice to enrich knowledge of dairy farm women. To increase the effectiveness of training, training module should be subject specific, preferably before onset of monsoon, one day duration and master trainers should be the female. **Suggestions:** **Not approved by the house due to insufficient data.** The house suggested that data for one year is not sufficient for recommended message hence study may be continued for two more years. **(Action: Senior Scientist & Head, KVK, JAU, Pipalia (Rajkot))**
14.6.2.9	**Perception of effectiveness of "Sawaj" Trichoderma in controlling the disease among its end users**
	Extension functionaries are suggested that farmers are believing and using "Sawaj" trichoderma in the groundnut crop to control the stem rot disease. However "Sawaj" trichoderma is also being used against the soil born disease of the other field

	crops. To reduce the cost and efficient use of "Sawaj" trichoderma, it is suggested that extension functionaries should give the emphasis on stage and method of application. **Suggestions:** **Not approved by the house due to insufficient` data.** The house suggested that data for one year is not sufficient for recommended message hence; study may be continued for two more years. **(Action: Senior Scientist & Head, KVK, JAU, Pipalia (Rajkot))**
14.6.2.10	**Perception of effectiveness of Sawaj-brand bio fertilizers under field condition at its end users**
	Training organizers of transfer of technology centre should conduct training on "Sawaj" biofertilizer to create awareness and its efficient use among the farmers. **Suggestions:** **Not approved by the house.** The house suggested that data for one year is not sufficient for recommended message hence; study may be continued for two more years. **(Action: Senior Scientist & Head, KVK, JAU, Pipalia (Rajkot))**

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

14.6.2.11	**Forecasting of rice (*Oriza sativa*) yield using ordinal logistic regression**
	The discriminant function model choosing maximum temperature, minimum temperature, rain fall, relative humidity-1 and relative humidity -2 is more effective model for pre harvest forecasting of rice yield as compared to Multiple linear regression (MLR) technique and Ordinal logistic regression for Navsari district. **Approved by the house.** **(Action: Astt. Professor, (Agril. Stat.), CoA, NAU, Waghai)**

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

14.6.2.12 Construction of Attitude Scale towards Cleanliness

The scale in the present study is valid and reliable therefore, it is recommended for those researchers, planners, developmental workers and social scientists who want to carry out research to study attitude of people towards cleanliness. The format of the scale is given is as under.

Table 1: Scale to Measure Attitude towards Cleanliness

Sr. No.	Attitude statements	SA	A	UD	DA	SDA
1	Dirtiness present in local surroundings gives unpleasant feelings.(+)	5	4	3	2	1
2	Cleaning the surrounding degrades image in front of others. (-)	1	2	3	4	5
3	Everyone realize health benefits of sanitized surroundings. (+)	5	4	3	2	1
4	Well educated people do not bother about cleanliness. (-)	1	2	3	4	5
5	Kids are too young so they throw garbage outside the container. (-)	1	2	3	4	5
6	Involving people in cleaning activities is a good way to spread awareness about cleanliness. (+)	5	4	3	2	1
7	Clean India Campaign is effective Government initiative to bring cleanliness. (+)	5	4	3	2	1
8	Cleanliness must not be choice, it must become law. (+)	5	4	3	2	1
9	There should be stringent laws, rules & regulations against unhygienic practices. (+)	5	4	3	2	1
10	Public health, water and sanitation services should	5	4	3	2	1

	be the first priority of the government. (+)					
11	Proper waste management system is necessary for cleanliness. (+)	5	4	3	2	1
12	Keeping separate dustbin to collect disposable and non-disposable wastes are not in practice. (-)	1	2	3	4	5
13	Domestic waste water should not be reused either before or after treatment. (-)	1	2	3	4	5
14	Dry sanitation is an expensive onsite disposal method of human excreta. (-)	1	2	3	4	5
15	There is no need to treat water to make it safer to drink. (-)	1	2	3	4	5
16	Use of handled ladle is cumbersome in case of unavailability. (-)	1	2	3	4	5
17	Clean and neat people are more confident. (+)	5	4	3	2	1
18	Cleaning of toilets and hand wash facilities are not socially acceptable. (-)	1	2	3	4	5
19	Food storage container should be cleaned only when it looks dirty. (+)	5	4	3	2	1
20	People ignore unhealthy changes in test and odour of spoiled foods. (-)	1	2	3	4	5

Scoring Technique: : For application of the scale, the researcher can collect information against each 12 statements in five point continuum *viz*., 'Strongly agree', 'Agree', 'Undecided', 'Disagree' and 'Strongly disagree' with weighted score of 5,4,3,2 and 1 for positive and reverse to negative statements.

Suggestion:

Approved by the house.

(Action: Head of Dept. of HECM, ASPEE College of Home Science, SKNagar)

14.6.2.13 **Attitude and perception of farmers' son towards farming as an occupation**

1. Government should attract the young generation towards farming by making policies which facilitate easy access, adequate and timely supply of critical inputs and credit to the farmers, market intervention and formulate strategies for remunerative prices of agricultural produce.
2. Documentation, publication and wide spread dissemination of success stories of achiever/innovative farmers shall also motivate the young generation for farming.

Suggestion:

Not approved by the house due to insufficient data.

(Action: Prof. & Head, Department of Extension Education, CPCA, SKNagar)

14.6.2.14 **Status of agriculture credit in Gujarat**

1. The percent share of farm credit in the tribal dominant districts (Dangs, Valsad, Tapi and Dahod) is very meagre, i.e. only 3.14 per cent of the total farm credit supply of the state. Therefore, policy makers should give more focus on the financial inclusion of the tribal dominant districts especially in agriculture sector so that farm production can be increased.
2. The percent share of term credit in the overall farm credit supply is 24 per cent whereas, the short term credit contributes to 76 per cent of farm credit supply. For enabling the farmers in adopting capital intensive technological innovations, policy makers should give more emphasis on increasing the term credit disbursal.

Suggestions:

Approved by the house.

(Action: Prof. & Head, Department of Economics, CPCA, SKNagar)

14.6.2.15 **Assessment of structural and technological changes in cultivation of fennel**

The proportion of insecticides/pesticides in total variable cost of fennel cultivation has grown at the highest rate which is an alarming concern.

	Hence, it is recommended for the extension personnel to train farmers for effective alternative techniques of integrated pest management such as mechanical, biological and cultural controls to prevent the insect and pest damages to the fennel crop. **Suggestions:** **Not approved by the house due to insufficient data.** **(Action: Prof. & Head, Dept. of Economics, College of Horticulture, Jagudan)**

14.6.3 NEW TECHNICAL PROGRAMMES

Chairman	Dr. K. A. Thakkar, DEE, SDAU
Co-chairmen	Dr. M. R. Prajapati, Dean, CPCA, SDAU
	Dr. P. R. Kanani, ADEE, JAU, Junagadh
Rapporteurs	Dr. J. B. Patel, Assoc. Prof., AAU, Anand
	Dr. B. Swaminathan, Asstt. Prof., JAU, Junagadh
Statistician	Dr. S. M. Upadhyay, Prof. & Head, JAU, Junagadh

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title	Suggestion/s and Action
14.6.3.1	An economic analysis of turmeric production in middle Gujarat: a comparative study of processed and non-processed	**Approved.** **(Action: Professor & Head, Dept. of Agril. Econ., BACA,AAU, Anand)**
14.6.3.2	Growth and prospects of export of groundnut, sesame and castor from India	**Approved with the following suggestion/s:** Change the third objective as: 'To study the direction of trade of selected oilseed exports from India'. **(Action: Professor & Head, Dept. of Agril. Econ., BACA, AAU, Anand)**
14.6.3.3	An economic evaluation of brinjal cultivation in Anand district	**Approved**. **(Action: Professor & Head, Dept. of Agril. Econ., BACA,AAU, Anand)**
14.6.3.4	Economics of solar pump irrigation system in Dahod District – A pilot study	**Approved with the following suggestion/s:** To modify the first objective as: 'To study the comparative irrigation costs between solar and normal irrigation systems'. **(Action: Principal, Horticulture College, AAU, Anand)**
14.6.3.5	Marketing of rose and marigold in Anand District	**Approved with the following suggestion/s:** 1. To modify the second objective as: 'To study the price spread and marketing efficiency in rose and marigold'. 2. Selection procedure of wholesalers and retailers need to be specified. 3. The formula of Price Spread needs to be corrected. **(Action: Principal, Horticulture College, AAU, Anand)**

14.6.3.6	Role of National Agricultural Market in Enhancing Farmers' Income in Gujarat	**Approved** **(Action: Professor & Head, ABE&P, IABMI, AAU, Anand**
14.6.3.7	A studyon capital structure analysis of food processing industry in India	**Approved**. **(Action: Asst. Professor & Head, Financial Management, IABMI, AAU, Anand)**
14.6.3.8	Profitability analysis of backyard poultry farming	**Approved**. **(Action: Professor & Head, ABE&P, IABMI, AAU, Anand)**
14.6.3.9	Current status, prospects and problems of potato processing industries in Gujarat	**Approved with the following suggestion/s:** Suitable statistical tools should be applied in the study. **(Action: Assoc. Professor & Head, HRD & PM, IABMI, AAU, Anand)**
14.6.3.10	A study on working capital management in cooperative dairies of Gujarat state	**Approved.** **(Action: Assoc. Professor & Head, Dept. of DBM, Dairy Sci. College, AAU, Anand)**
14.6.3.11	AICT awareness among the participants of training programme of Pashu Vigyan Kendra	**Approved.** **(Action: Assoc. Professor & Head, Dept. of DBM, Dairy Sci. College, AAU, Anand)**
14.6.3.12	A study of problems and prospects of entrepreneurship development through Students Start-up and Innovation Policy	**Approved**. (**Action: Assoc. Professor & Head, FBM, College of FPT&BE, AAU, Anand)**
14.6.3.13	Comparison of Statistical models for forecasting area, production and productivity of major fruit crops in Gujarat	**Approved with the following suggestion/s:** Time period as maximum as possible should be included in the methodology. **(Action: Principal, Horticulture College, AAU, Anand)**
14.6.3.14	Study of exposure, perception and advantages realized about weather based agro-advisory services by selected farmers of Anand district	**Approved.** **(Action: Professor & Head, Dept. of Agril. Meteorology, BACA, Anand)**
14.6.3.15	Development and standardization of a test to measure level of knowledge of women about Kitchen Gardening	**Approved.** **(Action: Professor & Head, Dept. of Ext. Edn., BACA, AAU, Anand)**
14.6.3.16	Determinants to avoid farming as a profession	**Approved with the following suggestion/s:** 1. Modify the title of the study as: 'Determinants to leave farming as a profession' 2. Modify the objectives in tune with the title. 3. In the first objective, use 'wish' instead of 'crave'. **(Action: Professor & Head, Dept. of Ext. Edu., BACA, AAU, Anand)**

14.6.3.17	Yoga inclination of students studying in final year of B. Sc. (Agri.) of AAU	**Approved with the following suggestion/s:** Operational definition of 'inclination' may be included in the methodology. **(Action: Professor & Head, Dept. of Ext. Edu., BACA, AAU, Anand)**
14.6.3.18	A study on communication behaviour of extension personnel	**Approved.** **(Action: Director, EEI, AAU, Anand)**
14.6.3.19	Attitude of extension functionaries towards organic farming	**Approved.** **(Action: Director, EEI, AAU, Anand)**
14.6.3.20	Effectiveness of training programmes conducted by EEI, Anand during the year 2018-19 in terms of gain in knowledge	**Approved with the following suggestion/s:** Discard the year from the title. **(Action: Director, EEI, AAU, Anand)**
14.6.3.21	Usefulness of certificate course for input dealers in agricultural extension services organized by AAU, Anand	**Approved.** **(Action: Director, SSK, DoEE, AAU, Anand)**
14.6.3.22	Effectiveness of training for promoting integrated pest management	**Approved.** **(Action: Director, DoEE, AAU, Anand)**
14.6.3.23	Effectiveness of training for promoting integrated weed management	**Approved.** **(Action: Director, DoEE, AAU, Anand)**
14.6.3.24	Role of Self Help Groups for empowerment of women in Chhotaudepur district	**Approved.** **(Action: Principal, College of Agri., AAU, Jabugam)**
14.6.3.25	Knowledge and adoption of cotton growers about Integrated Pest Management practices in Chhotaudepur District	**Approved with the following suggestion/s:** Correct the abbreviation from 'IMP' to 'IPM' in the third objective. **(Action: Principal, College of Agri., AAU, Jabugam)**
14.6.3.26	Awareness of buffalo owners about causes of infertility in buffaloin Anand taluka	**Approved.** **(Action: Assoc. Professor & Head, Dept. of Veterinary Ext., Veterinary Sci. College, AAU, Anand)**
14.6.3.27	Participation of farmwoman in decision making process with respect to animal husbandry practices in Vaso taluka of Kheda District	**Approved.** **(Action: Principal, Agriculture College, AAU, Vaso)**
14.6.3.28	Adoption of plant protection measures in paddy by paddy growers	**Approved.** **(Action: Principal, Agriculture College, AAU, Vaso)**
14.6.3.29	Women's empowerment and nutritional status of their children in Dholka and Anand taluka	**Approved.** **(Action: Principal, Polytechnic in Food Science & Home Economics, AAU, Anand)**
14.6.3.30	Perception of farmers about the technological traits of moong cultivar GAM-5 (Anubhav Brand Seed) of AAU	**Approved.** **(Action: Research Scientist & Head, Regional Research Station, AAU, Anand)**
14.6.3.31	Knowledge of livestock owners regarding artificial insemination in milch animals	**Approved.** **(Action: Principal, Polytechnic in Horticulture, AAU, Vadodara)**

14.6.3.32	Knowledge and adoption of recommended scientific practices of castor growers about castor cultivation in Panchmahals district	**Approved.** **(Action: Assoc. Research Sci. & Head, ARS, AAU, Derol)**
14.6.3.33	Awareness of maize growers regarding late wilt disease in maize	**Approved.** **(Action: Assoc. Research Sci. &Head, MMRS, AAU, Godhra**
14.6.3.34	Impact of Frontline Demonstration on maize growers of Panchmahals District	**Approved with the following suggestion/s:** 1. Modify the third objective from 'To study the impact of FLDs….' to 'To study the impact of FLDs in terms of consequences….' 2. Consider farmers who received FLDs before three years of the study. **(Action: Assoc. Research Sci. &Head, MMRS, AAU, Godhra)**
14.6.3.35	Adoption of no-cost and low cost technology of animal husbandry by the farmers of Ahmedabad district	**Approved.** **(Action: Senior Scientist & Head, KVK, AAU, Arnej)**
14.6.3.36	Study on existing feeding practices adopted for dairy animals by the farmers	**Approved.** **(Action: Senior Scientist & Head, KVK, AAU, Devataj)**
14.6.3.37	Training needs of tribal farmwomen in relation to improved animal husbandry practices in Chhotaudepur district of Gujarat	**Approved.** **(Action: Senior Scientist & Head, KVK, MangalBharti, Di. Vadodara)**
14.6.3.38	Study on knowledge and adoption of recommended production technology among castor growers of Kheda district.	**Approved.** **(Action: Senior Scientist & Head, KVK, Gujarat Vidhyapith, Dethali)**
14.6.3.39	A study on adoption of recommended wheat production technology by wheat growers in selected villages where seed village programme was implemented	**Approved.** **Action: Senior Scientist & Head, KVK, AAU, Dahod)**
14.6.3.40	A study on adoption of recommended soyabean production technology by soyabean growers in selected villages where seed village programme was implemented	**Approved.** **(Action: Senior Scientist & Head, KVK, AAU, Dahod)**
14.6.3.41	A study on adoption of recommended gram production technology by gram growers in selected villages where seed village programme was implemented	**Approved.** **(Action: Senior Scientist & Head, KVK, AAU, Dahod)**
14.6.3.42	Knowledge possessed by the cattle owners about improved animal husbandry practices in Dahod district	**Approved.** **(Action: Senior Scientist & Head, KVK, AAU, Dahod)**
14.6.3.43	Knowledge and attitude about artificial insemination in milch animals amongst the dairy farmers of Dahod district	**Approved.** **(Action: Associate Professor & Head, Pashu Vigyan Kendra, D'Baria)**
14.6.3.44	Knowledge of tribal farmers about vaccination in dairy animals in operational area of Pashu Vigyan Kendra	**Approved.** **(Action: Associate Professor & Head, Pashu Vigyan Kendra, D'Baria)**
14.6.3.45	Knowledge of dairy farmers about Brucellosis in operational area of Dairy Vigyan Kendra, Vejalpur	**Approved.** **(Action: Assoc. Professor & Head, Dairy Vigyan Kendra, AAU, Vejalpur)**

14.6.3.46	A study on use of ICT tools by the farmers of Kheda district	**Approved.** **(Action: Assistant Ext. Edu. & Head, FTTC, Nenpur- Sansoli)**
14.6.3.47	Awareness of farmers regarding soft rot disease of ginger in Dahod district	**Approved.** **(Action: Training Organizer, TRTC & TFWTC, AAU, Devgadhbaria)**
14.6.3.48	Awareness of farmers regarding girdle beetle of soybean in Dahod district	**Approved.** **(Action: Training Organizer, TRTC & TFWTC, AAU, Devgadhbaria)**

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

Sr. No.	Title	Suggestion/s and Action
14.6.3.49	Economics of marigold flower cultivation in Saurashtra region of Gujarat state	**Approved**. **(Action: Prof. & Head, Dept. of Agril. Economics, CoA, JAU, Junagadh)**
14.6.3.50	Performance and price discovery of cotton in Indian spot and future market	**Approved with the following suggestion/s:** Change the title as: 'Performance and price discovery of cotton in spot and futures markets in India'. **(Action: Prof. & Head, Dept. of Agril. Economics, CoA, JAU, Junagadh)**
14.6.3.51	Comparative study of Bt cotton based farming systems in Amreli District	**Approved.** **(Action: Asstt. Prof., Dept. of Agril. Statistics, CoA, JAU, Amreli)**
14.6.3.52	Price instability of major oilseed crops of Amreli district	**Approved with the following suggestion/s:** Specify the major crops in the objectives. **(Action: Asstt. Prof., Dept. of Agril. Statistics, CoA, JAU, Amreli)**
14.6.3.53	Comparison of various methods of stability analysis to identify suitable genotypes in sesame	**Approved**. **(Action: Prof. & Head, Dept. of Agril. Statistics, CoA, JAU, Junagadh)**
14.6.3.54	Rural markets dynamics of Bazzars/Haats in Saurashtra region	**Approved with the following suggestion/s:** Replace the word 'markets' as 'market' in the title. **(Action: Principal, PG Institute of ABM, JAU, Junagadh)**
14.6.3.55	Exports dynamics of raw cotton in India	**Approved**. **(Action: Principal, PG Institute of ABM, JAU, Junagadh)**
14.6.3.56	Gender role in Agricultural and livestock activities	**Approved with the following suggestion/s:** 1. Change the title as: 'Gender role in agriculture and livestock activities'. 2. Modify the first objective as: 'To study the profile of farmers and farmwomen'. 3. Modify the second objective as: 'To identify the gender role in different agriculture and livestock activities'. 4. Remove the third objective.

		5. Modify the fourth objective as: 'To study the relationship between gender role and their profile in agriculture and livestock activities'. **(Action: Prof. & Head, Dept. of Agril. Extension, CoA, JAU, Junagadh)**
14.6.3.57	Awareness and expectations of farmers from Junagadh Agricultural University	**Approved with the following suggestion/s** 1. Change the title as: 'Expectations of farmers about different activities of Junagadh Agricultural University'. 2. Modify the first objective as: 'To study the profile of respondents. **(Action: Prof. & Head, Dept. of Agril. Extension, CoA, JAU, Junagadh)**
14.6.3.58	Attitude of farm women towards dairy entrepreneurship and their participation and decision making in livestock management	**Approved with the following suggestion/s:** Change the title as: 'Entrepreneurial behavior of farmwomen in dairy enterprise'. **(Action: Associate Professor, Dept. of Agril. Extn., CoA, JAU, Amreli)**
14.6.3.59	Assessment of hygienic milk production practices adopted by dairy farmers	**Approved.** **(Action: Assoc. Prof. & Head, Dept. of A.H. Ext. Edu., CoV & & AH, JAU, Junagadh)**
14.6.3.60	Knowledge of farmers about integrated management of pink bollworm in cotton	**Approved.** **(Action: Senior Sci. & Head, Krishi Vigyan Kendra, JAU, Jamnagar)**
14.6.3.61	Adoption of recommended practices of pomegranate growers	**Approved with the following suggestion/s:** Change the title as: 'Adoption of recommended practices of pomegranate cultivation by growers. (**Action: Senior Sci. & Head, Krishi Vigyan Kendra, JAU, Jamnagar)**
14.6.3.62	Knowledge level of rural women regarding weaning food for infant in Jamnagar district	**Approved with the following suggestion/s:** Give the plural form of 'variable' and infant' wherever necessary. **(Action: Senior Sci. & Head, Krishi Vigyan Kendra, JAU, Jamnagar)**
14.6.3.63	Effectiveness of Mobiles SMS agro advisory among the farmers of Surendranagar district	**Approved with the following suggestion/s:** 1. Change the title as: 'Usefulness of mobile SMS agro-advisory as perceived by the farmers of Surendranagar district'. 2. Change the fourth objective as: 'To study the perception regarding usefulness of different messages provided by various SMS service providers.' **(Action: Senior Scientist & Head,**

		Krishi Vigyan Kendra, JAU, Nana Kandhasar)
14.6.3.64	Analysis of technological gap of the recommended production technology of lemon crop in Surendranagar district	**Approved**. **(Action: Senior Scientist & Head, Krishi Vigyan Kendra, JAU, Nana Kandhasar)**
14.6.3.65	Knowledge and adoption of dairy farmers about improved goat rearing practices in Surendranagar district	**Approved with the following suggestion/s:** Change the title as: 'Knowledge and adoption of improved goat rearing practices by goat owners in Surendranagar district'. **(Action: Senior Scientist & Head, Krishi Vigyan Kendra, JAU, Nana Kandhasar)**
14.6.3.66	Knowledge and adoption of improved cumin production technology of Surendranagar district	**Approved with the following suggestion/s:** Change the title as: 'Knowledge and adoption of improved cumin production technology by the farmers of Surendranagar district'. **(Action: Senior Scientist & Head, Krishi Vigyan Kendra, JAU, Nana Kandhasar)**
14.6.3.67	Assessment of skill needs of rural women in home science, agricultural and animal husbandry activities in KVK's operational area	**Approved with the following suggestion/s:** Change the title as: 'Assessment of skill oriented training needs of rural women in home science, agriculture and animal husbandry activities in operational area of KVK'. **(Action: Senior Sci. & Head, Krishi Vigyan Kendra, JAU, Pipaliya)**
14.6.3.68	Impact of recommended seed treatment practices in groundnut of South Saurashtra Agro-climatic Zone	**Approved with the following suggestion/s:** Methodological part need to be well defined relating to the use of insecticide, fungicide and rhizobium in seed treatment. **(Action: Senior Sci. & Head, Krishi Vigyan Kendra, JAU, Pipaliya)**
14.6.3.69	Assessment of skill development needs in technology adoption of unorganized small-scale dairy farmers	**Approved with the following suggestion/s:** 1. Change the title as: 'Assessment of needs for skill development in tech. adoption among unorganized small scale dairy farmers'. 2. Change the first objective as: 'To study the profile of unorganized small scale dairy farmers'. 3. Replace the second objective as: 'To assess the skill development needs of unorganized small-scale dairy farmers'.

		(Action: Senior Scientist & Head, Krishi Vigyan Kendra, JAU, Amreli)
14.6.3.70	Knowledge level of farmers about plant protection management practices of Groundnut	**Approved with the following suggestion/s:** 1. Change the title as: 'Knowledge level of farmers about plant protection measures in Groundnut cultivation'. 2. Make changes in the objectives in tune with the title. 3. Replace 'character' in the first objective with 'Characteristics'. **(Action: Senior Scientist & Head, Krishi Vigyan Kendra, JAU, Amreli)**
14.6.3.71	Adoption of improved cultivation practices of gram in Amreli district	**Approved with the following suggestion/s:** 1. Change the title as: Adoption of recommended cultivation practices of gram by the farmers in Amreli district. 2. Make appropriate changes in the objectives in tune with the title. 3. Remove the word 'characteristics' from the first objective. **(Action: Senior Scientist & Head, Krishi Vigyan Kendra, JAU, Amreli)**
14.6.3.72	Constraints faced by mango growers of Amreli district	**Approved with the following suggestion/s:** 1. Change the title as: 'Constraints faced by mango growers in adoption of recommended practices of mango in Amreli district'. 2. Make changes in the objectives in tune with the title. **(Action: Senior Scientist & Head, Krishi Vigyan Kendra, JAU, Amreli)**
14.6.3.73	Ergonomic evaluation of existing kitchen layouts with standards	**Approved**. **(Action: Senior Scientist & Head, Polytechnic in Home Science, Amreli)**
14.6.3.74	Market exploration and consumption pattern of oils in Amreli district.	**Approved with the following suggestion/s:** Recast the fifth objective using the word 'market positioning'. **(Action: Principal, Polytechnic in Home Science, Amreli)**

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Sr. No.	Title	Suggestion/s and Action
14.6.3.75	Adoption of improved mushroom production technology by tribal famers of Dang district	**Approved with the following suggestion/s:** Use the word 'perceived' in place of 'faced' in the fourth objective. (**Action: Associate Professor (Extension), CoA, NAU, Waghai)**

14.6.3.76	Constraints faced by the farmers in purchase of Agro-chemicals for vegetable crops	**Approved.** **(Action: Associate Professor (Extension), CoA, NAU, Bharuch)**
14.6.3.77	Training needs and constraints of farm women engaged in backyard poultry farming in South Gujarat region	**Approved with the following suggestion/s** **1.** Drop '…and constraints…' from the title. 2. Keep 'farmwomen' as a single word. **(Action: Head, Dept. Vet. Ext., VCVS & AH, NAU, Navsari)**
14.6.3.78	Role Performance of the Sarpanchs in Panchayti Raj· System with reference to Agricultural Development in Tapi District	**Approved with the following suggestion/s:** **1.** Modify the title as: 'Role performed by the sarpanchs in Panchayti Raj system with reference to selected rural development activities in Tapi district'. 2. Modify the objectives and methodology in tune with the title. **3.** Use 'seek' in place of 'identify' in the fourth objective. **(Action: Principal, Polytechnic in Agriculture, NAU, Vyara)**
14.6.3.79	Attitude of village extension workers towards ICT apparatus for exploring agricultural information	**Approved.** **(Action: Senior Scientist & Head, KVK, NAU, Vyara)**
14.6.3.80	Perception of the farmers towards plug tray nursery	**Approved.** **(Action: Senior Scientist & Head, KVK, NAU, Vyara)**
14.6.3.81	Adoption of Novel organic liquid fertilizer in fruits and vegetable crops in Tapi district	**Approved with the following suggestion/s:** Keep the word Novel under inverted commas as 'Novel'. **(Action: Senior Scientist & Head, KVK, NAU, Vyara)**
14.6.3.82	Tribal women's knowledge about different types of Anemia	**Approved with the following suggestion/s:** Change the title as: 'Knowledge of tribal women about different types of anemia'. **(Action: Senior Scientist & Head, KVK, NAU, Vyara)**
14.6.3.83	Constraints as perceived by farmers in adoption of improved organic farming practices in Dang district	**Approved with the following suggestion/s:** 1. Change the title as: 'Constraints faced by farmers in adoption of improved organic farming practicesin Dangs district'. **2.** Recast the second objective as: 'To assess the level of knowledge and adoption of technological innovations in organic farming'. **3.** Recast the third objective as: 'To study the constraints in adoption of organic farming in Dangs district'.

		(Action: Senior Scientist & Head, KVK, NAU, Waghai)
14.6.3.84	Impact of vermin compost demonstration organized by tribal women training center, Dediyapada	**Approved with the following suggestion/s:** 1. In the title, use the word 'demonstrations' instead of 'demonstration' and keep 'vermi-compost' as a single word. **2.** Keep 'vermi-compost' as a single word instead of 'vermin compost' in objectives and methodology. **3.** Specify methodology for impact measurement. **(Action: Senior Scientist & Head, KVK, NAU, Dediyapada)**
14.6.3.85	An economic analysis of major tuber crops of South Gujarat	**Approved**. **(Action: Professor& Head, Agril. Economics, NMCA, NAU, Navsari)**
14.6.3.86	Study of agricultural market information system in Navsari District	**Approved.** **(Action: Associate Professor, Agril. Economics, ACHF, NAU, Navsari)**
14.6.3.87	Consumer behaviour towards branded and unbranded value added agricultural products in Navsari city	**Approved.** **(Action: Planning officer and Assoc. Professor (Agril. Econ.), Directorate of Research, NAU, Navsari)**
14.6.3.88	Research and development priorities for livestock sector in Gujarat	**Approved.** **(Action: Assistant Professor, (Agril. Econ.), CoA, NAU, Waghai)**
14.6.3.89	Assessment of vulnerability to poverty among the farmers in Gujarat	**Approved**. **(Action: Assistant Professor, (Agril. Econ.), CoA, NAU, Waghai)**
14.6.3.90	A comparative assessment of export versus traditional production and marketing of Okra in Tapi District	**Approved with the following suggestion/s:** In the title, use 'economics' instead of 'assessment'. **(Action: Assistant Professor, (Agril. Econ.), Polytechnic, NAU, Vyara)**
14.6.3.91	Consumer perception and buying behavior towards private label food products in Surat and Navsari	**Approved with the following suggestion/s:** 1. Use 'Consumers' perception' instead of 'consumer perception' in the title. 2. Add 'buying behavior of consumers……' in the second objective. **(Action: Dean, AABMI, NAU, Navsari)**
14.6.3.92	Consumer preferences in purchasing fruits and vegetables from organized and unorganized retailing in Navsari city	**Approved with the following suggestion/s** Use 'Consumers' preferences' instead of 'consumer preferences' in the title. **(Action: Dean, AABMI, NAU, Navsari)**
14.6.3.93	Characteristics of agribusiness in Navsari District of Gujarat	**Approved**. **(Action: Assistant Professor, Office the Registrar, NAU, Navsari)**

14.6.3.94	Construction of selection indices to select optimum selection index in mungbean [*Vigna radiata* (*L.*) *R. Wilczek*]	**Approved**. **(Action: Professor, Dept. of Agril. Stat., NMCA, NAU,Navsari)**
14.6.3.95	Technical Efficiency and its Determinants in Brinjal and Okra Production in South Gujarat	**Approved**. **(Action: Asso. Prof., Dept of Ag Stat, ACHF, NAU, Navsari)**
14.6.3.96	Study of shifts in cropping pattern for cotton and pigeon pea in Bharuch district	**Approved with the following suggestion/s** Change the title as: 'Shifts in cropping pattern of cropping pattern for cotton and pigeon pea in Bharuch district'. **(Action: Asso. Prof, Dept of Ag. Stat, CoA, NAU, Bharuch)**
14.6.3.97	Estimation of optimum plot size and shape in Cabbage under rainfed saline condition	**Approved**. **(Action: Asso. Prof, Dept of Ag. Stat, CoA, NAU, Bharuch)**

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

Sr. No.	Title	Suggestion/s and Action
14.6.3.98	Student attitude and participation in cleanliness	**Approved with the following suggestion/s:** 1. Use 'Students' attitude' in place of 'student attitude' in the title. 2. 25 % students of UG and PG colleges may be selected. 3. Add one more objective: 'To study the profile of students'. 4. Change the second objective as: 'To know the extent of participation of SDAU students in cleanliness activities'. 5. Change the third objective as: 'To ascertain the relationship of students' profile with their attitude and extent of participation in cleanliness activities'. 6. The study should be completed in one year. **(Action: Prof. & Head, Dept. of H. Sc. Extn. & Comm. Mgt., ASPEE College of Home Science & Nutrition)**
14.6.3.99	Empowerment of rural women through training on embroidery work	**Approved with the following suggestion/s:** 1. Change the title as: 'Impact of training programmes on embroidery work for empowerment of rural women'. 2. Recast the second objective as: 'To measure the impact of training in terms of gain in knowledge and symbolic adoption'. 3. Add a new objective as: 'To seek suggestions from trainees for improving the effectiveness of the training programme'.

		4. Drop the third and fourth objectives. 5. Recast the methodology as per the changes in the objectives and employ pre- and post-evaluation technique. 6. The study should be completed in one year. **(Action: Prof. & Head, Dept. of H.Sc. Extn. & Comm. Mgt., ASPEE College of Home Science & Nutrition, SDAU, SKNagar)**
14.6.3.100	Effectiveness of advertisement in promoting selected agricultural practices	**Approved with the following suggestion/s:** 1. Change the title as: 'Perception of *Krushi Govidya* readers about the agricultural advertisements published'. 2. Recast the first objective as: 'To study the profile of *Krushi Govidya* readers'. 3. Recast the second objective as: 'To study the perception of *Krushi Govidya* readers about agricultural advertisements published'. 4. Add a new objective as: 'To seek suggestions of readers to improve the effectiveness of advertisements'. 5. Drop the third and fourth objectives. 6. Add a new objective as: 'To find relationship between profile and perception of the *Krushi Govidya* readers'. 7. The study should be completed in one year. **(Action: Prof. & Head, Dept. of H.Sc. Extn. & Comm. Mgt., ASPEE College of HSN, SDAU, SKNagar)**
14.6.3.101	Saving and borrowing pattern of farmers	**Approved with the following suggestion/s:** 1. Include both formal and informal credit institutions in the methodology. 2. In the fourth objective, use 'awareness' instead of 'pattern'. **(Action: Prof. & Head, Dept. of H.Sc. Extn. & Comm. Mgt., ASPEE College of Home Science & Nutrition, SDAU, SKNagar)**
14.6.3.102	Under graduate student's attitude towards higher study	**Approved with the following suggestion/s:** 1. Change the title as: 'Opinion of UG students towards higher education'. 2. Make changes in the objectives in tune with the title. **(Action: Prof. & Head, Dept. of H.Sc. Extn. & Comm. Mgt., ASPEE College of Home Science & Nutrition, SDAU,**

		SKNagar)
14.6.3.103	Plagiarism awareness amongst post graduate students and faculty of SDAU	**Approved with the following suggestions:** 1. Change the title as: 'Awareness about plagiarism regulations amongst PG students and faculty of SDAU'. 2. Make changes in the objectives and methodology in tune with the title. **(Action: Prof. & Head, Dept. of H. Sc. Extn. & Comm. Mgt., ASPEE College of Home Science & Nutrition, SDAU, SKNagar)**
14.6.3.104	Study on women farm labours' contribution in family	**Approved with the following suggestion/s:** 1. Use the singular 'woman' instead of 'women'. 2. Make changes in the objectives and methodology in tune with the title. **(Action: Prof. & Head, Dept. of H.Sc. Extn. & Comm. Mgt., ASPEE College of Home Science & Nutrition, SDAU, SKNagar)**
14.6.3.105	Knowledge and adoption level of farm women about nutritional practices	**Approved with the following suggestion/s:** Use the word 'relationship' instead of 'association' in the fifth objective. **(Action: Prof. & Head, Dept. of H.Sc. Extn. & Comm. Mgt., ASPEE College of HSN, SDAU, SKNagar)**
14.6.3.106	Knowledge of women regarding menstrual hygiene	**Approved with the following suggestion/s:** 1. Change the title as: 'Tool to develop test to measure knowledge of rural adolescent girls regarding menstrual hygiene management practices'. 2. Add a new objective as: 'To develop test to measure the knowledge of women regarding menstrual hygiene management practices' 3. Drop other objectives in the study. **(Action: Prof. & Head, Dept. of H.Sc. Extn. & Comm. Mgt., ASPEE College of Home Science & Nutrition, SDAU, SKNagar)**
14.6.3.107	Effect of heat stress on farm workers	**Approved**. **(Action: Prof. & Head, Dept. of FRM., ASPEE College of Home Science & Nutrition, SDAU, SKNagar)**
14.6.3.108	Motivational techniques used by officials of SDAU	**Approved with the following suggestion/s:** The investigators should contact their DEE to clarify the title. **(Action: Prof. & Head, Dept. of**

		Human Devt. & Family Studies, ASPEE College of Home Science & Nutrition, SDAU, SKNagar)
14.6.3.109	Study on nutritional status of urban and peri urban farm families	**Approved**. **(Action: Prof. & Head, Dept. of Food Science & Nutri., ASPEE College of Home Sci. & Nutrition, SDAU, SKNagar)**
14.6.3.110	Pesticide residue and safe food awareness among farm women	**Approved with the following suggestion/s:** 1. Change the title as: 'Awareness and adoption of health conscious practices of food among farmwomen'. 2. Recast the objectives and methodology in tune with the title. **(Action: Chief Scientist & Head, KVK, SDAU, Khedbrahma)**
14.6.3.111	Evaluation of training on nutritional knowledge of tribal farm women	**Approved with the following suggestion/s:** 1. Recast the first objective as: 'To study profile of the respondents'. 2. Drop the second objective. 3. Change the third objective as: 'To evaluate the gain in nutritional knowledge of the respondents'. **(Action: Chief Scientist & Head, KVK, SDAU, Khedbrahma)**
14.6.3.112	Calf rearing practices followed by tribal farmers of Sabarkantha district	**Approved**. **(Action: Chief Scientist & Head, KVK, SDAU, Khedbrahma)**
14.6.3.113	Preventive measures adopted by farmers against fruit cracking of pomegranate in Banaskantha district	**Approved with the following suggestion/s:** Change the second objective as: 'To know the levels of knowledge and adoption of recommended practices to prevent fruit cracking in pomegranate. **(Action: Chief Scientist & Head, KVK, SDAU, Deesa)**
14.6.3.114	Preventive measures adopted by farmers against fruit cracking of pomegranate in Banaskantha district	**Approved with the following suggestion/s:** Change the second objective as: 'To know the levels of knowledge and adoption of recommended practices regarding sun scald of pomegranate fruit'. **(Action: Chief Scientist & Head, KVK, SDAU, Deesa)**
14.6.3.115	Study on knowledge and technological gap of soybean growers in Sabarkantha district	**Approved**. **(Action: DEE, SDAU, SKNagar)**
14.6.3.116	Evaluation of crop demonstrations conducted under ATMA project in Sabarkantha and Mehsana Districts	**Approved with the following suggestion/s:** 1. Recast the first objective: 'To study

		the profile of the farmers'. 2. Change the second objective as: 'To study level of knowledge of demonstrator farmers about crop production technology'. 3. Use 'relationship' instead of 'association' in the fourth objective. **(Action: DEE, SDAU, SKNagar)**
14.6.3.117	Knowledge level of Potato growers about soil fertility	**Approved with the following suggestion/s:** Drop the third objective. **(Action: DEE, SDAU, SKNagar)**
14.6.3.118	Adoption of recommended cumin production technology by cumin growers in North Gujarat	**Approved**. **(Action: DEE, SDAU, SKNagar)**
14.6.3.119	Training need assessment of farmers regarding organic farming in North Gujarat	**Approved**. **(Action: DEE, SDAU, SKNagar)**
14.6.3.120	Credit Management of Tribal farmers of North Gujarat	**Approved**. **(Action: Prof. & Head, Dept. of Ext. Education, CPCA, SDAU, SKNagar)**
14.6.3.121	Knowledge of tribal farmers regarding agricultural development schemes in North Gujarat	**Approved**. **(Action: Prof. & Head, Dept. of Ext. Education, CPCA, SDAU, SKNagar)**
14.6.3.122	Perception of farmers about dairy farming in Mehsana and Kachchh Districts	**Approved with the following suggestion/s:** Use 'districts' instead of 'district' in the title. **(Action: Prof. & Head, Dept. of Ext. Edu., CPCA, SDAU, SKNagar)**
14.6.3.123	Adoption of health care management practices of got rearing by tribal farmers	**Approved**. **(Action: Prof. & Head, Dept. of Ext. Edu., CPCA, SDAU, SKNagar)**
14.6.3.124	Knowledge of beneficiary farmers about functioning of ATMA Programme in Patan and Kuchchh district	**Approved with the following suggestion/s:** Use 'districts' instead of 'district' in the title. **(Action: Prof. & Head, Dept. of Ext. Edu., CPCA, SDAU, SKNagar)**
14.6.3.125	Factors in prevalence of Mastitis in Dairy animals, preventive and control measures followed by dairy farmers of North Gujarat	**Approved**. **(Action: Prof. & Head, Dept. of Vet. & AH Extension Education, CPCA, College of Vet. Sc., SDAU, SKNagar)**
14.6.3.126	Attitude and aspiration of the students towards Diploma of Polytechnics in SDAU	**Approved**. **(Action: Principal, LITC, SDAU, Sardarkrushinagar)**
14.6.3.127	Perception of farmers regarding Micro Irrigation System (MIS) in summer Bajara Crop in Banaskantha District	**Approved with the following suggestion/s:** 1. In the title, replace 'micro irrigation system' as 'sprinkler irrigation system'. 2. Modify the objectives and methodology in tune with the title. **(Action: Principal, Agri. Polytechnic,**

		SDAU, Deesa)
14.6.3.128	Status of Dairy Sector in Gujarat	**Approved**. **(Action: Prof. & Head, Dept. of Agril. Economics, CPCA, SDAU, SKNagar)**
14.6.3.129	Structural Changes in Horticultural Sector and livelihood Security in Gujarat	**Approved with the following suggestion/s:** 1. Include Coppock's instability index in addition to Coefficient of Variation in the methodology. **(Action: Prof. & Head, Dept. of Agril. Economics, CPCA, SDAU, SKNagar)**
14.6.3.130	An assessment of production and resource use efficiency and constraints faced by fennel growers	**Approved**. **(Action: Prof. & Head, Dept. of Agril. Economics, College of Horticulture, SDAU, Jagudan)**
14.6.3.131	Contribution of tribal women in Agroforestry in Banaskantha District	**Approved**. **(Action: Prof. & Head, Department of ABM, CPCA, SDAU, SKNagar)**
14.6.3.132	Disposal Pattern and constraints faced by the Vegetable growers in Patan District	**Approved**. **(Action: Res. Sci., AICRP, FSR, SDAU, Jagudan)**
14.6.3.133	Crop diversification in Gujarat	**Approved with the following suggestion/s:** Categorize the study period into before and after krushi mahotsava (2005). **(Action: Prof. & Head, Dept. of Agril. Economics, CPCA, SDAU, SKNagar)**
14.6.3.134	Price spread and efficiency of marketing of red chilli in Mehsana district	**Approved with the following suggestion/s:** Change the title as: "Price spread and marketing efficiency of red chilli in Mehsana district. **(Action: Prof. & Head, Department of ABM, CPCA, SDAU, SKNagar)**
14.6.3.135	Cause and effect analysis for seed yield in castor (*Ricinus communis L.*)	**Approved with the following suggestion/s:** 1. Methodology needs to be specified. 2. Study period needs to be mentioned. 3. Change the second objective as: 'To estimate regression analysis of yield and attributes'. **(Action: Prof. & Head, Dept. of Agril. Stat., CPCA, SDAU, SKNagar)**
14.6.3.136	Comparative performance of time series forecasting models	**Approved**. **(Action: Prof. & Head, Dept. of Agril. Stat., CPCA, SDAU, SKNagar)**
14.6.3.137	Estimation of optimum plot size and shape from uniformity trial data of coriander (*Coriandrum sativum L.*)	**Approved**. **(Action: Prof. & Head, Department of Basic Sciences, College of Horti., SDAU, Jagudan)**
14.6.3.138	Optimum size and shape of plots for field experiments on sesame	**Approved**. **(Action: Principal, Agri. Polytechnic, Khedbrahma)**

*General Suggestions:

1. The house conceived the importance of yield gap in view of enhancing farmers' income and, hence, suggested to undertake a holistic study for the entire state using primary data of 4000 respondents entitled: 'Yield gap analysis of major field crops of Gujarat'. Further, it was decided to conduct the same as a joint-study by all the SAUs and the findings to be compiled by HoD, Agril. Economics,JAU, Junagadh.
2. The house decided to conduct a study on: 'Determinants of leaving farming as a profession' by all the SAUs as suggested by Deptt. of Ext. Edn., BACA, AAU, Anand.
3. The house decided to conduct a study on "Adoption of recommended technologies released for farming community" in respective jurisdiction of the SAUs.

The meeting ended with vote of thanks proposed by Convener, Social Science Sub-Committee, JAU, Junagadh.

Dignitary	Name of Dignitary
Chairman	Dr. K. A. Thakkar, DEE, SDAU
Co-chairmen	Dr. G. R. Patel, DEE, NAU, Navsari
	Dr. H. B. Patel, ADEE, AAU, Anand
	Dr. M. R. Prajapati, Dean, CPCA, SDAU
	Dr. P. R. Kanani, ADEE, JAU, Junagadh
Rapporteurs	Dr. K. P. Thakar, Prof., SDAU, Sardarkrushinagar
	Dr. N. B. Jadav, Sr. Sci., JAU, Pipalia
	Dr. J. B. Patel, Assoc. Prof., AAU, Anand
	Dr. B. Swaminathan, Asstt. Prof., JAU, Junagadh
Statistician	Dr. S. M. Upadhyay, Prof. & Head, JAU, Junagadh

14.7 BASIC SCIENCE & HUMANITIES, PLANT PHYSIOLOGY & BIOTECHNOLOGY

Chairman	Dr. S. R. Chaudhary, Director of Research, NAU, Navsari
Co-Chairman	Dr. B. A. Golakiya, Prof. & Head, Dept. of Biotechnology, JAU, Junagadh
	Dr. A. D. Patel, Research Scientist, Regional Research Station, AAU, Anand
Rapporteurs	Dr. J. B. Patel, Associate Professor, Dept. of Seed Sci. & Tech. JAU, Junagadh
	Dr. R. S. Tomar, Associate Professor, Dept. of Biotechnology, JAU, Junagadh
	Dr. Sanjay Jha, Associate Professor, ASBI, NAU, Surat

Presentation of recommendations and technical programmes by Conveners of SAUs

Sr. No.	Name	Designation & University
1	Dr. A. D. Patel	Res. Scientist & Nodal Officer, Mega Seed Project, AAU, Anand
2	Dr. V. J. Bhatia,	Professor & Head, Dept. of Seed Science & Tech, JAU, Junagadh
3	Dr. H. D. Bhimani	Associate Professor (Microbiology), NAU, Navsari
4	Dr. S. K. Shah	Assistant Research Scientist, CMRS, SDAU, SKNagar

Summary

Name of University	No. of Recommendations				New Technical Programmes	
	Farming Community		Scientific Community			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU, Anand	01	01	03	03	09	09
JAU, Junagadh	02	01	06	06 + 01*	10	10
NAU, Navsari	01	01	12	10	10	09
SDAU, SKNagar	-		04	04	19	12
Total	**04**	**03**	**25**	**24**	**48**	**40**

***Approved as scientific instead of farmers recommendation**

14.7.1 RECOMMENDATION FOR FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

14.7.1.1 Sustaining the yield of un-irrigated durum wheat in Bhal region through PGRs and chemicals

The farmers of Bhal and Coastal Agro- climatic Zone – VIII growing rainfed durum wheat are advised to apply first spray of thiourea500 ppm (5 g /10 litre water) at tillering stage (35-40 DAS) and second spray at ear emergence stage (60-65 DAS) to get maximum grain yield and net return.

ગુજરાત રાજયના ભાલ અને દરીયા કાંઠા ખેત આબોહવાકીય વિભાગ –૮ ના બિનપિયત ડયુરમ (ભાલીયા) ઘઉની ખેતી કરતાં ખેડૂતોને મહત્તમ ઉત્પાદન અને વધુ આવક મેળવવા માટે થાયોયુરીયા ૫૦૦ પી.પી.એમ.(૫ ગ્રામ/ ૧૦ લીટર પાણી) પ્રમાણે ઘઉની વાવણી બાદ પ્રથમ છંટકાવ ફુટ અવસ્થાએ (૩૫–૪૦ દિવસે) અને બીજો છંટકાવ ઉંબી નિકળવાના સમયે(૬૦–૬૫ દિવસે) કરવાની ભલામણ કરવામાં આવે છે.

Approved.

(Action:** Assistant Research Scientist, Agricultural Res. Station, AAU, Dhandhuka**)

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

14.7.1.2 Effects of 2, 3, 5-Triiodobenzoic Acid (TIBA) on seed cotton (*Gossypium hirsutum* L.) yield

It is informed to scientific community that spray growth regulator TIBA 5g/ha/spray at 50, 60, 70, 80 & 90 DAS to achieve balanced growth and higher seed cotton yield in late maturing Bt cotton hybrids under irrigated condition in South Saurashtra Agro-Climatic Zone.

Approved as scientific recommendation:

As TIBA is not listed by CIB, hence the house considered the recommendation for

scientific community.

[Action: Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh]

14.7.1.3 Effect of growth regulator, organic and inorganic foliar nutrition on the growth andyield of blackgram (*Vigna mungo* L.) under rainfed condition.

The farmers of North Saurashtra Agro-climatic Zone-VI growing blackgram in *kharif* under rainfed condition are advised to spray Gibberellic Acid (GA_3) 1 g/10 litre water (100 ppm) at flowering (35-40 DAS) and pod development (55-60 DAS) stages for obtaining higher seed yield and net return.

ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકીય પરિસ્થિતિ–૬માં ખરીફ ઋતુમાં વરસાદ આધારીત અડદનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે જીબ્રેલીક એસીડ (જીએ૩) ૧ ગ્રામ પ્રતિ ૧૦ લિટર પાણીમાં(૧૦૦ પી.પી.એમ.)નાં દ્રાવણનો ફુલ આવવાની (વાવણી બાદ ૩૫–૪૦ દિવસે) અને શિંગો બંધાવાની (વાવણી બાદ ૫૫–૬૦ દિવસે)અવસ્થાએ એમ બે છંટકાવ કરવાથી વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવી શકાય છે.

Approved.

[Action: Res. Scientist (Dry Farming), Dry Farming Res. Station, JAU, Targhadia]

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

14.7.1.4 Effect of pre-harvest water stress on yield and post-harvest quality of cabbage (*Brassica oleraceae* var. *capitata* L.)

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone AES III growing cabbage are advised to withheld two irrigations, first at head development (35-40 DAS) and second at leaf overlapping stages (65-70 DAS) for sustaining post-harvest quality, increasing yield, saving water and to get higher net return

દક્ષિણ ગુજરાત વધુ વરસાદવાળા ખેત આબોહવાકીય વિસ્તારમાં કોબીજનું વાવેતર કરવાવાળા ખેડૂતોને બે પિયત ઓછા આપવાની ભલામણ કરવામાં આવે છે.જેમાં પહેલું પિયત કોબીજના દડાના વિકાસ સમયે (૩૫ થી ૪૦ દિવસ બાદ)અને બીજું પિયત કોબીજના દડા પર પર્ણના ચઢાવ (૬૫ થી ૭૦ દિવસે) સમયે આપવું નહીં. તેનાથી કોબીજના દડાની કાપણી પછીની ગુણવતા ટકાવી શકાશે, ઉપજમાં વધારો, પાણીની બચત અને વધુ આવક મળશે.

Approved.

(Action: Prof. & Head, Dept. of Plant Mol. Bio.& Biotech, ACHF, NAU, Navsari)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

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14.7.2 RECOMMENDATION FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

14.7.2.1 Seed hardening and its combined effect on seed germination and molecular characterization in greengram

It is informed to scientific community that seed hardening of greengram variety GAM-5 with $CaCl_2$ 2 % or cycocel 1000 ppm (3 hours seed soaking and 18 hours shade drying) were found more effective for physiological and biochemical parameters.

Approved.

(Action: Prof. & Head, Department of Plant Physiology, BACA, AAU, Anand)

14.7.2.2 DNA fingerprinting of crop varieties and other bio-inputs developed by AAU, Anand using RAPD and SSR markers.

It is informed to scientific community that two aroma specific primers *viz.*, ESP and IFAP can be utilized to discriminate aromatic rice genotypes from non-aromatic rice genotypes and for selection of aromatic segregants among segregating generation.

Primer Code	Description	Sequence
ESP	External Sense Primer	TTGTTTGGAGCTTGCTGATG
IFAP	Internal Fragrant Antisense Primer	CATAGGAGCAGCTGAAATATATACC

Approved.

(Action:** Research Scientist, Department of Agri. Biotechnology, AAU, Anand**)

14.7.2.3	**Development and validation of highly sensitive LC-MS/MS method for plant metabolite quantification and confirmation from medicinal and aromatic plants.**

It is informed to scientific community that to ascertain the quality of medicinal plant products, LC-MS/MS protocol given below can be utilized to detect and quantify various active compounds.

Table 1: LC Parameters set for analysis of secondary metabolites

Time	Flow ml/min	A(H_2O with 0.1 % formic acid)	B (50 % ACN + 50% Methanol with 0.1 % formic acid)
0.0	0.3	90	10
1.5	0.3	50	50
2.5	0.3	0	100
5.0	0.3	0	100
6.0	0.3	50	50
7.0	0.3	90	10
10	0.3	90	10

Table 2: MS/MS parameters for negatively ionized compounds

Q1	Q3	Compounds	DP	EP	CE	CXP
193	133.9	Ferrulicaicd	-29	-4.6	-13	-4.6
447	284.2	Kuromanin	-97	-9.7	-32	-10
137.1	92.8	B-Hydroxy_1	-90	-4	-45	-8.8
137.1	64.8	B-Hydroxy_2	-90	-4	-40.8	-4.4
359	197	Ros_1	-60	-10	-24.58	-19.05
359	159.9	Ros_1	-60	-10	-35.3	-33.2
359	178.8	Ros_2	-60	-10	-25.16	-7.05
359	132.8	Ros_2	-60	-10	-60.74	-9.2
285	184.6	Kampherol	-110	-8	-36	-12.12
285	238.3	Kampherol_2	-110	-8	-41	-15.74
109	90.6	Pyrocatechol	-109	-10	-30	-6.07
109	65	Pyrocatechol_2	-109	-10	-31.96	-9.6
147.1	103.6	Cinnamic	-15	-12	-20	-8.8
473	178	Chicoric_1	-80	-11	-20	-10
473	310.2	Chicoric_2	-80	-11	-26.72	-10
311	178.7	Caftaric_1	-160	-10	-20	-10
311	134.7	Caftaric_2	-160	-10	-20.76	-10
178.9	135	Caffeic acid	-115	-10	-22	-9
178.9	107	Caffeic acid	-115	-10	-30	-7
206.9	177	Sinapaldehyde	-20	-10	-26	-11
206.9	148.9	Sinapaldehyde	-20	-10	-34	-9
223	163.9	Sinapic acid	-120	-10	-20	-9
223	192.9	Sinapic acid	-120	-10	-28	-11
166.9	137	Vanillicacid	-140	-10	-12	-9
166.9	109.1	Vanillic acid	-140	-10	-16	-7

Table 3: MS/MS parameters for positively ionized compounds

Q1	Q3	Compounds	DP	EP	CE	CXP
568.6	476.5	Zeaxanthin_1	28	10	19.12	11.83
568.6	209.1	Zeaxanthin_2	28	10	38.08	10.93
568.6	175.3	Zeaxanthin_3	28	10	36.33	9.15
568.6	476.6	Lutein_1	28	10	23.94	7.14
568.6	338.1	Lutein_2	28	10	24.74	5.82
568.6	145.1	Lutein_3	28	10	54.94	11.05

568.6	81.87	Luein_4	28	10	81.87	8.18
417.2	119	ApoBetaCarotene_1	20	7	53.57	11.05
417.2	121	ApoBetaCarotene_3	20	7	30.07	29.13
537.4	445.4	betacarotene	120	7.06	21.21	3.08
537.4	177	B_1	120	7.06	29.13	9.98
109	81	p-Cresol	65	11	15	5
109	66.9	p-Cresol_2	65	11	17.87	6.78
611.1	449	Cyanidin Chloride	65	11	30	24.82
611.1	287	Cyanidin Chloride_2	65	11	39.98	17.22
355.1	163	Chlorogenic acid	46	10	21	10
355.1	89	Chlorogenic acid	46	10	75	14
286.9	153	Kaempferol	111	10	43	10
286.9	68.9	Kaempferol	111	10	89	10
199	140	Syringic acid	16	10	21	10
199	155	Syringic acid	16	10	13	10

Approved.

***(Action:** Research Scientist, Department of Agril. Biotechnology, AAU, Anand)*

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

14.7.2.4 Biochemical and molecular characterization of brinjal varieties and promising genotypes

It is informed to the scientific community that brinjal variety GOB-1 was found most distinctamong14 promising genotypes and varieties based on biochemical, nutritional and molecular analysis. It contains higher protein, total soluble solids, soluble sugars, phenols, ascorbic acid, PPO activity, flavanoid contents; lower glycoalkaloids and acidity. The clustering pattern on the basis of biochemical parameters of brinjal varieties and genotypes correlates with molecular (SSR) based dendrogram depicting most distinct genotype GOB-1 out grouped from other genotypes with 48 per cent similarity.

Approved.

***(Action:** Prof. & Head, Dept. of Biochemistry and Biotechnology, JAU, Junagadh)*

14.7.2.5 Development of cultivar specific markers for the hybrids released by JAU in pearl millet

The scientific community involved in pearl millet improvement is informed to use below mentioned JAUB series of primers for identification of following hybrids.

Primer Name	Primer Sequence	Product Length	Hybrid
JAUB5F	CTGCTTCTTCTCGTAAT	941	GHB 538
JAUB5R	TTCGCCAGGAGGGCGT		
JAUB7F	ATCGCTACGTCTACGATG	527	GHB 558
JAUB7R	TCTCCGATTAGGTCGTTG		
JAUB17F	TACCTTTGTGTTGATGGTTT	415	GHB 577
JAUB17R	CTACTCTTGTTCCTCCTCT		
JAUB10F	CAACATACCTCTCGTACGGT	1020	GHB 719
JAUB10R	TTTTCGGATAGTTCAAACAGT		
JAUB1F	TAGCTGGGTAGAGGCTGACT	249	GHB 526
JAUB1R	GCCTGTTGACAGTCCGTAGA		
JAUB22F	CGCAGTGGATTATCCCTCTC	354	GHB 732
JAUB22R	GGATGACCCTCGAAACCATA		
JAUB24F	GGCATCTCGTTGTACCTCGT	339	GHB 744
JAUB24R	AACAGCATCAGAGCGGACTT		

	JAUB27F	CTTGTGCCTTGGAGCTGTTT	550	GHB 757
	JAUB27R	GTGGCTGTTGTCATGAATGC		
	JAUB30F	TTAGCATTTTGCGCTTTGTG	250	GHB 905
	JAUB30R	GCATGAATCAGCCCATACAA		

Approved.

(Action: Prof. & Head, Dept. of Biochemistry and Biotechnology, JAU, Junagadh)

14.7.2.6 Development of cultivar specific markers for the varieties released by JAU in groundnut

The scientific community involved in groundnut improvement is informed to use below mentioned JAUG series of primers for identification of following groundnut varieties.

Primer Name	Primer Sequence	Product Length	Variety
JAUG12F	CACCAAGTGGGAGAGGAAAA	352	GJG 22
JAUG12R	CCAACACTACCCCATTCTGG		
JAUG13F	GTGGCCAAAGATTTCACACA	1201	GJG 17
JAUG13R	GTCCGATGGCAGCTCTATGT		
JAUG1F	GTCGATGAGACGGCTAGTGG	348	GJG 31
JAUG1R	TCGTGACGAGGGTGATCTCT		
JAUG17F	TCGGGATGTGTTTATGTTGC	386	GJG 9
JAUG17R	GGAGTTCGCACATTGTGTTG		
JAUG20F	GCTGGTTAGTTGTGCGGATT	409	GJG HPS 1
JAUG20R	CTCCCCCTTATTGGATAGGC		
JAUG22F	CGAGTATCCCGAACCCTACA	265	GJG 20
JAUG22R	AAAAGGGTTGGTTTCGCTTT		
JAUG4F	CGCACGCATGCCCTAAATAC	355	GG 5
JAUG4R	TTGGGTGCGGATGAGAAAGG		
JAUG26F	TGAGGATTTGCCGTTTCTTT	405	GJG 7
JAUG26R	CCCGTCCCCAAATGATAGAT		
JAUG8F	AAACCGCTGTGTCTCTCTGC	329	GG 11
JAUG8R	GCCTGTTGACAGTCCGTAGA		

Approved.

(Action:** Prof. & Head, Dept. of Biochemistry and Biotechnology, JAU, Junagadh**)

14.7.2.7 Genome sequencing of pathogenic *Macrophomina phaseolina* isolated from castor

It is informed to the scientific community involved in castor improvement that whole genome sequencing of plant pathogenic fungi *Macrophomina phaseolina* showed 98.6 Mb of genome size. The draft genome has3061 contigs, 30756 genes, 183303 exons, 28096 SSRs and 13947 repeat regions. In this genome, 24.30 % of genes are involved in molecular functions, 34.27 % in cellular components and 41.43 % in biological processes. Pathogenicity related genes identified in this study have high relevance in future fungicide designing. The following primers can be used for identification of pathogenic fungi *Macrophomina phaseolina*

Name	Primer 3'-5'	Product length	GC%	Tm
JAUMPF1	GGAGAGTTTGCGTCAAGTCC	202	55	59.85
JAUMPR1	ACTGTCGGAGAAACCGAAGA		50	59.84
JAUMPF2	GCGAACTCAATCCCAACATC	226	50	60.47
JAUMPR2	TCGACCATGAGGGTTTTCTC		50	60.05
JAUMPF3	CGCACTAATAATCGGCCCTA	193	50	60.07
JAUMPR3	GTAAAAGTGCGTTGGCGTTT		45	60.17

Approved.

(Action:** Prof. & Head, Dept. of Biochemistry and Biotechnology, JAU, Junagadh**)

14.7.2.8 *In situ* detection of potassium status in cotton plants

It is informed to scientific community/industrialists that silver and carbon nano-

	particles based portable nano-biosensor has been invented for detection of potassium directly from the leaf sap of cotton plant with precision. The nano-biosensor works on the basis of ion-selective mechanism to detect potassium ion in the range of 10 to 120 mM. The deficiency of potassium below threshold line of 40 mM from sap with the sensor display indicating the voltage output below (-ve) 15 mV will be signaled. The onetime cost of the invented nano-biosensor is about Rs.2500-3000 and it works well to detect potassium deficiency level at any growth stage of cotton crop. **Approved.** ***(Action:*** *Prof. & Head, Dept. of Biochemistry and Biotechnology, JAU, Junagadh)*
14.7.2.9	**Thermal stress tolerance in wheat (*Triticum aestivum* L.)** It is informed to scientific community that genotypes J 2010-09 (GW 463) and J 2010-05 are good germplasm sources for wheat improvement for heat tolerance and yield. **Approved.** ***(Action:*** *Prof. & Head, Dept. of Genetics and Plant Breeding, JAU, Junagadh)*

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

14.7.2.10	**Biochemical basis for powdery mildew resistance in mango genotypes**
	It is informed to scientific community that infection of *Oidium mangiferae* in mango perturbs various biochemical parameters in variety dependent matter. Thetotal phenol content of resistant varieties (Ostin and Totapuri) was found to be significantly higher in comparison to susceptible and moderately resistant mango varieties irrespective of *Oidium mangiferae infection*. **Not approved.** The results of phenol content for different varieties were non-significant. ***(Action:*** *Principal, Aspee Shakilam Biotechnology Institute, NAU, Surat)*
14.7.2.11	***In-silico* studies of NAL1 protein using bioinformatic approach in various cereal crops**
	It is informed to the scientific community that NAL1 protein structure derived using I-Tasser web server can be used as a reference model for future molecular docking experiments and validation in rice. **Approved.** ***(Action:*** *Principal, Aspee Shakilam Biotechnology Institute, NAU, Surat)*
14.7.2.12	**Metabolic profiling and anatomical study of jassid resistance and susceptible genotype of cotton**
	It is informed to scientific community that the molecules namely butanedioic acid, 2, 6, 10, 14, 18 - pentamethyl - 2, 6, 10, 14, 18 - eicosapentaeneandd-ribose increase whereas, octacosane and gluconic acid decrease which may be responsible for jassid resistance in cotton. Further, genotypes with higher phenol, free gossypol, trichome density and length with more leaf thickness whereas, lower reducing sugar and tannin contents should be used for selecting jassid resistant genotypes. **Approved.** ***(Action:*** *Research Scientist, Main Cotton Research Station, NAU, Surat)*
14.7.2.13	**Isolation, identification and exploitation of microbes from composting site for xylanase production for agro waste management**
	It is informed to scientific community that Xylanase producing *Bacillus licheniformis* X6 in combination with *Aspergillus terrus* XF9 degrade 15.5 % rice straw at ambient temperature after 40 days of incubation. **Approved.** ***(Action:*** *Prof. & Head, Dept. Food Quality Testing Lab., NMCA, NAU, Navsari)*
14.7.2.14	**Microbial pigment as food additive to replace chemically synthesized colour**
	Yellow and orange pigments produced by bacteria *Micrococcus luteus* and *Kocuria rosea,* respectively having antioxidant activity can be used as natural

	colorants. **Approved.** ***(Action:** Prof. & Head, Dept. Food Quality Testing Lab., NMCA, NAU, Navsari**)***
14.7.2.15	**Isolation and identification of cyanobacteria as source of single cell protein**
	It is informed to scientific community that *Anabaena* isolate2 having high protein content (381.12 µg/mg) and antioxidant activity (28 %) has the potential to be used as single cell protein **Approved.** ***(Action:** Prof. & Head, Dept. Food Quality Testing Lab., NMCA, NAU, Navsari**)***
14.7.2.16	**Isolation of important microorganisms in biodegrading crop residues**
	Scientific community is informed to prefer *Bacillus alkalophilus* RR isolate over *Vibrio mediterranei* ST-4 and *Bacillus okuhidensis* ST-9 for cellulose decomposition in rice straws because of minimum C:N ratio and maximum cellulose decomposition activity **Approved.** ***(Action:** Prof. & Head, Dept. of Plant Pathology, NMCA, NAU, Navsari**)***
14.7.2.17	**Screening of pigeon pea genotypes for qualitative characters**
	It is informed to scientific community that pigeonpea variety BDN-2contains high quantity of soluble protein (12.61 %), calcium (2.88 mg/kg) and magnesium (2.45 g/kg). Vaishali has high amount of iron (78.30 mg/kg), zinc (12.20 mg/kg) and molybdenum (6.02 mg/kg) content. NPK-15-25 variety has high amount of phosphorous (0.73 %), while NPK15-05, NPK-15-14, GT-1, AGT-2 and BNP-1B have high amount of copper (80.23 mg/kg), potassium **(**9.86 g/kg**),** manganese **(**14.23 mg/kg**),** boron (98.27 mg/kg) and cobalt **(**12.333 mg/kg**),** respectively. **Approved.** ***(Action:** Prof. & Head, Dept. of Soil Science & Agri. Chem., NMCA, NAU, Navsari**)***
14.7.2.18	**Molecular diversity assessment in geographical collection of Eucalyptus germplasm using DNA based marker system**
	Scientific community is informed to use RAPD markers OPB-14, OPH-07, OPH-13, OPH-15 and ISSR marker UBC-873 for genetic diversity analysis in eucalyptus clones. Genetically diverse clones *viz.*, CPM-2070, CPM-2306, JKSC-02 with Corymba-1, G-283 and IFGTBEC-2, JKSC-02 and Pellita-1 can be usedin future breeding programmes. **Approved.** ***(Action:** Prof. & Head, Dept. of Basic Sci. & Humanity, CoF, ACHF, NAU, Navsari**)***
14.7.2.19	**Analysis of genetic fidelity of *in vitro* raised banana plantlets at different subculture level using molecular marker**
	It is informed to scientific community that genetic fidelity of banana cv Grande Naine during micro-propagation gave homogenous amplification profile for 7th to 15th subculture cycle using RAPD and ISSR markers (UBC 848, UBC 855, UBC 847, UBC 880, UBC 882 UBC 879, M3, UBC 817, UBC 840, UBC 841, UBC 871, UBC 872, UBC 874). The results corroborate the fact that *in vitro* multiplication is the safest mode for production of true to type plants. **Not approved.** The house did not approve the recommendation due to variation observed in the molecular profiling pattern among the sub-cultures from 7th to 15th cycles. ***(Action:** Prof. & Head, Dept. of Plant Mol. Bio.& Biotech, ACHF, NAU, Navsari**)***
14.7.2.20	**Assessment of genetic diversity present in different bamboo species using DNA based marker system**
	It is informed to scientific community touse markers OPB-07, OPC-06, OPD-08, OPD-11 and OPD-12 for genetic diversity analysis in bamboo. Additionally, species *B. vulgaris* green and *B. vulgaris* yellow were genetically most similar species followed by *Gigantochloa atroviolacea* and *Gigantochloa rostrata*, and *Bambusa vulgaris* yellow and *Bambusa wamin*. Whereas, *Dendrocalamus giganteus* and

	Guadua aungustifolia were found to be genetically most diverse followed by *Bambusa balcooa* and *Guadua aungustifolia* and *Sasa auricoma* and *Dendrocalamus skkimensis*. **Approved.** ***(Action:*** *Head, Dept of Basic Sci. and Humanity, CoF, ACHF, NAU, Navsari****)***
14.7.2.21	**Assessment of genetic diversity through molecular markers in mango (*Mangifera indica* L.)**
	Scientific community is informed to use markers OPA-04, OPG-17, OPA-18 and OPB-19 for genetic diversity analysis in mango. Amarapali and Dashehari varieties were found to be genetically most similar, followed by Sonpari and Baneshan; Neelphanso and Sonpari; Dashehari and Mallika; Ratna and Sindhu and Sonpari and Alphanso. Whereas, Banglora and Neelphanso were found to be genetically most diverse varieties followed by Lal Malgoa and Amrutang; and Lal Malgoa and Vanraj. **Approved.** ***(Action:*** *Res. Scientist, Regional Horticultural Res. Station, ACHF, NAU, Navsari****)***

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

14.7.2.22	**Biochemical and nutritional evaluation of different genotypes of maize (*Zea mays* L.)**
	It is informed to scientific community that maize genotypes under study showed variability for the tryptophan, lysine, protein, oil and carbohydrate contents. Among them, following genotypes were superior with respect to following quality parameters.

Sr. No.	Quality Parameters	Genotypes/Hybrids
1	Protein	Hy-235 (10.26 %), JCS-2-7 (10.11 %), VL-109178 (10.11 %), HQPM-1 (9.88 %)
2	**Protein Quality**	
	Tryptophan	JCS-2-7 (0.61 %), BLD-233 (0.61 %), GAYMH-1 (0.55 %), HQPM-1 (0.58 %), VL-109178 (0.59 %)
	Lysine	VL-109178 (3.85 %), CM-140 (3.47 %) CM-135 (3.43 %), BLD-233 (3.16 %), JCS-2-7 (3.52 %)
3	Oil content	HQPM-1 (4.68 %), GAYMH-1 (4.99 %), JCS-2-7 (4.83 %), BLD-233 (4.42 %)
4	Carbohydrate	HQPM-1 (70.65 %), CM-140 (68.78 %), VL-109178 (68.59 %)
5	Starch	BLD-233 (61.91 %), HY-235 (61.78 %), GAYMH-1 (61.43 %)
6	Fe^{2+}content	HQPM-1 (49 ppm), CM-140 (43.8 ppm) CM-135 (43.2 ppm), VL-109178 (42.9 ppm), GAYMH-1 (41.2 ppm)
7	Zn^{2+}content	HQPM-1 (37.5 ppm), JCS-2-7 (31.8 ppm), GAYMH-1 (31.3 ppm)

Based on the above results, the genotypes JCS-2-7, BLD-233 and VL-109178 were most promising for different quality parameters.

Approved.

(Action: *Dean, College of Basic Science and Humanities, SDAU, SKNagar****)***

14.7.2.23	**Evaluation of Inflorescence From Grain Amaranth (*Amaranthus Spp.*) Genotypes For Betalain Pigments And Antioxidant Activity**
	It is informed to scientific community that in Amaranthus, all species evaluated under study showed high amount of variability with respect to betalain content and antioxidant potential. Among them, *A. cruentus* species genotypes inflorescence possessed higher amount of betalain content and antioxidant potential than *A.*

	hypochondriachus and *A. edulic* species at pre-mature stage. In post-harvest inflorescence analysis, betalain content and antioxidant potential were found higher in GA-2 and GA-3 than GA-1 genotype. Antioxidant potential was found three times higher in post-harvest inflorescence than pre-mature stage. The dark red colored inflorescence genotype EC-524457 showed high amount of betalain content and antioxidant potential. **Approved.** ***(Action:*** *Dean, College of Basic Science and Humanities, SDAU, SKNagar)*
14.7.2.24	**Proteomics of buffalo milk fat globule membrane during different stages of lactation**
	It is informed to scientific community that Xanthin oxidase (XO), Periodic Acid Schiff (PAS) IV, Butyrophillin (BTN), PAS VI/VII polypeptides were present at the time of calving. The amounts of XO, BTN & PAS VI were maximum at the time of calving. However, levels of PAS IV & PAS VII were highest after 2 hours of calving. The amount of XO, PAS IV & PAS VI level remained high till 4 hours in colostrum, afterwards their amount decreased. Moreover, PAS III appeared at 12 hours and reached to maximum level in colostrum after 24 hours of calving. **Approved.** ***(Action:*** *Dean, College of Basic Science and Humanities, SDAU, SKNagar)*
14.7.2.25	**Quality profiling of seed spices with respect to major constitutes and hazard residues analysis**
	It is informed to scientific community that cumin can be stored without loss of aroma, flavour, volatile oil, oleoresin, total phenols, total flavonoids, free radicals scavenging activity and FRAP activity up to 36 months under ambient storage condition. **Approved.** ***(Action:*** *In-charge, Central Instrumental Laboratory, DOR, SDAU, SKNagar)*

14.7.3 NEW TECHNICAL PROGRAMMES

Chairman	Dr. S. R. Chaudhary, Director of Research, NAU, Navsari
Co-Chairman	Dr. S. R. Vyas, Dean, Basic Science, SDAU, SKNagar
	Dr. R. S. Fougat, Unit Head, Dept. of Agril. Biotechnology, AAU, Anand
Rapporteurs	Dr. H. P. Gajera, Associate Professor, Dept. of Biotechnology, JAU, Junagadh
	Dr. S. B. Gondaliya, Assoc. Res. Scientist, Biochemistry, SDAU, SKNagar
	Dr. Divakar Singh, Assistant Professor, ACHF, NAU, Navsari

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title	Suggestion/s and Action
14.7.3.1	Standardization of soil less culture in *Stevia rebaudiana* Bertoni.	**Approved.** ***(Action:*** *Assoc. Res. Sci., Medicinal and Aromatic Plants Res. Stat., AAU, Anand)*
14.7.3.2	Comparative field study of growth of Safed musli planting materials generated through conventional and tissue culture meth	**Approved.** ***(Action:*** *Assoc. Res. Sci., Medicinal and Aromatic Plants Res. Stat., AAU, Anand)*
14.7.3.3	Influence of seed hardening on morph-physiological and yield on green gram (*Vigna radiate* L.)	**Approved.** ***(Action:*** *Prof. & Head, Dept. of Plant Physiology, BACA, AAU, Anand)*
14.7.3.4	Marker assisted screening for sterility mosaic disease (SMD) resistance in pigeonpea [*Cajanus cajan* (L.) Millsp.].	**Approved.** ***(Action:*** *Prof. & Head, Department of Agricultural Biotechnology, AAU, Anand)*

14.7.3.5	Identification of markers associated with leaf curl virus (LCV) resistance in Chilli.	**Approved.** ***(Action:*** *Prof. & Head, Department of Agricultural Biotechnology, AAU, Anand****)***
14.7.3.6	Studies on anther culture in tomato (*Lycopersicon esculentum*Mill.).	**Approved.** ***(Action:*** *Assistant Prof., Centre for Advanced Research in Plant Tissue Culture, AAU, Anand****)***
14.7.3.7	Green synthesis of silver nano-particles and assessment of its anti-fungal activity against early blight disease causing *Alternaria solani* in tomato.	**Approved.** ***(Action:*** *Assistant Professor, Centre for Advanced Research in Plant Tissue Culture, AAU, Anand****)***
14.7.3.8	Nutraceutical characterization of moringa (*Moringa oleifera*) fruit (marketable) and leaf during development.	**Approved with following suggestion/s:** Add variety PKM1 in title. ***(Action:*** *Prof. & Head, Dept. of Agril. Biochemistry, BACA, AAU, Anand****)***
14.7.3.9	Identification of linked markers associated with shelf life and lycopene content in tomato.	**Approved.** ***(Action:*** *Assoc. Res. Sci., Distant Hybridization Department of Agricultural Biotechnology, AAU, Anand****)***

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

Sr. No.	Title	Suggestion/s and Action
14.7.3.10	Use of molecular markers to differentiate tall, dwarf and hybrids coconuts (*Cocos nucifera* L.)	**Approved with following suggestion/s:** Elaborate methodology for marker development. ***(Action:*** *Prof. & Head, Dept. of Genetics and Plant Breeding, CoA, JAU, Junagadh****)***
14.7.3.11	Evaluation of released varieties and different collections of turmeric for yield in Saurashtra (*Curcuma longa* L.)	**Approved with following suggestion/s:** Determine curcumin fractions. ***(Action:*** *Prof. & Head, Dept. of Genetics and Plant Breeding, CoA, JAU, Junagadh****)***
14.7.3.12	Morphological and molecular characterization of kalijiri (*Centratherum anthelminticum* L.)	**Approved.** ***(Action:*** *Prof. & Head, Dept. of Genetics and Plant Breeding, CoA, JAU, Junagadh****)***
14.7.3.13	Soil and water appraisal of organic farms in Saurashtra region	**Approved.** ***(Action:*** *Prof. & Head, Dept. of Biochem. and Biotechnology, CoA, JAU, Junagadh****)***
14.7.3.14	Development of biochemical and molecular markers for heat tolerance in chickpea	**Approved.** ***(Action:*** *Prof. & Head, Dept. of Biochem. and Biotechnology, CoA, JAU, Junagadh****)***
14.7.3.15	Biochemical analysis based lipid indices of edible, non-edible and medicinal herbs oils	**Approved.** ***(Action:*** *Prof. & Head, Dept. of Biochem. and Biotechnology, CoA, JAU, Junagadh****)***
14.7.3.16	Diversity analysis of marine diatoms through SEM-EDX from surface microalgae of Saurashtra coastal belt	**Approved.** ***(Action:*** *Prof. & Head, Dept. of Biochem. and Biotechnology, CoA, JAU, Junagadh****)***
14.7.3.17	Diversity analysis of fresh water diatoms through SEM-EDX from surface microalgae of water bodies of Junagadh region	**Approved.** ***(Action:*** *Prof. & Head, Dept. of Biochem. and Biotechnology, CoA, JAU, Junagadh****)***
14.7.3.18	The effect of packing materials and pod treatments on viability and seedling vigour of groundnut (*Arachis hypogaea*	**Approved.** ***(Action:*** *Prof. & Head, Dept. of Seed Science and Technology, CoA, JAU,*

	L.) seeds.	*Junagadh)*
14.7.3.19	Screening of cotton genotypes for abiotic stress tolerance - water stress tolerance	**Approved.** ***[Action:** Research Scientist (Cotton), Cotton Res. Station, JAU, Junagadh**]***

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Sr. No.	Title	Suggestion/s and Action
14.7.3.20	Development of nano-fertilizers for the precision and sustainable agriculture	**Approved with following suggestion/s:** 1. Change title as "Development of nitrogen nano-fertilizers and its efficacy testing in paddy" 2. Change Objective 1, "To develop nitrogen based nano-fertilizers". 3. Change objective 2, "To evaluate efficacy of nitrogen based nano-fertilizers in paddy under pot study". ***(Action:** Principal, Aspee Shakilam Biotechnology Institute, NAU, Surat**)***
14.7.3.21	Bio inspired silver nano particles from *Andographis paniculata* and evaluation of its anti-fungal activity	**Approved with following suggestion/s:** 1. Title should be changed as, "Synthesis of bio inspired silver nano particles by using *Andographis paniculata* extract and its evaluation for anti-fungal activity". 2. Elaborate each experimental detail. ***(Action:** Principal, Aspee Shakilam Biotechnology Institute, NAU, Surat**)***
14.7.3.22	Use of *Polyalthia longifolia* (Asopalav) leaf extracts as biopesticide on sorghum	**Not Approved.** **Advised to conduct as feeler trial with following suggestions:** 1. Describe method of extraction in detail and use successive solvent extraction. 2. Quantify bioactive ingredients of the plant extract. ***(Action:** Principal, Aspee Shakilam Biotechnology Institute, NAU, Surat**)***
14.7.3.23	Isolation and characterization of endophytic bacteria from G.27 (*G. arboreum*) and exploring insecticidal activity against pink boll worm, *Pectinophora gossypiella* Saunders.	**Approved with following suggestion/s:** Add one observation for confirmation of isolates as endophytic bacteria. ***(Action:** Research Scientist, Main Cotton Research Station, NAU, Surat**)***
14.7.3.24	Nutritional and anti-nutritional profile of different Kabuli chickpea (*Cicer arientinum* L.) genotypes	**Approved with following suggestion/s:** 1. Write profiling instead of profile in title. 2. Replace word variety with genotype. 3. Add check variety(s). 4. Add Boron, Molybdenum and Potassium in mineral analysis. 5. Mention detailed methodology with reference for all observations to be recorded. ***(Action:** Prof. & Head, Dept. of Soil Sci. & Agri. Chem., NMCA, NAU, Navsari**)***

14.7.3.25	Exploration and validation of sex linked marker in Palmyra palm (*Borassus flabillifer*)	**Approved with following suggestion/s:** 1. Change title as "Identification and validation of sex linked markers in Palmyra palm (*Borassus flabillifer*)". 2. Elaborate the methodology in detail. ***(Action:** Prof. & Head, Dept. of Basic Sci. and Humanity, CoF, ACHF, NAU, Navsari**)***
14.7.3.26	Amino acid profiling of released variety / promising genotype of pigeon pea from NAU	**Approved with following suggestion/s:** 1. Correct title as, "Amino acid profiling of released varieties of pigeonpea from SAUs of Gujarat". 2. Add6 varieties AGT-2, GJP-1, GT-101, GT-103, Banas and AVPP-1 from SAUs of Gujarat. ***(Action:** Prof. & Head, Dept. of Plant Mol. Bio & Biotech., ACHF, NAU, Navsari**)***
14.7.3.27	To evaluate the role of Bio stimulants during salinity stress in tomato	**Approved with following suggestion/s:** 1. Change the title as, "Evaluation of bio-stimulants against salinity stress in tomato". 2. Apply CRD. 3. Take observations up to fruiting. ***(Action:** Prof. & Head, Dept. of Plant Mol. Bio & Biotech., ACHF, NAU, Navsari**)***
14.7.3.28	Extraction of elicitors from sea weed and its role in alleviation of salinity stress on tomato	**Approved with following suggestion/s:** 1. Correct title as, "Extraction of elicitors from sea weeds and their role in overcoming salinity stress in tomato". 2. Give name of sea weeds. 3. In place of EC level 0, write actual EC (1:2.5) of normal soil. ***(Action:** Prof. & Head, Dept. of Plant Mol. Bio & Biotech., ACHF, NAU, Navsari**)***
14.7.3.29	Assessment of various anti nutritional factors from different varieties of pigeonpea	**Approved with following suggestion/s:** 1. Study anti nutritional factors from whole seed and seed coat alone. 2. Add 6 varieties AGT-2, GJP-1, GT-101, GT-103, Banas and AVPP-1 from SAUs of Gujarat: ***(Action:** Prof. & Head, Dept. of Soil Sci. & Agril. Chem., COA, NAU, Bharuch**)***

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Sr. No.	Title	Suggestion/s and Action
14.7.3.30	Screening of antagonistic bacteria against *Fusarium* wilt disease of castor	**Approved.** ***(Action:** Dean, College of Basic Science and Humanities, SDAU, SKNagar**)***
14.7.3.31	Assessment of zinc solubilizing potential of bacteria isolated from soil	**Approved with following suggestion/s:** 1. Change title as "Assessment of zinc

		solubilization potential of bacteria isolated from soil". 2. Mention source of soil sample and sample size. 3. Specify media detail for isolation of bacteria. 4. Specify source of soluble and insoluble Zn. ***(Action:** Dean, College of Basic Science and Humanities, SDAU, SKNagar**)***
14.7.3.32	Screening of thermo tolerant phosphate solubilizing bacteria from rhizosphere	**Approved with following suggestion/s:** 1. In objective 2 remove word "pre-screened". 2. Add viable cell count after thermal treatment in methodology. ***(Action:** Dean, College of Basic Science and Humanities, SDAU, SKNagar**)***
14.7.3.33	Mining and characterization of EST-SSR markers for oil content in Castor (*Ricinus communis* L.)	**Approved with following suggestion/s:** 1. Identify only fatty acid metabolic pathway related ESTs. 2. Club parents of hybrids and promising parents. ***(Action:** Dean, College of Basic Science and Humanities, SDAU, SKNagar**)***
14.7.3.34	Validation of cadherin allele in cotton pink boll worm prevailing in North Gujarat	**Approved with following suggestion/s:** Observe allelic variation in cadherin gene through sequencing. ***(Action:** Dean, CBSH, SDAU, SKNagar**)***
14.7.3.35	Studies on effect of priming on seed germination of bitter guard, cauliflower, sponge guard (Galka) and cowpea	**Not Approved.** Advised to conduct feeler trial on the crops where seed germination is a problem. ***(Action:** Dean, College of Basic Science and Humanities, SDAU, SKNagar**)***
14.7.3.36	Studies on effect of priming on seed germination of dill seed, fennel and artichoke	**Not Approved.** Advised to conduct feeler trial on the crops where seed germination is a problem. ***(Action:** Dean, College of Basic Science and Humanities, SDAU, SKNagar**)***
14.7.3.37	Studies on effect of priming on seed germination of pigeonpea, french bean, rajama and carrot	**Not Approved.** Advised to conduct feeler trial on the crops where seed germination is a problem. ***(Action :** Dean, CBSH, SDAU, SKNagar)*
14.7.3.38	Effect of synthetic brassinosteroid on *Fusarium* wilt disease of castor	**Approved with following suggestion/s:** 1. Add disease observations. 2. Check invasion of pathogen in root. 3. Study PR proteins and isozyme profile 4. Keep only three concentrations of BR i.e. 10, 30 and 50 ppm. 5. Conduct field study. ***(Action:** Dean, College of Basic Science and Humanities, SDAU, SKNagar**)***
14.7.3.39	Improvement of storage stability of pearl millet flour by microwave	**Approved with following suggestion/s:** 1. Write GHB-558.

	treatment	2. Write specifications of microwave. 3. Record moisture % before and after microwave treatment. 4. Remove treatment1. ***(Action**: Dean, CBSH, SDAU, SKNagar)*
14.7.3.40	Effect of zinc and iron fertilizers on yield and grain quality of mungbean (*Vigna radiata* L.)	**Not Approved.** It is in close accordance to Crop production sub-committee. ***(Action:** Dean, College of Basic Science and Humanities, SDAU, SKNagar**)***
14.7.3.41	Biochemical evaluation of *Kappaphycus* spp.(algae) cultivated at costal area of *Mandavi* (*Kutch*)	**Approved with following suggestion/s:** Specify observations to be recorded *viz*., total carbohydrate, total protein, total fat, fatty acid profile, heavy metals, chlorophyll, beta-carotene, caraganin, pigments and antioxidant activity. ***(Action:** Dean, College of Basic Science and Humanities, SDAU, SKNagar**)***
14.7.3.42	Testing of phosphate solubilization and acid phosphatase activity in the bacterial isolates from *khejri* plants	**Not Approved.** ***(Action:** Prof. & Head, Dept. of Microbiology, CPCA, SDAU, SKNagar**)***
14.7.3.43	Studies on effect of priming on seed germination of baby corn, chili, coriander, pea, okra and cluster been	**Not Approved.** Advised to conduct feeler trial on the crops where seed germination is a problem. ***(Action:** Prof. & Head, Dept. of Genetics and Pl. Br., CPCA, SDAU, SKNagar**)***
14.7.3.44	Studies on effect of priming on seed germination of brinjal, celery, onion, cabbage, brussels	**Not Approved.** Advised to conduct feeler trial on the crops where seed germination is a problem. ***(Action:** Prof. & Head, Dept. of Genetics and Pl. Br., CPCA, SDAU, SKNagar**)***
14.7.3.45	Evaluation of effect of different chemical additives and plant growth regulators on the fruit quality of *in vitro* regenerated tomato	**Approved with following suggestion/s:** 1. Reduce the number of chemical additives and PGRs. 2. Keep only three doses. ***(Action :** I/c, Centre Instrumental Laboratory, DOR, SDAU, SKNagar**)***
14.7.3.46	Degradation of pesticide residues from cauliflower	**Approved with following suggestion/s:** 1. Take 3 treatments, 1 level and mention 3 time interval as variable. 2. Remove objective 1 and 2. 3. Mention statistical design CRD. 4. Mention OP and SP in the objective. ***(Action :** I/c, Centre Instrumental Laboratory, DOR, SDAU, SKNagar**)***
14.7.3.47	Screening of mustard genotypes for high temperature tolerance at seedling stage	**Approved with following suggestion/s:** Add control. ***(Action:** Res. Sci. (C&M), Castor and Mustard Res. Station, SDAU, SKNagar**)***
14.7.3.48	Evaluation of physical quality of castor seed oil, oil content and ricinoleic acid along with soil properties in farmers' field of Gujarat	**Approved.** ***(Action:** Research Scientist (C&M), Castor and Mustard Research Station, SDAU, SKNagar**)***

14.8 ANIMAL HEALTH, ANIMAL PRODUCTION AND FISHERIES SCIENCE

Chairman	:	Dr. P. H. Vataliya, Hon.Vice-Chancellor, Kamdhenu University
Co-Chairmen	:	Dr. A. M. Thakkar, Dean, AAU
		Dr. A. Y. Desai, Dean, JAU
Rapporteurs	:	Dr. J. S. Patel, Professor, JAU
		Dr. S. V. Shah, Research Scientist, AAU
		Dr. R. V. Borichangar, Assoc. Prof., NAU
Statistician	:	Dr. A. D. Kalola, AP, AAU

Presentation of recommendations and technical programmes by Conveners of SAUs

Sr. No.	Name	Designation & University
1	Dr. G. C. Mandali	Professor, Dept. of Vet. Medicine, CVSc. & AH, AAU, Anand
2	Dr. S. C. Dubbal	Professor, Dept. of Vet. Anatomy, CVSc. & AH, AAU, Anand
3	Dr. K. S. Murthy	Research Scientist (AG), Cattle Breeding Farm, JAU, Junagadh
4	Dr. V. S. Dabas	Prof. & Head, Dept. of Vet. Surgery & Radiology, CVSc. & AH, NAU, Navsari
5	Dr. Sandhya S. Chaudhary	Prof. & Head, Dept. of Vet. Physiology & Biochemistry, CVSc. & AH, NAU, Navsari
6	Dr. B. N. Suthar	Professor & Head, Dept. of Gynecology, CVSc. & AH, SDAU, SKnagar
7	Dr. A. P. Chaudhary	Professor & Head, Dept. of LPM, CVSc. & AH, SDAU, SKnagar

Summary

Name of Sub Committee	No. of Recommendations				No. of New Technical Programmes	
	Farming Community		Scientific Community			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU, Anand	07	07	10	10	42	42
JAU, Junagadh	10	06	18	10	18	17
NAU, Navsari	06	05	05	04	12	11
SDAU, SKNagar	04	02	05	04	32	31
Kamdhenu University	00	00	01	01	00	00
Total	**27**	**20**	**39**	**29**	**104**	**101**

14.8.1 RECOMMENDATION FOR FARMING COMMUNITY

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14.8.1.1 Development of feeding strategy to enhance body weight gain in Surti kids

The Surti goat keepers are recommended to feed high protein (14 % CP) and high energy (69 % TDN) total mixed ration (TMR) to growing Surti male kids during seven months to one year of age and thereafter 11.5 % CP and 69 % TDN TMR for two months to improve daily gain and feed conversion efficiency with 24 % reduction in feed cost per kg gain.

Sl. No.	Name of the ingredient	T_2 (Grower) Phase-I	T_2 (Finisher) Phase-II
1.	Jowar hay (%)	45.00	45.00
2.	Soybean meal (%)	15.00	9.50
3.	Maize grain (%)	24.00	29.00

4.	De-oiled rice bran (%)	0.00	5.00
5.	Rice polish (%)	4.50	0.00
6.	Molasses (%)	10.00	10.00
7.	Mineral mixture (%)	1.00	1.00
8.	Common salt (%)	0.50	0.50
9.	Vitamin AD_3 supplement (g/100 kg TMR)	0.06	0.06

સુરતી બકરા પાલકોને ભલામણ કરવામાં આવે છે કે બકરીના નર લવારાઓને સાત માસથી એક વર્ષની ઉંમર સુધી વધુ પ્રોટીન (૧૪ ટકા) અને વધુશક્તિ (૬૯ ટકા) કુલ પાચ્યતત્વો ધરાવતો કુલ મિશ્રિત પશુઆહાર અને ત્યાર બાદ બે માસ સુધી ૧૧.૫૦ ટકા પ્રોટીન અને ૬૯.૦૦ ટકા કૂલ પાચ્યતત્વો ધરાવતો કુલ મિશ્રિત પશુ આહાર આપવો જોઈએ કે જેનાથી તેમની દૈનિક વૃધ્ધિદર અને ખોરાકને શરીરના વજનમાં રૂપાંતર કરવાની ક્ષમતામાં વધારો થાય છે તેમજ પ્રતિ કિ.ગ્રા. વજન વધારવા માટે થતા ખોરાકીય ખર્ચમાં ૨૪.૦૦ ટકાનો ઘટાડો થાય છે .

બકરાને આપવામાં આવતા પશુઆહારમાં કૂલ મિશ્રિત ખોરાકના ઘટકો

અ. નં.	ખોરાકના ઘટકો	૭-૧૨ માસ સુધીના સુરતી નર લવારાને અપાતો કુલ મિશ્રિત પશુઆહાર (૧૪ % પ્રોટીન; ૬૯ % કુલ પાચ્યતત્વો)	૧૨-૧૪ માસ સુધીના સુરતી નર બકરાને અપાતો કુલ મિશ્રિત પશુઆહાર (૧૧.૫ % પ્રોટીન; ૬૯ % કુલ પાચ્યતત્વો)
૧	જુવાર બાટુ	૪૫.૦૦	૪૫.૦૦
૨	સોયાબીન ખોળ	૧૫.૦૦	૯.૫૦
૩	મકાઇ	૨૪.૦૦	૨૯.૦૦
૪	તેલ રહિત ચોખાનું થુલુ (ડી.ઓ.આર.બી.)	૦.૦૦	૫.૦૦
૫	ચોખાની કુસકી	૪.૫૦	૦.૦૦
૬	ગોળની રસી	૧૦.૦૦	૧૦.૦૦
૭	ક્ષારમિશ્રણ	૧.૦૦	૧.૦૦
૮	મીઠું	૦.૫૦	૦.૫૦
૯	વિટામીન એ., ડી$_3$ (ગ્રામ/૧૦૦ કિલો)	૦.૦૬	૦.૦૬

Approved.

(Action: Research Scientist & Head, Animal Nutrition Research Station, AAU, Anand)

14.8.1.2 Effect of methane mitigation on growth performance of crossbred calves through feeding legume straw based TMR

It is recommended that replacing wheat straw with 25 % groundnut straw in TMR with 50:50 roughage to concentrate ratio increases growth rate by 20 % and decreases daily methane emission by 13 % in growing crossbred calves.

પશુપાલકોને ભલામણ કરવામા આવે છે કે ઉછરતા સંકર વાછરડા/વાછરડીઓને, ૫૦ %ખાણદાણ, ૨૫ % ઘઉંનુ કુંવળ અને ૨૫ % મગફળી ગોતર લઈને બનાવેલ કુલ મિશ્રિત પશુ આહાર ખવડાવવાથી ૫૦ % ખાણદાણ અને ૨૫ % ઘઉં કુંવળ લઈને બનાવેલ કુલ મિશ્રિત પશુ આહાર કરતા વૃધ્ધિદરમાં ૨૦ % નો વધારો અને દૈનિક મીથેન વાયુના ઉત્સર્જનમાં ૧૩ % નો ઘટાડો થાય છે.

	Approved. (**Action:** Research Scientist & Head, Animal Nutrition Research Station, AAU, Anand)
14.8.1.3	**Study of nutritional status of dairy animals of Chhota Udepur district**
	Farmers of Chhota Udepur district are recommended to feed daily additional 1.0 kg compound concentrate mixture to cows producing less than 10 kg milk and 1.5 kg to cows producing 11-14 kg milk during summer and winter season, while additional 0.5 kg during monsoon season in order to fulfill their nutrient requirement. છોટાઉદેપુર જીલ્લાના પશુપાલકોને ભલામણ કરવામાં આવે છે કે, દૈનિક ૧૦ કિ.ગ્રા. થી ઓછુ દૂધ આપતી ગાયોની પોષક તત્વોની જરૂરીયાત પૂર્ણ કરવા હાલમાં અપાતા દાણ કરતા ૧.૦ કિ.ગ્રા. તથા ૧૧-૧૪ કિ.ગ્રા. દૂધ આપતી ગાયોને ૧.૫ કિ.ગ્રા. જેટલું વધારાનું દાણ ઉનાળા તથા શિયાળામાં આપવું, જ્યારે ચોમાસામાં ૦.૫ કિ.ગ્રા. જેટલું વધારાનું દાણ આપવું જોઇએ. **Approved.** **(Action:** Research Scientist & Head, Animal Nutrition Research Station, AAU, Anand)
14.8.1.4	**Study of Nutritional Status of dairy animals of Chhota Udepur district**
	The farmers of Chhota Udepur district are recommended to feed daily additional1.5 kg compound concentrate mixture during summer, while 1.0 kg during monsoon and winter season to buffaloes producing less than 10 kg milk in order to fulfill their nutrient requirement. છોટાઉદેપુર જીલ્લાના પશુપાલકોને દૈનિક ૧૦ કિ.ગ્રા. થી ઓછુ દૂધ આપતી ભેંસોની પોષક તત્વોની જરૂરીયાત પૂર્ણ કરવા તેમના દ્વારા હાલ અપાતા દાણ કરતાં, ઉનાળામાં વધારાનું દૈનિક ૧.૫ કિ.ગ્રા. અને ચોમાસા તથા શિયાળામાં ૧.૦ કિ.ગ્રા. સુમિશ્રિત દાણ આપવાની ભલામણ કરવામાં આવે છે. **Approved.** **(Action:** Research Scientist & Head, Animal Nutrition Research Station, AAU, Anand)
14.8.1.5	**Effect of supplementing Jivanti (*Leptadenia reticulata*) and bypass fat in total mixed rations on nutrient utilization and milk production of Surti goats**
	It is recommended that supplementation of Jivanti/Dodi (*Leptadenia reticulata*) and bypass fat at 1 and 2 % level, respectively, in total mixed ration for lactating Surti goats increased milk production by 22 %, milk fat by 10 % and return over feed cost by 2.00 Rs./goat/day as compared to total mixed ration without supplementation. બકરા પાલકોને ભલામણ કરવામા આવે છે કે દૂધાળ સુરતી બકરીઓ માટેના કુલ મિશ્રિત આહારમાં જિવંતી / ડોડી અને બાયપાસ ફેટ અનુક્રમે ૧ અને ૨ % પ્રમાણે આપવાથી દૂધ ઉત્પાદનમાં ૨૨ % અને દૂધમાં ફેટમાં ૧૦ % નો વધારો થાય છે અને આહાર ખર્ચ પરના વળતરમાં દૈનિક બકરી દિઠ રૂ. ૨.૦ નો વધારો થાય છે. **Approved.** (**Action:** Research Scientist & Head, Animal Nutrition Research Station, AAU, Anand)
14.8.1.6	**Evaluation of optimum stocking density for nursery raising of *Labeo rohita* Spawn under Hapa system (Multi-location trial) in village ponds of middle Gujarat**
	Fish farmers are recommended to stock Rohu (*Labeo rohita*) spawn @ 750 No./m^3 for achieving high fry production with higher net benefits under Hapa system in village ponds. મત્સ્ય પાલન કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ગામ તળાવમાં હાપા પધ્ધતિમાં ૭૫૦ નંગ પ્રતિ ઘનમીટર રોહુસ્પોનનો સંગ્રહ કરવાથી ફ્રાયનું વધુ ઉત્પાદન સાથે વધુ આર્થિક વળતર મેળવી શકાય છે. **Approved.** (**Action:** Chief Scientist, Krishi Vigyan Kendra, AAU, Devataj and RRC of ICAR-CIFA, Anand)
14.8.1.7	**Development of area-specific mineral mixture formulations for Botad district**
	Based on the prioritization of limiting minerals in Botad district, the area specific mineral mixture has been formulated as follows, which would make up the

	deficiency when fed @ 30g/head/day to dairy animals in addition to the current feeding practices. <table><tr><th>Sr. No.</th><th>Mineral Element</th><th>Requirement (%)</th></tr><tr><td>1</td><td>Calcium</td><td>20.00</td></tr><tr><td>2</td><td>Phosphorus</td><td>12.00</td></tr><tr><td>3</td><td>Magnesium</td><td>5.00</td></tr><tr><td>4</td><td>Sulphur</td><td>1.80</td></tr><tr><td>5</td><td>Copper</td><td>0.10</td></tr><tr><td>6</td><td>Zinc</td><td>1.78</td></tr><tr><td>7</td><td>Manganese</td><td>0.12</td></tr><tr><td>8</td><td>Iron</td><td>0.40</td></tr><tr><td>9</td><td>Cobalt</td><td>0.012</td></tr><tr><td>10</td><td>Iodine</td><td>0.026</td></tr></table>બોટાદ જિલ્લાના પશુપાલકો માટે ભલામણ કરવામાં આવે છે કે, જિલ્લામાં ક્ષારોના ઉણપ ધ્યાને રાખીને નીચે મુજબના સ્પષ્ટીકરણ કરેલા ક્ષાર મિશ્રણને પુખ્ત વયના પશુ દીઠ દરરોજ ૩૦ ગ્રામ ખવડાવાની ભલામણ કરવામાં આવે છે. **Approved.** **(Action:** Res. Sci. & Head, Animal Nutrition Research Station, AAU, Anand)

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14.8.1.8	**Seroprevalence of Infectious Bovine Rhinotracheitis (IBR) in dairy animals with reproductive disorders**
	Seroprevalence of Infectious Bovine Rhinotracheitis (IBR) in dairy animals is above 30%. Hence dairy farmers of Saurashtra region are recommended to vaccinate their animals against Infectious Bovine Rhinotracheitis (IBR). સૌરાષ્ટ્ર વિસ્તારના પશુઓમાં ઈન્ફેકસીસ બોવાઈન રાઈનોટ્રેકયાટીસ **(IBR)** રોગનુ આશરે ૩૦ % થી વધુ જોવા મળેલ હોય નિયંત્રણ માટે રોગ પ્રતિકારક રસીકરણ કરાવવા માટેની ભલામણ કરવામાં આવે છે. **Approved.** (**Action:** Asstt. Prof. & Head, Dept. of Vet. Public Health, CVSc & AH, JAU, Junagadh)
14.8.1.9	**Assessment of plumage and integument condition in White Leghorn layers and their association with egg production**
	Poultry farmers should observe and maintain the health of plumage and integument to obtain optimum egg production. મરઘાં પાલકોને ભલામણ કરવામાં આવે છે કે તેઓએ મહત્તમ ઈંડા ઉત્પાદન મેળવવા માટે મરઘીઓના પીંછા ચામડીની તંદુરસ્તીનું સતત અવલોકન અને જાળવણી કરવી જોઈએ. **Not approved.** (**Action :** Professor and Head, ILFC, CVSc & AH, JAU, Junagadh)
14.8.1.10	**Incorporation of *Cucurbita pepo* (pumpkin) pulp for the preparation of value added flavoured buffalo milk**
	Good quality pumpkin flavoured buffalo milk can be prepared by incorporation of *Cucurbita pepo*(pumpkin) pulp and ground sugar at concentration of 15 and 10 per cent, respectively. ડેરી પેદાશો બનાવતા ઉત્પાદકો તથા ખેડુતોને ભલામણ કરવામાં આવે છે કે કોળા ફલેવર્ડ દુધ બનાવવાની પધ્ધતિમાં કોળાનો માવો ૧૫ % અને ખાડનું પ્રમાણ ૧૦ % નો ઉપયોગ કરી સારી ગુણવતાવાળુ કોળા ફલેવર દુધ બનાવી શકાય છે. **Suggestions :** **Referred to dairy technology subcommittee and it is suggested to continue experiment for another year and study keeping quality off flavored milk.**

	(**Action:** Asstt. Professor & Head, Dept. of Livestock Product Technology, CVSc & AH, JAU, Junagadh)
14.8.1.11	**Clinical studies of foot affections in unsound working horses**
	Horse rearers are informed that the prevalence of laminitis is higher during winter; hence they are advised to take appropriate care of the hooves.
	અશ્વ પાલકોને જણાવવાનું કે શિયાળામા સુમનો સોજોનુ પ્રમાણ વધારે જોવા મળતુ હોઈ તેઓએ અશ્વના સુમની યોગ્ય કાળજી લેવી. **Approved.** (**Action:** Assistant Professor and Head, Dept. of Veterinary Surgery and Radiology, CVSc & AH, JAU, Junagadh)
14.8.1.12	**Clinical studies on brisket tumor in Jaffarabadi buffaloes**
	Buffalo owners are recommended that incidence of brisket swelling is found to be higher among Jaffarabadi buffaloes maintained on kachha floor, and hence it is recommended to keep their animals on pakka floor. પશુપાલકોને ભલામણ કરવામાં આવે છે કે કાચાભોય-તળિયા ઉપર રાખવામાં આવતી જાફરાબાદી ભેસોમાં હળાનો સોજો વધારે પ્રમાણમાં જોવા મળતો હોય તેમને પાકાભોય-તળિયા પર રાખવાની ભલામણ કરવામાં આવે છે. **Not approved.** (**Action:** Assistant Professor and Head, Dept. of Veterinary Surgery and Radiology, CVSc & AH, JAU, Junagadh)
14.8.1.13	**Effect of fogger cooling on body comfort, milk yield and milk composition in Jaffrabadi buffaloes during summer season**
	It is recommended to dairy farmers that fogger cooling system in loose housing buffalo shed is beneficial in sustaining milk production.
	જાફરાબાદી ભેંસોનો તબેલો ધરાવતા પશુપાલકોને ભલામણ કરવામાં આવે છે કે ઉનાળામાં છુટી પુરેલ ભેંસોના તબેલામાં ફોગર્સ (ભારે દબાણવાળા ફુવારા) લગાવવામાં આવે તો દૂધ ઉત્પાદન જાળવાઈ રહે છે. **Approved.** (**Action :** Research Scientist, Cattle Breeding Farm,JAU, Junagadh)
14.8.1.14	**Association of estrous behavior and cervical mucus properties with conception in Gir cows**
	It is recommended to dairy farmers that Gir cows having clear cervical mucus and more ear play activity during estrous have higher conception rate. પશુપાલકોને ભલામણ કરવામા આવે છે કે, વેતરમા આવેલી ગીર ગાયોમા ચોખ્ખી લાળી તેમજ કાન / પારદર્શક કાનના હલન ચલન લક્ષણ વધુ પ્રમાણમા જોવા મળે તો ગર્ભ ધારણ ક્ષમતા વધુ રહે છે. **Not approved.** (**Action :**Research Scientist, Cattle Breeding Farm, JAU, Junagadh)
14.8.1.15	**Effects of vitamin E and minerals supplementation during peri-partum period on BCS, milk yield, body weight and performance of calves in Gir heifer**
	Supplementation of vitamin E and minerals during prepartum and postpartum periods to Gir heifers has beneficial effect on milk yield, body weight, body condition score and calf performance after calving. ગીર વોડકીઓને વિયાણ પહેલા અને વિયાણ પછીના સમયગાળામાં વિટામીન ઈ તથા ક્ષારયુક્ત આહાર આપવાથી દૂધ ઉત્પાદન, શારીરિક વજન અને શારીરીક સ્થિતિ તેમજ બચ્ચાના વિકાસદરમાં વધારો થાય છે. **Not approved.** (**Action :** Research Scientist, Cattle Breeding Farm, JAU, Junagadh)

14.8.1.16	**Effects of hurdle technology on biochemical, microbiological, and sensory quality of frozen cut crabs, *Portunus pelagicus***
	Frozen cut crabs processors are recommended to apply hurdle technique of pasteurization process at 85 ^{o}C for 10 minutes prior to freezing of cut crabs at -40 ^{o}C for reduction of bacterial load, lowering drip loss, improvement of sensory quality attributes and shelf life expansion up-to 210 days under frozen storage at -18 ± 2 ^{o}C.
	આથી મત્સ્ય પ્રક્રીયાકારોને ભલામણ કરવામાં આવે છે કે કરચલા (કટક્રેબ) ને જુદી-જુદી જાણવણીની પ્રકીયાઓ પૈકી જીવાણુ નાશન (પાસ્ચુરાઈજેસન) ની પ્રકિયા દ્વારા ૮૫ °સે. તાપમાને ૧૦ મિનીટ સુધી પ્રોસેસ કર્યા બાદ -૪૦ °સે. શીત તાપમાને ફ્રીઝીંગ કરી -૧૮±૨ °સે. તાપમાને જાણવણી કરવામાં આવે તો સુક્ષ્મ જીવાણુની સંખ્યામાં ઘટાડો, તેમજ તેની પાણી સંગ્રહ ક્ષમતા, ગુણવત્તા અને આવરદા ૨૧૦ દિવસો માટે સારી રીતે જાળવી શકાય છે. **Approved.** (**Action :** Principal and Dean, College of Fisheries, JAU, Veraval)
14.8.1.17	**Effect of stocking density on growth and survival of juvenile Pacific white shrimp, *Litopenaeus vannamei* (Boone, 1931)**
	The brackish water shrimp growing farmers are recommended to stock *Littopenaeus vannamei* shrimp seeds @ 25 pc/m^2 to obtain better survival, growth and economical return.
	ભાંભરા પાણીના જીંગા પાલન કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, લીટોપીનીયસ વન્નામી જીંગાના ઉછેરમાં બિયારણનો સંગ્રહ દર ૨૫ નંગ/ચોરસ મીટર રાખવાથી વધુ સારો જીવંત દર, વિકાસ અને વળતર મેળવી શકાય છે. **Approved.** (**Action :** Research Officer, Fisheries Research Station, Okha)
14.8.1.18	**Effect of *Aloe vera* treatment on quality parameters of Indian mackerel (*Rastrelliger kanagurta*, Cuvier-1816) during chill storage**
	The fisherman/suppliers are recommended to give 20 % *Aloe vera* gel extract dip treatment for 30 minutes before chill storage of Indian mackerel (*Rastrelliger kanagurta*) for better quality up to 15 days shelf-life.
	માછીમારો/સપ્લાયરને ભલામણ કરવામા આવે છે કે એલો વેરાના ૨૦ % ના દ્રાવણમાં ૩૦ મીનીટ સુધી બરફમાં સંગ્રહ કરતા પહેલા ડુબાડી રાખવાની માવજત આપવાથી ઈન્ડીયન મેકરલ માછલી ૧૫ દિવસ સુધી સારી ગુણવતા સાથે જાળવી શકાય છે. **Approved.** (**Action :** Research Officer, Fisheries Research Station, Okha)

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14.8.1.19	**Effect of different floor types on the growth performance and behavioural traits of Surti buffalo calves during winter**
	Surti buffalo keepers of South Gujarat are recommended to use paddy straw as bedding material on concrete to house buffalo calves up to 6 months of age to get better growth rate during winter season. દક્ષિણ ગુજરાતનાં સુરતી ભેંસ પાલકોને ભલામણ કરવામાં આવે છે કે ૬ માસ સુધીના પાડીયાને શિયાળામાં કોંક્રીટના ભોય તળિયા ઉપર ડાંગર પરાળની પથારી પર ઉછેરવાથી વૃદ્ધિ દરમાં વધારો થાય છે. **Approved.** (**Action:** Research Scientist, Livestock Research Station, NAU, Navsari)
14.8.1.20	**Effect of heat ameliorative measures (fans, foggers and green net) on physiological, haematological, biochemical and productive performance of lactating Surti buffaloes**
	Surti buffalo keepers of South Gujarat region are recommended to house Surti

	buffaloes in shed having fans, foggers and rooftop whitewashed with lime for decreasing heat stress during summer season from 9 am to 5 pm (temperature decreases upto 3°C) which is beneficial in sustaining milk production. દક્ષિણ ગુજરાતના ભેંસ પાલકોને ભલામણ કરવામાં આવે છે કે સુરતી ભેંસોને પંખા, ફુવારા અને ધાબા પર ચૂનો લગાવેલ પાકા રહેઠાણમાં ગરમીની ઋતુમાં સવારના ૯ થી સાંજે ૫ ના સમયગાળા દરમ્યાન રાખવાથી ગરમી નું ભારણ ઘટાડી શકાય (તાપમાનમાં ૩ °સેલ્સિયસ સુધીનો ઘટાડો) અને જેને કારણે દૂધ ઉત્પાદન જાળવાઈ રહે છે. **Approved.** (**Action:** Professor & Head, Dept. of Vet. Physiology and Biochem. CVSc & AH, NAU, Navsari)
14.8.1.21	**Effect of bedding materials on broiler performance**
	The Poultry farmers of south Gujarat region are recommended to use sugarcane baggase as a bedding material for rearing of broilers to minimize cost of bedding without affecting growth rate and Feed Conversion Ratio. દક્ષિણ ગુજરાતના બ્રોઈલર મરઘાં ઉછેર કરતા મરઘા પાલકોને ભલામણ કરવામાં આવે છે કે, શેરડીના કુચાનો ઉપયોગ ભોંય તળીયા ઉપર પથારી તરીકે કરવાથી પક્ષીના વિકાસ દર અને ખોરાકને રૂપાંતરીત કરવાની ક્ષમતામાં ફેરફાર કર્યા વિના પથારીના થતા ખર્ચમાં નોંધપાત્ર ઘટાડો થાય છે. **Approved.** (**Action:** Prof. & Head, Dept. of Instructional Livestock Farm Complex, CVSc & AH, NAU, Navsari)
14.8.1.22	**Effect of feeding processed maize on fattening of male Surti kids**
	The goat keepers of South Gujarat are recommended to feed 250 grams/day of moist cooked crushed maize grains over and above basal diet for 60 days to male Surti goat of 8-10 months age for better growth and economic returns. દક્ષિણ ગુજરાતના બકરા પાલકોને ભલામણ કરવામાં આવે છે કે, ૮ થી ૧૦ મહીનાના સુરતી બકરાઓને પાયાના આહાર ઉપરાંત ૨૫૦ ગ્રામ મકાઇ ભરડો/ દિવસ બાફીને ૬૦ દિવસ સુધી ખવડાવાથી તેના વૃધ્ધી દર અને આવકમાં નોંધપાત્ર વધારો કરી શકાય. **Not approved** (**Action:** Assistant Professor & Head, Dept. of Animal Nutrition CVS & A H, NAU, Navsari**)**
14.8.1.23	**Study of Indian white shrimp (*Fenneropenaeus indicus*) growth under varying salinities.**
	The brackish water shrimp growing farmers of coastal areas of Gujarat are recommended to maintain pond water salinity of 25-30 ppt (parts per thousand) in Indian white shrimp rearing for better survival, growth and economical returns. ગુજરાતના દરિયાકાંઠામાં ભાંભરા પાણીના ઝીંગાપાલન કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે ૨૫–૩૦ પીપીટી (પાર્ટ પર થાઉઝંડ) પાણીની ખારાશ ધરાવતાં તળાવમાં ભારતીય સફેદ ઝીંગાની પ્રજાતિના ઉછેર કરવાથી વધુ સારો જીવંત દર, વિકાસ અને વળતર મેળવી શકાય. **Approved** (**Action:** Principal and Dean, College of Fisheries Science, NAU, Navsari)
14.8.1.24	**Effect of challenge feeding on production and reproduction performance of Surti buffaloes.**
	Farmers of South Gujarat are recommended that feeding of concentrate mixture @ 1% of body weight for 2 months before and after calving in Surti buffalo heifers increases calf birth weight, increases daily milk production and income. દક્ષિણ ગુજરાતના પશુપાલકોને ભલામણ કરવામા આવે છે કે સુરતી પાડીઓને વિયાણના બે માસ પહેલા અને વિયાણ બાદ બે માસ સુધી શરીરના વજનના ૧% ના દરે દાણ ખવડાવવાથી વિયાણ સમયે બચ્ચાનુ વજન વધે છે અને દુધ ઉત્પાદન તેમજ આવકમાં વધારો થાય છે.

	Approved. **(Action:** Research Scientist, Livestock Research Station, NAU, Navsari**)**

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

14.8.1.25	Comparative evaluation and efficacy of the commonly used acaricides against ectoparasites infestation in cattle.
	The acaricides efficacy of cypermethrin (10% w/v, @ 1 ml / lit) spray and flumethrin (1% w/v, @ 1 ml / 10kg body weight) pour on is equally effective for ectoparasite control in cattle up to 17 and 32 days respectively. [NB: No withholding time for milk] પશુપાલકોને ભલામણ કરવામાં આવે છે કે ગૌવંશ ઉપર સાયપર મેથ્રીન) ૧૦ % w/v, ૧ મીલી/૧લીટર (કીટનાશકનો છંટકાવ તેમજ ફ્લૂમેથ્રીનની) ૧%w/v, ૧મીલી/૧૦કીગ્રા (કીટનાશક દવા જાનવારના માથાથી પૂંછડી સુધીના ભાગ ઉપર લીટી દોરવાથી બાહ્ય પરોપજીવીઓનો ઉપદ્રવ એક સરખી રીતે ૧૭ અને ૩૨ દિવસ સુધી અનુક્રમે ઘટાડી શકાય છે. નોધ; દવા છાટયા પછી દૂધના વપરાશને રોકી રાખવાની જરૂર નથી. **Not approved.** (**Action:** Professor and Head, RADIC, CVSc&AH, SDAU, S.K.Nagar*)*
14.8.1.26	**Clinical and blood profile studies on Mehsana buffaloes affected with dystocia**
	Since cases of uterine torsion at the time of difficult parturition in Mehsana buffaloes are more, the prompt treatment (within 48 hours) provided to the pregnant buffaloes reduces the incidence of uterine adhesions. મહેસાણી ભેંસોમાં કઠણ પ્રસવ વખતે ગર્ભાશયની આંટીના કિસ્સાઓ ખુબ જ મોટા પ્રમાણમાં જોવા મળેલ હોઇ સગર્ભા ભેંસોને વિયાણનો દુખાવા થવાના કિસ્સાઓમાં ત્વરીતતા દાખવી (બિમારીનો ગાળો ૪૮ કલાકથી ઓછો રહે) સારવાર ઉપલબ્ધ કરાવવાથી ગર્ભાશયનું ચોંટી જવાની ઘટના બનવાની શક્યતા ઓછી રહે છે. **Not approved.** (**Action:** Professor and Head, TVCC, CVSc&AH, SDAU, S.K.Nagar)
14.8.1.27	**Effect of different ratios of DM intake from green and dry fodder on growth performance of Kankrej heifer calves.**
	Feeding of 50 % DM from green fodder, 20 % DM from dry fodder and 30 % DM from concentrate is advise to Kankrej heifer calves (6-10 months) for better growth performance **કાંકરેજ ઓલાદની ૬ થી ૧૦ માસની ઉછરતી વાછરડીઓ (સરેરાશ વજન ૮૮ થી ૧૪૪ કિલો) માં સારો વૃધ્ધિ દર મેળવવા માટે તેના દૈનિક આહારમાં કુલ સૂકા તત્વની જરૂરિયાત પૈકી ૫૦ ટકા ભાગ (૬થી ૧૦ કિલો વજનના સપ્રમાણમાં) લીલા ઘાસચારા, ૨૦ ટકાભાગ(૫૦૦ ગ્રામથી ૧ કિલો વજનના સપ્રમાણમાં) સૂકા ઘાસચારા અને ૩૦ ટકા ભાગ (૬૦૦ ગ્રામથી ૧.૨ કિલો વજનના સપ્રમાણમાં) ખાણદાણ ધ્વારા પૂરી પાડવા ભલામણ કરવામાં આવે છે.** **Approved.** (Action: Research Scientist, Livestock Research Station, SDAU, S.K. Nagar)
14.8.1.28	**Effect of feeding dried *Moringa* (Sargavo) leaves on body weight gain in Mehsana goat kid (3-6 months)**
	Mehsana goat rearing farmers are advised to fed dried *Moringa* leaves in place of concentrate mixture to male kids of 3-6 months of age to obtain better body weight gain. **મહેસાણા ઓલાદની બકરીઓના ૩ થી ૬ માસના નર બચાઓમા સારો વૃધ્ધિ દર મેળવવા ખાણ દાણને બદલે સરગવાના સૂકા પાન ખવડાવવા બકરા પાલકોને ભલામણ કરવામાં આવે છે.** **Approved.** (**Action:** Research Scientist, Livestock Research Station, SDAU, S.K. Nagar)

14.8.2 RECOMMENDATION FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND

14.8.2.1	**Study on efficacy of inclusion body hepatitis vaccines in experimentally challenged IBH virus serotype 4 and 11 in broiler chicks**
	The Inclusion Body Hepatitis- Hydro Pericardium Syndrome (IBH-HPS) vaccines having serotype-4 virus are also protective against serotype-11(IBH-HPS) virus prevalent in the commercial broilers. Hence the field veterinarians are advised to recommend serotype-4 IBH vaccines against prevalent serotype-11 IBH virus in the commercial broilers. **Approved.** (**Action:** Professor & Head, Dept. of Veterinary Pathology, Veterinary College, AAU, Anand)
14.8.2.2	**Study on relative merits of egg yolk and soyabean based extenders for cryo preservation of cattle and buffalo semen: Effect of Season on Semen Quality and Freezability**
	It is recommended to harvest maximum frozen semen doses during winter season using soyabean based ready to use extender for cryopreservation of buffalo semen in middle Gujarat. **Approved.** (**Action:** Professor & Head, Department of Veterinary Gynaecology and Obstetrics, Veterinary College, AAU, Anand)
14.8.2.3	**Study of testicular biometry, sexual behavior, semen quality and blood biochemical profile during the period of adolescence in Surti male kids**
	The growing male kids of Surti goats attained puberty at 27 weeks and sexual maturity with optimum libido at 38 weeks of age with stable body weight (19.61 ± 0.93 kg), scrotal circumference (20.14 ± 0.65 cm), scrotal volume (229.09 ± 15.91 cm^3) and optimum semen quality. Hence, it is recommended to consider these criteria while selecting Surti bucks for breeding purpose. **Approved.** **(Action:** Professor & Head, Dept. of Veterinary Gynaecology and Obstetrics, Veterinary College, AAU, Anand)
14.8.2.4	**Assessment of Doublesynch, Estradoublesynch and PRID + PMSG protocols for estrus synchronization and fertility in cyclic and acyclic dairy animals**
	The estrus/ovulation synchronization protocols *viz.*, CIDR/PRID, PRID + PMSG, Doublesynch and Estradoublesynch used in true anestrus crossbred cows and buffaloes resulted into equally good estrus induction response (89-100 %), but the conception rates were much better with PRID and PRID+PMSG in both cattle (70 % each) and buffaloes (66 and 75 %, respectively) than with Doublesynch (55 %) and Estradoublesynch (35 %). In repeat breeding cows and buffaloes, the conception rates were better with Doublesynch than Estradoublesynch protocol. It is therefore recommended for practicing veterinarians to use PRID alone or PRID+PMSG protocol in anestrus cows and buffaloes, and Doublesynch protocol in repeat breeder cows and buffaloes for higher conception rates. **Approved.** **(Action:** Professor & Head, Department of Veterinary Gynaecology and Obstetrics, Veterinary College, AAU, Anand)
14.8.2.5	**Evaluation of role of hypothalamo-hypophyseal-ovarian axis in the onset of puberty in Surti buffalo and crossbred cattle**
	HF X K crossbred heifers (6-9 months of age) on higher plane of nutrition (1 kg concentrate 24 % CP, 30 g min mix and *ad lib* dry fodder) showed significant increase in gain in body weight (25-35 kg) and reduction in the age of onset of puberty (20.40 ± 0.45 vs 22.23 ± 0.45 months) and sexual maturity (23.17 ± 0.60 vs 24.72 ± 0.89 months) as compared to routine farm fed heifers and had ovulatory follicles (>12 mm) or CLs (>10 mm) with concurrent elevated plasma estradiol and progesterone

	concentrations. **Approved.** **(Action:** Professor & Head, Department of Veterinary Gynaecology and Obstetrics, Veterinary College, AAU, Anand)
14.8.2.6.	**Association of body condition score with metabolic profile in cows**
	At calving average BCS (on 5 point scale) should be 3.50 to 3.75 for obtaining optimum milk production. **Approved** **(Action:** Research Scientist, Livestock Research, Station, AAU, Anand)
14.8.2.7	**Development of area-specific mineral mixture formulations for Botad district**
	Based on the prioritization of limiting minerals in Botad district, the area specific mineral mixture has been formulated as follows, which would make up the deficiency when fed @ 30g/head/day to dairy animals in addition to the current feeding practices.

Sr. No.	**Mineral Element**	**Requirement (%)**
1	Calcium	20.00
2	Phosphorus	12.00
3	Magnesium	5.00
4	Sulphur	1.80
5	Copper	0.10
6	Zinc	1.78
7	Manganese	0.12
8	Iron	0.40
9	Cobalt	0.012
10	Iodine	0.026

	This recommendation was approved for farmers. **(Action:** Research Scientist, Animal Nutrition Research Station, AAU, Anand)
14.8.2.8	**Development of feeding strategy to enhance body weight gain in Surti Kids**
	It is recommended that TMR with 20 % higher protein and 15 % higher energy significantly improves feed efficiency, average daily gain (by 92 %) and decreases cost/kg gain (by 29 %) in Surti male kids during growing phase (7 to 12 months) compared to kids reared as per ICAR feeding standard. **Approved.** (**Action:**Research Scientist, Animal Nutrition Research Station, AAU, Anand)
14.8.2.9	**Development of feeding strategy to enhance body weight gain inSurti Kids**
	It is recommended that TMR with 15 % higher energy significantly improves feed efficiency, average daily gain (by 79 %) and decreases cost/kg gain (by 15 %) in Surti male kids during finishing phase (12-14 months) compared to kids reared as per ICAR feeding standard. **Approved.** (**Action:** Research Scientist, Animal Nutrition Research Station, AAU, Anand)
14.8.2.10	**Effect of methane mitigation on growth performance of crossbred calves through feeding legume straw based TMR**
	It is recommended that replacing wheat straw with 25 % groundnut straw in TMR with 50:50 roughage to concentrate ratio increases growth rate by 20 and 33 %, rumen microbial protein synthesis by 79 and 38 % while decreases methane emission (g/kg DDMI) by 26 and 32 % and dietary energy loss through methane by 30 and 35 %, respectively in mash and pellet form. This loss of dietary energy saved through methane mitigation was utilized by the crossbred calves for growth. **Approved.** **(Action:** Research Scientist, Animal Nutrition, Research Station, AAU, Anand)

14.8.2.11	**Evaluation of *in-vitro* antibacterial, anti-inflammatory, antioxidant and anti-diabetic effects of medicinal plants** Crude alkaloid fraction from *Cassia absus* has *in-vitro* antibacterial activity against *Escherichia coli*, *Salmonela typhimurium*, *Streptococcus agalactiae* and *Staphylococcus aureus.* **Approved.** *(***Action:** Associate Professor and Head, Dept. of Veterinary Pharmacology and Toxicology, CV Sci. & A.H., JAU, Junagadh*)*
14.8.2.12	**Evaluation of *in-vitro* antibacterial, anti-inflammatory, antioxidant and anti-diabetic effects of medicinal plants** Aqueous extract of *Operculina turpethum* leaves and hydro alcoholic extract of *Sphaeranthus indicus* fruit have *in-vitro* anti-inflammatory activity. **Approved.** *(***Action:** Associate Professor and Head, Dept. of Veterinary Pharmacology and Toxicology , CV Sci. & A.H., JAU, Junagadh*)*
14.8.2.13	**Evaluation of *in-vitro* antibacterial, anti-inflammatory, antioxidant and anti-diabetic effects of medicinal plants** Aqueous, alcoholic and hydro alcoholic extracts of *Cressa cretica* leaves have *in-vitro* antioxidant activity. **Approved.** *(***Action:** Associate Professor and Head, Dept. of Veterinary Pharmacology and Toxicology , CV Sci. & A.H., JAU, Junagadh*)*
14.8.2.14	**Evaluation of *in-vitro* antibacterial, anti-inflammatory, antioxidant and anti-diabetic effects of medicinal plants** Hydro alcoholic extract of *Luffa echinata* fruit, *Pterocarpus marsupium* bark and extracts of *Cressa cretica* leaves have *in-vitro* anti-diabetic activity. **Approved.** *(***Action:** Associate Professor and Head, Dept. of Veterinary Pharmacology and Toxicology , CV Sci. & A.H., JAU, Junagadh*)*
14.8.2.15	**Evaluation of healing potential of polyherbal formulation on full-thickness skin wounds in rabbits** Polyherbal formulation containing gel of *Aloe vera* (1 %), defatted alcoholic extract of leaves of *Argyreia speciosa* (0.25 %), hydro alcoholic extract of bark of *Ficus racemosa*(0.25 %), aqeous extract of leaves of *Prosopis juliflora* (1.5 %)and *Tridax procumbens* (0.5 %) has wound healing effect in full-thickness skin excision wound in rabbits polyherbal formulation containing gel of *Aloe vera*, defatted alcoholic extract of leaves of *Argyreia speciosa*, hydro alcoholic extract of bark of *Ficus racemosa*, aqeous extract of leaves of *Prosopis juliflora* and *Tridax procumbens* has wound healing effect in full-thickness skin excision wound in rabbits **Approved.** *(***Action:** Associate Professor and Head, Dept. of Veterinary Pharmacology and Toxicology , CV Sci. & A.H., JAU, Junagadh*)*
14.8.2.16	**Effect of piperine pre-conditioning on pharmacokinetics of marbofloxacin following subcutaneous administration in rats** Oral administration of piperinedoes not alters the pharmacokinetics of subcutaneously administered marbofloxacin in rats. **Approved.** *(***Action:** Associate Professor and Head, Dept. of Veterinary Pharmacology and Toxicology , CV Sci. & A.H., JAU, Junagadh*)*
14.8.2.17	**Seroprevalence of Infectious Bbovine Rhinotracheitis (IBR) in dairy animals with reproductive disorders** Due to high (more than 30%) seroprevalence of IBR in Saurashtra region, it is advisable to take preventive &control measure.

	Approved. (**Action:** Assistant Professor and Head, Dept. of Veterinary Public Health, CV Sci. & A.H., JAU, Junagadh)
14.8.2.18	**Hematological and biochemical aspects associated with haemoprotozoan infection in cows, buffaloes and horses** Hemoprotozoan infection in cows, buffaloes and horses causes anaemia (significant decrease in TEC, Hb and PCV) and negative energy balance as evident by significant decrease in serum glucose and total protein as well as albumin. **Not approved** (**Action:** Assistant Professor and Head, Dept. of Veterinary Public Health, CV Sci. & A.H., JAU, Junagadh
14.8.2.19	**Hematological and biochemical aspects associated with haemoprotozoan infection in cows, buffaloes and horses** Hemoprotozoan infection in cows, buffaloes and horses causes anemia with significant increase in serum AST & ALT levels as well as significant change in SOD & MDA levels indicating oxidative stress and oxidative damage. **Approved.** (**Action:** Assistant Professor and Head, Dept. of Veterinary Public Health, CV Sci. & A.H., JAU, Junagadh)
14.8.2.20	**Clinical studies on brisket tumor in Jaffarabadi buffaloes** High frequency of brisket swelling cases is observed in Jaffarabadi buffaloes housed on kachha floor due to chronic inflammatory reaction. **Not approved** (**Action:** Assistant Professor & Head, Dept. of Surgery and Radiology, CV Sci. & A.H., JAU, Junagadh)
14.8.2.21	**Training needs assessment of livestock farmers, paravets and veterinarians in animal husbandry practices** It is recommended that institutions may give prime importance to conduct training in the areas of construction of low cost animal shed, methods of heat detection, time of insemination, balanced feeding and symptoms of common diseases for livestock farmers. **Referred to Social science subcommittee and the recommendation was not approved due to insufficient data.** (**Action:** Assistant Professor & Head, Dept. of Veterinary Extension, CV Sci. & A.H., JAU, Junagadh)
14.8.2.22	**Training needs assessment of livestock farmers, paravets and veterinarians in animal husbandry practices** To fulfill most preferred area of training needs of paravets, institutions may give prime importance to conduct training in the areas of pregnancy diagnosis, preventive and control measures and capacity building. **Referred to Social science subcommittee and the recommendation was not approved to insufficient data.** (**Action:** Assistant Professor and Head, , Dept. of Veterinary Extension, CV Sci. & A.H., JAU, Junagadh)
14.8.2.23	**Training needs assessment of livestock farmers, paravets and veterinarians in animal husbandry practices** It is recommended that institutions may give prime importance to conduct training in the areas of ultrasonography diagnostic techniques, handling of obstetrical cases and caesarian sections to fulfill most preferred area of training needs of veterinarians. **Referred to Social science subcommittee and the recommendation was not approved due to insufficient data.** (**Action:** Assistant Professor and Head, , Dept. of Veterinary Extension, CV Sci. & A.H., JAU, Junagadh)

14.8.2.24	**Training needs assessment of livestock farmers, paravets and veterinarians in animal husbandry practices** Training to farmers to update knowledge and skills, recognizing and encouraging progressive farmers to act as extension agents, organization of animal health camps at field level and create awareness through extension activities are most effective mode of transfer of technology at field level. **Referred to Social science subcommittee and the recommendation was not approved due to insufficient data.** (**Action:** Assistant Professor and Head, , Dept. of Veterinary Extension, CV Sci. & A.H., JAU, Junagadh*)*
14.8.2.25	**Comparative efficacy of hormonal regimens for estrous induction in post-partum Jaffarabadi buffaloes** It is recommended that in true anoestrus Jaffarabadi buffaloes either Ovysnch or CIDR alone shows better estrus induction response as compared to their combination. **Suggestions:** **1. Continue for one year and present the data in next AGRESCO.** **2. Include hormonal profile if possible.** (**Action:** Research Scientist, Cattle Breeding Farm, JAU, Junagadh)
14.8.2.26	**Effect of Methyl ergometrine and PGF2α during puerperium period in Gir cows** It is recommended that a single dose of PGF2α immediately after parturition in Gir cows enhances the process of placental separation, hastens the uterine involution, decreases the service period and increases the conception rate. **Approved.** (**Action:** Research Scientist, Cattle Breeding Farm, JAU, Junagadh*)*
14.8.2.27	**Association of estrous behavior and cervical mucus properties with conception in Gir cows** It is recommended that Gir cows having more ear play activity as well as clear mucus, higher spinnbarkeit value and typical fern pattern has higher conception rate. **Not approved.** (**Action:** Research Scientist, Cattle Breeding Farm, JAU, Junagadh)
14.8.2.28	**Sexual behaviour and its relationship with semen quality parameters in Jaffrabadi breeding bulls** Jaffrabadi bulls exhibited excellent sexual behavior and semen attributes with positive corelation only with semen volume. **Not approved.** (**Action:** Research Scientist, Cattle Breeding Farm, JAU, Junagadh)
14.8.2.29	**Comparison of EPA (Eicosapentaenoic Acid) and DHA (Docasahexaenoic acid) content of four marine micro algae culture** *Isochrysis galbanais* recorded to have 14 % eicosapentaenoic acid while *Chaetoceros* species is recorded to have 3.65 % eicosapentaenoic acid and 11 % docosahexaenoic acid. Hence, scientific community is informed to promote the marine microalgae culture for omega 3 fatty acid. **Approved.**

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

14.8.1.30	**Evaluation of *in vitro* antimicrobial properties of endophytes isolated from medicinal plants *Terminalia bellirica* (Baheda) and *Bixa orellana* (Sindur/Annatto seed)**

	Ethyl acetate extract of endophytic fungi (*Schizophyllum spp*.) isolated from *Bixa orellana* (Sindur, Annato seeds) leaves possess antibacterial activity against *Bacillus subtilis* (0.08 µg/ml), *Proteus mirabilis* (0.08 µg/ml), *Staphylococcus aureus* (0.16 µg/ml), *Pseudomonas aeruginosa* (2.56 µg/ml) and *Streptococcus pyogenes* (5.12 µg/ml). **Approved.** (**Action:** Head of the Department, Pharmacology and Toxicology, CVSc & AH, NAU, Navsari)
14.8.1.31	**Evaluation of *in vitro* antimicrobial properties of endophytes isolated from medicinal plants *Terminalia bellirica* (Baheda) and *Bixa orellana* (Sindur/Annatto seed)**
	Ethyl acetate extract of endophytic fungi (*Schizophyllum* Spp.) isolated from *Terminalia bellirica* (Baheda) leaves possess antibacterial activity against *Staphylococcus aureus* (0.64 µg/ml), *Bacillus subtilis* (0.64 µg/ml), *Proteus mirabilis* (0.64 µg/ml), *Streptococcus pyogenes* (2.56 µg/ml), *Pseudomonas aeruginosa* (2.56 µg/ml), *Escherichia coli* (2.56 µg/ml), and *Salmonella typhimurium* (2.56 µg/ml). **Approved** (**Action:** Head of the Department, Pharmacology and Toxicology, CVSc & AH, NAU, Navsari)
14.8.1.32	**Relationship of body measurements and testicular parameters on extra-gonadal sperm reserves in buck**
	It is recommended to use Scrotal Circumference (SC, in cm) as a base for calculation of Testicular Diameter (TD) and Epididymal Weight (EW) in live bucks through following regression equations: TD (cm) = - 0.892 + 0.231 x SC (R2=0.904) and EW (g) = -6.450 + 0.635 x SC (R2=0.792) **Approved.** (**Action:** Head of the Department, Veterinary Gynaecology and Obstetrics, CVSc & AH, NAU, Navsari)
14.8.1.33	**Effect of heat ameliorative measures (fans, foggers and green net) on physiological, haematological, biochemical and productive performance of lactating Surti buffaloes**
	Fans, foggers and whitewashing of the rooftop with microfine lime powder of the pucca shed as heat ameliorative measures help to control mean, minimum and maximum meteorological variables (temperature, humidity, THI) to reduce heat stress by increasing glucose, triglycerides, cholesterol, reduced glutathione and total antioxidant status during hot dry season and thus sustain milk production. **Approved.** (**Action:** Head of the Department, Veterinary Physiology and Biochemistry, CVSc & AH, NAU, Navsari)
14.8.1.34	**Effect of feeding processed maize on fattening of male Surti kids**
	Feeding of 250 g moist cooked crushed maize grain to the Surti kids of 8-10 months of age over and above their normal nutritional requirement could increase the growth rate (16 %) with an elevated blood glucose and cholesterol level ($P<0.05$) without affecting major metabolites of rumen. **Not approved** **(Action:** Head of the Department, Animal Nutrition, CVSc & AH, NAU, Navsari**)**

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

14.8.1.35	**Comparative evaluation and efficacy of the commonly used acaricides against ectoparasites infestation in cattle**
	Cypermethrin (10% w/v @ 1 ml / lit) spray and Flumethrin (1% w/v @ 1 ml / 10 kg body weight) pour-on is at par for effective ectoparasite control in cattle upto 17 and 32 days, respectively.”

	Approved. (**Action:** Professor and Head, RADIC, CVSc & AH, SDAU, S.K.Nagar**)**
14.8.1.36	**Clinical and blood profile studies on Mehsana buffaloes affected with dystocia**
	Uterine adhesions are related to duration and degree of uterine torsion in dystocia affected buffaloes, as evidenced by adhesion free uterus in torsions of shorter duration (≤ 48 hours) with lesser degree of twist (≤180). **Approved.** (**Action:** Professor and Head, TVCC, CVSc & AH, SDAU, S.K.Nagar)
14.8.1.37	**Clinical and blood profile studies on Mehsana buffaloes affected with dystocia**
	Alterations in haematological (Total leucocyte count, Differential leucocyte count and platelets), enzymatic (Aspartate amino transferase) and cortisol hormonal profiles can be used as diagnostic indicator for dystocia associated clinico-obstetrical attributes (Type & duration of dystocia, condition of fetus and uterine adhesion) in dams. **Approved** (**Action:** Professor and Head, TVCC, CVSc & AH, SDAU, S.K.Nagar)
14.8.1.38	**Comparative evaluation of modified and standard surgical technique for amputation of horn in Mehsana buffaloes**
	In Mehsani buffaloes, during horn amputation by flap method, surgical incision 1 cm above frontal crest is suggested to reduce operation time and blood loss. **Approved.** (**Action:** Professor and Head, Veterinary Surgery and Radiology, CVSc & AH, SDAU, S.K.Nagar)
14.8.1.39	**Evaluation of surgical treatment of obstructive urolithiasis in bovines in clinical cases**
	Congested mucus membranes along with abdominal distension are indicative of cystorrhexis in Kankrej males with anuria **Not approved.** (**Action:** Professor and Head, Veterinary Surgery and Radiology, CVSc & AH, SDAU, S.K.Nagar)

KAMDHENU UNIVERSITY, GANDHINAGAR

14.8.1.40	**Dynamics of vaginal metabiota during estrous cycle and its association with reproductive hormones in *Bubalus bubalis***
	Vaginal metabiota of buffaloes revealed Archaea (*Methanobacterium alkaliphilium* and *Methanobacterium Sp*, MB4) during metestrus only andfungus *Penicillium chrysogenum* during estrus, metestrus and diestrus phase of Estrous cycle. **Approved** (**Action:** Associate Director of Research , Kamdhenu University, Gandhinagar)

14.8.3 NEW TECHNICAL PROGRAMMES

Chairman: Dr. P. H. Vataliya, Hon. Vice-Chancellor, Kamdhenu University

Co-Chairmen: Dr. D. V. Joshi, Dean, SDAU
Dr. A. M. Thakkar, Dean, AAU

Rapporteurs: Dr. H. S. Panchasara, Research Scientist, SDAU
Dr. P. R. Pandya, Research Scientist, AAU
Dr. S. I. Yusufzai, AP, JAU

Statistician: Dr. A. D. Kalola, AP, AAU

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title/Centre	Suggestion/s and Action
14.8.3.1	Phytochemical screening and	**Approved.**

	evaluation of antibacterial activity of aqueous, alcoholic and chloroform extracts of *Linum usitatissimum* (common flax or linseed).	(**Action:** Prof. & Head, Dept. of Veterinary Pharmacology & Toxicology, Veterinary College, AAU, Anand.)
14.8.3.2	Effect of piperine pretreatment on pharmacokinetics of gemifloxacin in layer birds	**Accepted with following suggestion/s:** Birds of 25 weeks should be mentioned. (**Action:**Prof. & Head, Dept. of Veterinary Pharmacology & Toxicology, Veterinary College, AAU, Anand)
14.8.3.3	Abattoir studies on helminth parasites of goat (*Capra hircus*)	**Approved.** (**Action:** Prof. & Head, Dept. of Veterinary Parasitology, Vet. College, AAU, Anand)
14.8.3.4	Haemato-biochemical alterations in camel (*Camelus dromedaries*) affected with brucellosis	**Accepted with following suggestion/s:** 1. In objective replace prevalence with surveillance. 2. Add more biochemical parameters. (**Action:**Prof. & Head, Dept. of Veterinary Medicine, Veterinary College, AAU, Anand)
14.8.3.5	Pathological and molecular studies on Infectious Bursal Disease (IBD) in commercial broiler flocks	**Accepted with following suggestion/s:** Replace one pathologist with microbiologist in investigators. (**Action:** Prof. & Head, Dept. of Veterinary Pathology, Vet. College, AAU, Anand)
14.8.3.6	Pathological and molecular studies on caseous tracheo-bronchitisin broilers with special reference to Low Pathogenic Avian Influenza (H9N2), Infectious Bronchitis virus, *Escherichia coli and* Avian Mycoplasma.	**Accepted with following suggestion/s:** Replace one pathologist with microbiologist in investigators. (**Action:** Prof. & Head, Dept. of Veterinary Pathology, Veterinary College, AAU, Anand)
14.8.3.7	Prevalence of *Escherichia coli* O157:H7 in healthy / diarrhoeic cattle faeces.	**Accepted with following suggestion/s:** Delete from title "healthy/diarrhoeic." (**Action:** Prof. & Head, Dept. of Veterinary Microbiology, Vet. College, AAU, Anand)
14.8.3.8	Prevalence of extended spectrum beta-lactamase (ESBL) producing *Escherichia coli* and their antibacterial sensitivity patterns from poultry droppings.	**Accepted with following suggestion/s:** Add in place of from in title. (**Action:**Prof. & Head, Dept. of Veterinary Microbiology, Veterinary College, AAU, Anand)
14.8.3.9	Studies on haemato-biochemical and endocrinological alterations in buffaloes suffering from uterine torsion.	**Approved.** (**Action:** Prof. & Head, Dept. of Veterinary Gynaecology & Obstetrics, Veterinary College, AAU, Anand)
14.8.3.10	Role of non-specific genital infections and its management in infertile dairy cattle	**Approved.** (**Action:** Prof. & Head, Dept. of Veterinary Gynaecology & Obstetrics, Veterinary College, AAU, Anand)
14.8.3.11	Effect of heat stress (microclimate) on sperm production of cattle and buffalo bulls	**Approved** (**Action:** Prof. & Head, Dept. of Veterinary Gynaecology & Obstetrics, Veterinary College, AAU, Anand)
14.8.3.12	Effect of antioxidant Sericin in TFYG extender for improving cryo preservability of cattle and buffalo	**Approved.** (**Action:** Prof. & Head, Dept. of Veterinary Gynaecology & Obstetrics, Veterinary

	semen.	College, AAU, Anand)
14.8.3.13	Differential diagnosis and therapeutic management of cystic ovarian degeneration in crossbred cattle.	**Approved.** (**Action:** Prof. & Head, Dept. of Veterinary Gynaecology & Obstetrics, Veterinary College, AAU, Anand)
14.8.3.14	Study on seroprevalence of Cysticercosis in pigs.	**Approved.** (**Action:** Prof. & Head, Dept. of Veterinary Public Health & Epidemiology, Veterinary College, AAU, Anand)
14.8.3.15	Study on seroprevalence of Japanese Encephalitis in pigs by ELISA.	**Accepted with following suggestion/s:** Delete ELISA from title. (**Action:**Prof. & Head, Dept. of Veterinary Public Health & Epidemiology, Veterinary College, AAU, Anand)
14.8.3.16	Studies on surgical management of prolapse of third eyelid gland in canines.	**Accepted with following suggestion/s:** 1. Second objective should be replaced as under –Surgical management of cherry eye using standard technique. 2. Take minimum of 10 dogs and change modified Morgan pocket technique as standard surgical technique in methodology. (**Action:** Prof. & Head, Dept. of Vet. Surgery & Radiology, Vet. College, AAU, Anand)
14.8.3.17	Clinical studies on different combinations of butorphanol, acepromazine and dexmedetomidine premedication along with midazolam - ketamine and propofol induction and isoflurane maintenance in dogs.	**Accepted with following suggestion/s:** 1. Specify the number of animals. 2. Biochemical parameters need to be studied. (**Action:** Prof. & Head, Dept. of Vet. Surgery & Radiology, Vet. College, AAU, Anand)
14.8.3.18	Clinical studies on ear infections, bacteriological evaluation and therapeutic management in canines.	**Approved.** (**Action:** Prof. & Head, Dept. of Vet. Clinical Complex, Vet. College, AAU, Anand)
14.8.3.19	Studies on incidence and etiological factors associated with anaemia in goats	**Approved.** (**Action:** Prof. & Head, Veterinary Clinical Complex, Veterinary College, AAU, Anand)
14.8.3.20	The effect of feeding protected choline on milk and production efficiency in dairy cows	**Approved.** **(Action:** Res. Sci. & Head, LRS, AAU, Anand)
14.8.3.21	Effect of some microclimatological changes on milk production in crossbred cows	**Approved.** **(Action:** Res. Sci. & Head, LRS, AAU, Anand)
14.8.3.22	Performance of crossbred cows under different feeding Regimes	**Approved.** **(Action:** Res. Sci. & Head, LRS, AAU, Anand)
14.8.3.23	Optimizing managemental factors associated with goat productivity	**Approved.** **(Action:** Res. Sci. & Head, Pashupalan Sanshodhan Kendra, Ramna Muvada)
14.8.3.24	Gastrointestinal parasitism in goats of Ramna Muvada farm and surrounding field areas	**Approved.** **(Action:** Res. Sci. & Head, Pashupalan Sanshodhan Kendra, Ramna Muvada)
14.8.3.25	Standardization of progesterone profile in blood and milk for early	**Accepted with following suggestion/s:** Remove “Standardization of” from the title.

	pregnancy diagnosis in buffaloes	**(Action:** Res. Sci. & Head, R.B.R. Unit, AAU, Anand)
14.8.3.26	Effect on SSF biomass supplementation on growth performance of crossbred calves	**Approved.** **(Action:** Res. Sci. &Head, Anim. Nutri. Res. Station, AAU, Anand)
14.8.3.27	Formulation of area specific mineral mixture for dairy animals in Chhota Udepur district	**Approved.** **(Action:** Research Scientist & Head, Animal Nutrition Research Station, AAU, Anand)
14.8.3.28	Effect of tannin as phytonutrient on growth performance and health of Surti kids	**Approved.** **(Action:** Res. Sci. & Head, Anim. Nutri. Res. Station, AAU, Anand)
14.8.3.29	Methane mitigation in crossbred cows under different feeding regimes	**Approved.** **(Action:** Res. Sci. & Head, Anim. Nutri. Res. Station, AAU, Anand)
14.8.3.30	Methane mitigation in calves through dietary interventions and its effect on performance of animals	**Approved.** **(Action:** Res. Sci. & Head, Anim. Nutri. Res. Station, AAU, Anand)
14.8.3.31	Determination of optimum body weight at housing of White Leghorn birds for obtaining maximum production performance	**Approved** **(Action:** Res. Sci. & Head, Poultry Res. Station, AAU, Anand)
14.8.3.32	Study on the growth, production and carcass evaluation of Kadaknath, Rhode Island Red and their crosses	**Approved.** **(Action:** Res. Sci. & Head, Poultry Res. Station, AAU, Anand)
14.8.3.33	Assessing the effect of herbal material/compounds on semen quality with respect to percentage motility and viability of x- and y-bearing spermatozoa	**Accepted with following suggestion/s:** Names of scientists who have worked in the project should be mentioned. **(Action**: Prof. & Head, Dept. of Animal Biotechnology, Veterinary College, AAU, Anand)
14.8.3.34	Performance of indigenous goats of Gujarat State under different watering frequencies	**Accepted with following suggestion/s:** 1. Objectives to be reduced to two. (**Action**: Prof. & Head, Dept of Livestock Production & Management, Vet. College, AAU, Anand)
14.8.3.35	Study on performance of Holstein Friesian x Kankrej (HF X K) crossbred cows under intensive production system	**Approved.** (**Action**: Prof. & Head, Dept of Livestock Production & Management, Vet. College, AAU, Anand)
14.8.3.36	Assessment of the effect of temperature and time of incubation oncomplete blood count (CBC) tests in cattle, buffalo, sheep and goat	**Approved.** (**Action:** Prof. & Head, Dept. of Vet. Physiol. & Biochem., Vet. Coll., AAU, Anand
14.8.3.37	Assessment of haemato-biochemical status of Surti goats during different physiological conditions	**Approved.** (**Action:** Prof. & Head, Dept. of Vet. Physiol. & Biochem., Vet. Coll., AAU, Anand
14.8.3.38	Development of flavoured milk prepared with tulsi and turmeric	**Approved.** (**Action:** Prof. & Head, Dept. of Livestock Products Technology, Vet. Coll., AAU, Anand)

14.8.3.39	Validation of findings of nutritional status of dairy animals in Anand district	**Approved.** (**Action:** Res. Scientist (Animal Sci.), KVK, Devataj, AAU, Anand)
14.8.3.40	Validation of findings of nutritional status of dairy animals in Ahmedabad district	**Approved.** (**Action:** Res. Scientist (Animal Sci.), KVK, Arnej, AAU, Anand)
14.8.3.41	Validation of findings of nutritional status of cattle in Dahod district	**Approved.** **(Action:** Res. Scientist (Animal Sci.), KVK, Dahod, AAU, Anand
14.8.3.42	Validation of findings of nutritional status of buffaloes in Dahod district	**Approved.** (**Action**: Res. Sci. (Anim. Sci.), Pashu Vigyan Kendra, Devgadh Baria, Dist. Dahod, AAU, Anand)

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

Sr. No.	Title	Suggestion/s and Action
14.8.3.43	Morphological and molecular identification of ticks infesting the domestic and wild animals	**Approved.** (**Action:** Asstt. Prof. & Head, Veterinary Pathology, CVSc & A.H., JAU, Junagadh)
14.8.3.44	Studies on prevalence, haemato-biochemical & diagnostic aspects of fasciolosis by coprological examination in cattle & buffalo of Junagadh district.	**Accepted with following suggestion/s:** 1. Specify sample size. 2. Specify biochemical parameters to be studied. (**Action:** Asstt. Prof. & Head, Veterinary Pathology, CVSc & A.H., JAU, Junagadh)
14.8.3.45	Optimization of Loop Mediated Isothermal Amplification (LAMP) test fordiagnosis of *Trypanosoma evansi* infection in animals	**Approved.** (**Action:** Assistant Professor & Head, Veterinary Pathology, CVSc & A.H., JAU, Junagadh)
14.8.3.46	Evaluation of galactagogue effect of two poly herbal mixtures in Gir cows	**Approved.** (**Action:** Assistant Professor & Head, Veterinary Pharmacology and Toxicology, CVSc & A.H., JAU, Junagadh)
14.8.3.47	Evaluation of an antioxidant effect of Poly herbal mixture against Cadmium induced oxidative stress in chickens	**Approved.** (**Action:** Assistant Professor & Head, Veterinary Pharmacology and Toxicology, CVSc & A.H., JAU, Junagadh)
14.8.3.48	Association of chick weight and body measurements with growth performance in caribro-dhanraja broiler chicken	**Approved.** (**Action:** Professor & Head, ILFC, CVSc & A.H., JAU, Junagadh)
14.8.3.49	Association of body weight and biometric measurements with egg productionand quality performance in white leghorn layers	**Approved.** (**Action:** Professor & Head, ILFC, CVSc & A.H., JAU, Junagadh)
14.8.3.50	Phenotypic and Molecular characterization of extended-spectrum β-lactamase (ESBL) producing Escherichia coli from poultry in Junagadh, Gujarat."	**Approved.** (**Action:** Assistant Professor and Head, Livestock Products Technology, CVSc & A.H., JAU, Junagadh)
14.8.3.51	Assessment of hygienic milk production practices adopted by dairy farmers for quality milk production.	**Approved.** (**Action:** Associate Professor & Head, VAHE, CVSc & A.H., JAU, Junagadh)

14.8.3.52	Ecological studies of *Staphylococccus aureus* isolates from poultry meat andassociated environment in and around Junagadh district	**Approved.** (**Action:** Assistant Professor & Head, VPH, CVSc & A.H., JAU, Junagadh)
14.8.3.53	Evaluation of various diagnostic methods for detection of subclinical mastitis and its therapeutics in bovine.	**Approved.** (**Action:** Professor & Head, Veterinary Medicine, CVSc & A.H., JAU, Junagadh)
14.8.3.54	Principal component analysis to predict the life time milk yield using first lactation traits in Gir cattle."	**Accepted with following suggestion/s:** 1. In title, instead of "life time milk yield" write "herd life". 2. Lactation length should be minimum 200 days. (**Action:** Associate Professor & Head, AGB, CVSc & A.H., JAU, Junagadh)
14.8.3.55	Effect of replacing concentrate mixture with moringa (*Moringa oliefera*) leaf meal on growth performance and blood biochemical profiles Gir calves.	**Approved.** (**Action:** Research Scientist, Cattle Breeding Farm, JAU, Junagadh)
14.8.3.56	Development of shelf stable, ready to fry fish crackers from bull eye fish (*Priacanthus hamrur)* meat and its quality characterization during storage	**Approved.** (**Action:** Principal, College of Fisheries Science, JAU, Veraval)
14.8.3.57	Supplementation of selected marine macro algae in practical diets for Indian major carp, *Cirrhinus mrigala*	**Accepted with following suggestion/s:** Mention life stage of fish. (**Action:** Principal, College of Fisheries Science, JAU, Veraval)
14.8.3.58	Effect of pH and temperature on the growth and survival of *Nerita* sp.	**Approved.** (**Action:** Research Officer ,Fisheries Research Station, JAU, Sikka)
14.8.3.59	Effect of different levels of protein diets on growth and survival of *Terapon jarbua*	**Approved.** (**Action:** Research Officer, Fisheries Research Station, JAU, Mahuva)
14.8.3.60	Supplementation of shrimp protein hydrolysate inpractical diets of *Litopenaeus vannamei*	**Accepted with following suggestion/s:** Biochemical parameters to be recorded. (**Action:** Research Officer, Fisheries Research Station, Mahuva)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Sr. No.	Title	Suggestion/s and Action
14.8.3.61	Formulation and *In-vitro* evaluation of quercetin loaded micro emulsion for pharmacological properties	**Approved.** (**Action:** Dept. of Pharmacology and Toxicology, CVSc &AH, NAU, Navasari)
14.8.3.62	*In vitro* evaluation of combination effect of Rutin with Enrofloxacin, Gentamicin sulphate and Ceftriaxone	**Accepted with following suggestion/s:** Mention concentration of all components and antibiotics. (**Action:** Dept. of Pharmacology and Toxicology, CVSc &AH, NAU, Navasari)
14.8.3.63	Effect of supplementary cooling on body temperature, behaviour, milk composition and haemato-biochemical changes in hot dry and hot humid	**Approved.** (**Action:** Department of Veterinary Physiology and Biochemistry, CVSc &AH, NAU, Navasari)

	season in lactating Surti buffaloes.	
14.8.3.64	Measurement of heat stress and its impact on behavior and production performance in surti buffaloes in different seasons.	**Approved.** (**Action:** Department of Veterinary Physiology and Biochemistry, CVSc &AH, NAU, Navasari)
14.8.3.65	Cutaneous thermal profiling of Surti does in different seasons.	**Approved.** (**Action:** Dept. of Veterinary Physiology and Biochemistry, CVSc &AH, NAU, Navasari)
14.8.3.66	Haemato-biochemical and oxidative stress profiling in young Surti goats	**Accepted with following suggestion/s:** 6-12 months of age to be mentioned. (**Action:** Dept. of Veterinary Physiology and Biochemistry, CVSc &AH, NAU, Navasari)
14.8.3.67	Relative Gene Expression Study on Casein Protein and its Regulatory Genes in Mammary Epithelial Cells of Surti Goats.	**Accepted with following suggestion/s:** 1. Specify type of Casein to be used. 2. Refine the objectives, experimental design, and time of sampling. (**Action:** Department of Animal Genetics and Breeding, CVSc &AH, NAU, Navasari)
14.8.3.68	An investigation on skin temperature differentials in relation to estrus in Surti goats by infrared thermography	**Approved.** (**Action:** Dept. of Livestock production and management, CVSc &AH, NAU, Navasari)
14.8.3.69	Study on genetic polymorphism of prolificacy related genes using PCR-RFLP and its association with kidding rate in Surti goats.	**Accepted with following suggestion/s:** 1. Include animals from different locations. 2. Minimum 50 animals in each group. 3. Field based sampling. (**Action:** Department of ILFC, CVSc &AH, NAU, Navasari)
14.8.3.70	Effect of Various Light Sources on Broiler Performance.	**The project was dropped in CJA.** (**Action: Department of ILFC,** CVSc &AH, NAU, Navasari)
14.8.3.71	Effect of supplementation of Neem leaf meal and Citric acid on meat quality of broiler chicken.	**Approved.** (**Action: Department of LPT,** CVSc &AH, NAU, Navasari)
14.8.3.72	Withdrawal period evaluation of Emamectin benzoate (EB) as a feed additive for *Cirrhinus mrigala* advance fingerlings.	**Approved.** (**Action:** College of Fisheries, NAU, Navasari)

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR

Sr. No.	Title	Suggestion/s and Action
14.8.3.73	Detection of bovine papilloma virus in bovine cutaneous squamous cell carcinoma	**Approved.** (**Action:** Head, Department of Pathology, CVSc & AH, SDAU, SKNagar)
14.8.3.74	Immuno histochemical expression of gankyrin in canine mammary tumor and its correlation with histopathological classification and grading	**Accepted with following suggestion/s:** Include at least 50 animals. (**Action:** Head, Department of Pathology, CVSc & AH, SDAU, SKNagar)
14.8.3.75	Detection of Heinz body, Howell Jolly body and reticulocytes in blood of domestic animals and its correlation with haematological abnormalities.	**Approved.** (**Action:** Head, Department of Pathology, CVSc & AH, SDAU, SKNagar)
14.8.3.76	Immuno histochemical expression of	**Approved.**

	Androgen receptor in cutaneous epithelial neoplasms of animals	(**Action:** Head, Department of Pathology, CVSc & AH, SDAU, SKNagar)
14.8.3.77	Prevalence and molecular epidemiology of canine parvovirus	**Accepted with following suggestion/s:** Define native dogs. (**Action:** Head, Dept. of Microbiology & Biotech., CVSc & AH, SDAU, SK Nagar)
14.8.3.78	Molecular detection and characterization of chicken anemia virus (CAV) from poultry	**Accepted with following suggestion/s:** Mention minimum number of farms. (**Action:** Head, Dept. of Microbiology & Biotech., CVSc & AH, SDAU, SK Nagar)
14.8.3.79	Therapeutic approach for control of bovine parasitic dermatitis in Banaskantha region.	**Accepted with following suggestion/s:** Take 12 animals in each group. (**Action :** Professor & Head, RADIC, CVSc & AH, SDAU, SK Nagar)
14.8.3.80	Pharmacokinetics of marbofloxacin in rabbits after its IV and IM administration.	**Approved.** (**Action:** Head, Department of Veterinary Pharmacology & Toxicology, CVSc & AH, SDAU, SKNagar)
14.8.3.81	Assessment of heavy metals in soil, water, fodder and milk of dairy animals.	**Approved.** (**Action:** Head, Department of Veterinary Pharmacology & Toxicology, CVSc & AH, SDAU, SKNagar)
14.8.3.82	Antimicrobial Sensitivity Test of newly developed roxithromycin-ciprofloxacin combination disc against common bovine pathogens isolated from clinical samples	**Accepted with following suggestion/s:** 1. Mention concentration of antibiotics. 2. Include study on 5-6 standard microorganisms. 2. Check the effect separately for both the antibiotics and in combination. **(Action:** Head, Department of Veterinary Pharmacology & Toxicology, CVSc & AH, SDAU, SKNagar)
14.8.3.83	Comparative feed additive efficacy study of roxithromycin plus ciprofloxacin with antibiotic alternative formulation in broiler birds	**Programme is not approved.** (**Action:** Head, Department of Veterinary Pharmacology & Toxicology, CVSc & AH, SDAU, SKNagar)
14.8.3.84	Evaluation of benzimidazole resistance in gastrointestinal nematodes of sheep and goat using *in vitro* test.	**Accepted with following suggestion/s:** Mention sample size. (**Action:** Head, Dept. of Vet. Parasitology, CVSc & AH, SDAU, SKNagar)
14.8.3.85	Molecular detection of *Theileria equi* and *Babesia caballi* infections in equines in North Gujarat.	**Accepted with following suggestion/s** Mention sample size and jurisdiction. (**Action:** Department of Veterinary Medicine, CVSc & AH, SDAU, SKNagar)
14.8.3.86	Assessment of production status of Kankrej Cattle based on Mini compton metabolic profile test	**Accepted with following suggestion/s:** Minimum 70 samples should be taken. (**Action:** Head, Department of Veterinary Medicine, CVSc & AH, SDAU, SKNagar)
14.8.3.87	Assessment of blood metabolites during early postpartum period as an indicator of reproductive performance in Mehsana buffaloes	**Accepted with following suggestion/s** Include metabolic parameters like NEFA, calcium, total protein and cholesterol. (**Action:** Head, Department of Gynecology, CVSc & AH, SDAU, SKNagar)
14.8.3.88	Effect of melatonin on resumption of cyclicity and conception rate in	**Approved.** (**Action:** Head, Department of Gynecology,

	anoestrus Mehsana buffalo hiefers (*Bubalus bubalis*)	CVSc & AH, SDAU, SKNagar)
14.8.3.89	Evaluation and therapeutic management of infertile mares	**Accepted with following suggestion/s:** 1. Delete objective 1. 2. Antibiotics should be included after revalidation review. (**Action:** Head, Department of Gynecology, CVSc & AH, SDAU, SKNagar)
14.8.3.90	Insulin supplementation to improve the fertility in postpartum Mehsana buffalo	**Accepted with following suggestion/s:** 1. Change the title from supplementation to suitable word. 2. Mention source of Insulin. (**Action:** Head, Department of Gynecology, CVSc & AH, SDAU, SKNagar)
14.8.3.91	Clinical studies on ear affections in canine	**Accepted with following suggestion/s:** 1. Use VCC instead of TVCC in all projects. 2. Take 20 dogs instead of 12. 3. Separate clinical case sheets for ear examination should be evolved. (**Action:** Head, Teaching Vet.y Clinical Complex, Deesa, CVSc & AH, SDAU, SKNagar)
14.8.3.92	Prevention of uterine adhesion in caesarean operated cases of uterine torsion in Mehsana buffaloes.	**Accepted with following suggestion/s:** 1. Use VCC instead of TVCC in all projects. 2. Use polyvinyl pyrovidone 40% in place of Hyaluronic acid. 3. Take maximum cases of uterine torsion. (**Action:** Head, Vet. Clinical Complex, Deesa, CVSc & AH, SDAU, SKNagar)
14.8.3.93	Immunodiagnosis of demodectic mange in canine.	**Accepted with following suggestion/s** 1. Use VCC instead of TVCC in all projects. 2. Mention sample size. 3. In title use the word immunomolecular disgnosis instead of immunodiagnosis. (**Action:** Head, Vet. Clinical Complex, Deesa, CVSc & AH, SDAU, SKNagar)
14.8.3.94	Assessment of lameness in horses	**Accepted with following suggestion/s:** 1. Use incidence instead of assessment in title. 2. Sample size should be 50. (**Action:** Head, Dept. of Vet. Surgery & Radiology, CVSc & AH, SDAU, SKNagar)
14.8.3.95	Study on sharp molars in bovines	**Accepted with following suggestion/s:** Include following objectives 1. To study incidence of dental affections in bovines. 2. To elicit predisposing factors for development sharp molar. (**Action:** Head, Dept. of Vet. Surgery & Radiology, CVSc & AH, SDAU, SKNagar)

14.8.3.96	Non-genetic factors affecting Kleiber's ratios and other growth parameters in farm bred broiler rabbits.	**Approved.** (**Action:** Head, Department of AGB, CVSc & AH, SDAU, SKNagar)
14.8.3.97	Relationship and prediction of body weight using morphometric traits in goats.	**Approved.** (**Action:** Head, Department of AGB, CVSc & AH, SDAU, SKNagar)
14.8.3.98	Production performance of lactating Kankrej cows supplemented with ricinoleic acid from castor oil.	**Accepted with following suggestion/s:** Assess lipid profile. (**Action:** Head, Dept. of Animal Nutrition, CVSc & AH, SDAU, SKNagar)
14.8.3.99	Study the hygienic score of dairy animals of organized and unorganized herd	**Approved/** (**Action:** Head, Department of LPM, CVSc & AH, SDAU, SKNagar)
14.8.3.100	Effect of probiotic supplementation on growth the performance of broiler rabbits.	**Accepted with following suggestion/s:** Include in title multistrain probiotic. (**Action:** Head, Department of LPM, CVSc & AH, SDAU, SKNagar)
14.8.3.101	Study the economics of commercial dairy farm	**Accepted with following suggestion/s:** 1. Minimum 10 farms to be included in the study. 2. It should be 2 year study. (**Action:** Head, Department of LPM, CVSc & AH, SDAU, SKNagar)
14.8.3.102	Haemato-biochemical profiling of Mehsana goat	**Accepted with following suggestion/s:** 1. Include estimation of more microminerals. 2. Take more number of animals. (**Action:** Livestock Research Station, SDAU, SKNagar)
14.8.3.103	Calculating the feed efficiency of lactating Mehsana buffalo	**Accepted with following suggestion/s:** 1. Take 2 observations per week. 2. Skip observations if urine /feces passed before weighing of calf. (**Action:** Livestock Research Station, SDAU, SKNagar)
14.8.3.104	Determination of suckling allowance in Mehsana buffaloes	**Approved.** (**Action:** Livestock Research Station, SDAU, SKNagar)

Proceeding of 14th Combined Joint AGRESCO meeting of SAU's and Kamdhenu University held at Junagadh Agricultural University (JAU), Junagadh during April 3-5, 2018

Plenary Session

Venue: University Auditorium **Date: 05.04.2018**
Time: 09:00 to 11:00

The plenary session of 14th Combined Joint AGRESCO meeting of State Agricultural Universities was commenced on April 5, 2018 at 9:00 hrs at the Auditorium of Junagadh Agricultural University, Junagadh. The session was chaired by Dr. A. R. Pathak, Hon'ble Vice Chancellor, Junagadh Agricultural University, Junagadh and Co-Chaired by Dr. N. C. Patel, Hon'ble Vice Chancellor, Anand Agricultural University, Anand; Dr. C. J. Dangaria, Hon'ble Vice Chancellor, Navsari Agricultural University, Navsari; Prof. (Dr.) Ashok A. Patel, Hon'ble Vice Chancellor, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar; Dr. P. H. Vatalia, Hon'ble Vice Chancellor, Kamdhenu Agricultural University, Gandhinagar and Shri J. D. Dave, Joint Secretary, Horticulture/Krushi University, Department of Agriculture, Farmer Welfare & Cooperation, Govt. of Gujarat, Gandhinagar. Besides, Director of Research of SAUs, Director of Extension Education of SAUs, Principals and Deans of SAUs, Associate Director of Research of SAUs and Research Scientists, Professors and Scientists remained present. After brief remark by Dr. A. R. Pathak, Hon'ble Vice Chancellor, Junagadh Agricultural University, Junagadh session began with the presentation of proceeding of all sub committees by the respective conveners, wherein recommendation and new technical programmes of different sub committees were approved by the house. Dr. I. U. Dhruj, ADR, JAU, Junagadh; Dr. H. R. Patel, ADR, AAU, Anand; Dr. P. Mohnot, ADR, JAU., Junagadh; Dr. K. A. Patel, ADR, NAU, Navsari and Dr. R. N. Singh, ADR, SDAU, Sardarkrushinagar were rapporteurs for this session.

Dr. M. A. Vaddoria, Convener, Crop Improvement Agresco subcommittee, JAU, Junagadh presented release proposals of varieties, recommendation and new technical programmes of Crop Improvement Agresco subcommittee. Out of the 25 release proposals of improved crop varieties/hybrids, 24 entailing 05, 07, 11 and 01 from AAU, JAU, NAU and SDAU were approved. One recommendation for farmers' and three for scientific community were also approved.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. B. D. Patel, Convener, Natural Resource Management subcommittee of AAU, Anand presented the proceeding of Crop Production and Natural Resource Management Agresco subcommittee. Sixty seven farming community recommendations, 14 scientific information and 125 new technical programmes were approved. It was suggested to put the name of crop varieties in bracket wherever not mentioned in recommendation.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. S. P. Saxena, Convener, Plant Protection Agresco subcommittee, NAU, Navsari presented the proceeding of the Plant Protection/Crop Protection Agresco subcommittee. He informed that of the 31 and 58 proposals for farming and scientific community, 27 and 63 respectively were approved. Five farmers' recommendations were approved as scientific information as they are not fulfilling thee CIB guide line. Hundred and five technical programmes entailing 28, 23, 17, and 37 from AAU, JAU, NAU and SDAU respectively were also approved.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. D. K. Sharma, Convener, Horticulture Agresco subcommittee, NAU, Navsari presented the proceeding of Horticulture and Agro-forestry Research Agresco subcommittee of SAUs. The committee approved 30 recommendations for farmers, 10 for scientific community and 69 new technical programmes. In multidisciplinary trials suggestions of related Agresco sub committees must be incorporated while preparing final proceeding.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. R. F. Suthar, Convener, Dairy Science and Food Processing Technology & Bio energy Agresco subcommittee, AAU, Anand presented finalized recommendations and new technical programmes of Agricultural Engineering and AIT/Ag. Engg., Dairy & Food Tech/Dairy Science and FPT & Bio energy/Agril Eng. Agresco subcommittee. Farming community 50 and scientific community 20 recommendations were presented and approved with the suggestion to verify English and gujarati version of the text. Seventy two new technical programmes were presented, out of which, 66 were approved.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. V. T. Patel, Convener, Social Science Agresco subcommittee, SDAU, Sardarkrushinagar presented the proceeding. Eight recommendations for scientific community and 145 (138 +7) new technical programmes were approved. As per general suggestion, decision taken in the house, Yield gap analysis of major field crops of Gujarat and Determinants of leaving farming as a profession suggested by the Dept. of Extension Education BACA, AAU, Anand to be conducted by all SAUs.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. Sanjay Jha, NAU, Navsari presented the proceeding of Basic Science & Humanity, Plant Physiology, Biochemistry & Biotechnology Agresco subcommittee. Three recommendations for farming community and 24 for scientific community were approved. Twenty seven new technical programmes were also approved.

(Action: Concerned Director of Research and Scientist of SAUs)

Dr. K. S. Murthy, Convener, Animal Health & Animal Production and Fisheries, JAU, Junagadh presented proceeding of Animal Health & Animal Production and Fisheries Science Agresco subcommittee. Twenty, 29 and 101 recommendations for farming community, scientific community and new technical programmes were approved, respectively.

(Action: Concerned Director of Research and Scientist of SAUs)

Note: Minor suggestions suggested during session are already incorporated in the proceedings.

General points:

1. It was suggested to form two committees i.e. Agril. Engineering, Food Processing and Technology and Agril. Information Technology as one and Dairy Science as another one instead of single committee of Agril. Engineering, Dairy Science, Food Processing and Technology and Agril. Information Technology from ensuing AGRESCO meeting.

   (Action: Concerned Director of Research and Scientist of SAUs)

2. Following General Points submitted by the Director of Research, Navsari Agricultural University, Navsari were discussed and following suggestion was made.
   - Whether to include names of RA/SRF/Other Contractual posts in recommendations / release proposals?
   - Fixation of fee/charges by SAUs of Gujarat for DNA finger printing for varieties/hybrids of Private companies.
   - Revision of charges fixed for undertaking trials of varieties/pesticides/fertilizers.

   With respect to all the three points submitted by Director of Research, Navsari Agricultural University, Navsari. It was suggested to form a committee of following members.

   1. Director of Research of each Agricultural University.
   2. Associate Director of Research of each Agricultural University.
   3. If required member of respective disciplines.

3. It was also suggested that the names of RA/SRF should not be there in the new technical programme.

   (Action: Concerned Director of Research of SAUs)

At the end, Shri J. D. Dave, Joint Secretary, Horticulture/Krushi University appreciated the work carried out by the scientists. He advised the scientists that the recommendations made by the university should reach to the farmers so that, it will definitely help in doubling the farmers' income. He blessed the occasion.

The meeting was ended with vote of thanks proposed by Dr. A. M. Parkhia, Director of Extension Education, Junagadh Agricultural University, Junagadh.

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Summary -Farmer recommendation/scientific recommendation/new technological of SAUs and KU

Name of University	Crop Improvement, Plant Physiology & Biotechnology	Crop Production / Natural Resource Management	Plant Protection/ Crop Protection	Horticulture & Agro Forestry	Agriculture Engg. and AIT / Agril. Engg. Dairy & Food Tech./ Dairy Science and FPT & Bio Energy/ Agril. Engg.	Social Science	Basic Science & Humanities, (Plant Physiology, Bio-chemistry & Biotechnology	Animal Health, Animal Production and Animal Science & Fisheries Science	Total
Varieties and farmer recommendations									
AAU, Anand	05*+01	15	07	06	32	-	01	07	05*+69
JAU, Junagadh	07*	15	12	02	10	-	01	06	07*+46
NAU, Navsari	11*	26	06	19	06	-	01	05	11*+63
SDAU, SKNagar	01*	11	02	03	02	-	-	02	01*+20
Total	**24*+01**	**67**	**27**	**30**	**50**	**-**	**03**	**20**	**24*+198**
Scientific recommendations									
AAU, Anand	02	-	32	-	11	02	03	10	**60**
JAU, Junagadh	-	07	10	01	03	03	07	10	**41**
NAU, Navsari	-	03	17	08	04	01	10	04	**47**
SDAU, SKNagar	01	04	04	01	02	02	04	04	**22**
Kamdhenu Uni., Gandhinagar	-	-	-	-	-	-	-	01	**01**
Total	**03**	**14**	**63**	**10**	**20**	**08**	**24**	**29**	**171**
New technical programmes									
AAU, Anand	21	33	28	11	33	49	09	42	**226**
JAU, Junagadh	-	25	23	06	13	28	10	17	**122**
NAU, Navsari	01	26	17	34	08	25	09	11	**131**
SDAU, SKNagar	09	41	37	18	11	43	12	31	**202**
Kamdhenu Uni., Gandhinagar	-	-	-	-	01	-	-	-	**01**
Total	**31**	**125**	**105**	**69**	**66**	**145**	**40**	**105**	**682**

* Indicate Variety

Proceeding of 14th Combined Joint AGRESCO meeting of SAU's and Kamdhenu University held at Junagadh Agricultural University (JAU), Junagadh during April 3-5, 2018

Valedictory Session

Venue: University Auditorium **Date: 05.04.2018**
Time: 15:00 to 17:00

The Valedictory Session of 14th Combined Joint AGRESCO meeting of State Agricultural Universities and Kamdhenu University was commenced with lighting a lamp by the dignitaries on the dais Shri R. C. Faldu, Hon'ble Minister of Agriculture, Fisheries and Animal Husbandry; Dr. A. R. Pathak, Hon'ble Vice Chancellor, Junagadh Agricultural University, Junagadh; Dr. N. C. Patel, Hon'ble Vice Chancellor, Anand Agricultural University, Anand; Dr. C. J. Dangaria, Hon'ble Vice Chancellor, Navsari Agricultural University, Navsari; Prof. (Dr.) Ashok. A. Patel, Hon'ble Vice Chancellor, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar; Dr. P. H. Vataliya, Hon'ble Vice Chancellor, Kamdhenu University, Gandhinagar; Shri J. D. Dave, Joint Secretary, Horticulture/Krushi University, Department of Agriculture, Farmer Welfare & Cooperation, Govt. of Gujarat, Gandhinagar; Dr. K. B. Kathiria, Director of Research & Dean, PG Studies, AAU, Anand and Dr. V. P. Chovatia, Director of Research & Dean, PG Studies, JAU, Junagadh. It was followed by flower welcome of the dignitaries on the dais.

Dr. V. P. Chovatia, Director of Research & Dean, PG Studies, JAU, Junagadh warmly welcomed the dignitaries. The dignitaries on the dais were also welcomed by offering floral bouquet. During his welcome speech, he mentioned about the Co-operation and harmony in carrying out research activities in the state by all the Agricultural Universities and Kamdhenu University.

Dr. P. H. Vataliya, Hon'ble Vice Chancellor, Kamdhenu University, Gandhinagar briefed the activities of the university pertaining to dairy and veterinary sectors in the state like milk adulteration testing technique, metagenomics and the need of veterinary college in the University.

Prof. (Dr.) Ashok. A. Patel, Hon'ble Vice Chancellor, Sardar Krushinagar Dantiwada Agricultural University, Sardarkrushinagar, in his address narrated the progress of Sardar Krushinagar Dantiwada Agricultural University with limited numbers of scientists and mentioned about the difficulties faced by the University in administration, research and education.

Dr. C. J. Dangaria, Hon'ble Vice Chancellor, Navsari Agricultural University, Navsari, highlighted the research activities carried out by Navsari Agricultural University, Navsari. He also throws light on the achievements made by the KVKs of the University and value addition through organic farming.

Dr. N. C. Patel, Hon'ble Vice Chancellor, Anand Agricultural University, Anand, in his address reported the noteworthy achievements made by the of scientists of Anand Agricultural University in Agriculture, Dairy and Veterinary Science with special reference to Pink bollworm management strategy, Development of NABL accredited laboratories like Pesticide

Residues and Food testing laboratory, Experimental learning units, etc. He also informed the house that technologies given by the Gujarat in management of Pink bollworm are adopted by other state in country as a model. He advised the scientists to publish the recommendations in highly reputed journals, which is prime requirement in NIRF ranking of the universities. He also throws light on need of artificial intelligence in the development of agriculture in paucity of manpower.

Dr. A. R. Pathak, Hon'ble Vice Chancellor, Junagadh Agricultural University, Junagadh, briefed the house about the progress made by Junagadh Agricultural University, Junagadh for the benefit and upliftment of the farmers. He mentioned about the achievements made by the scientists of the University with respect to Crop Improvement, Natural Resource Management, Integrated Pest Management, Water Use Efficiency and Irrigation Management, role of the varietal development in Gujarat by the university at National level in improving yield of the crops, etc. He also mentioned that spending one rupee in research turn out to be Rs. 17.50 as income.

During the function, number of publications prepared by Junagadh Agricultural University, Junagadh, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar were released.

1. Research Recommendations for Farmers and Scientific Community (2004-05 to 2016-17)
2. મરી મસાલા અને તેજાના પાકોની ખેતી
3. ભાંભરા પાણીમાં જીંગા ઉછેર
4. નાળીયેરીની આધુનિક ખેતી પધ્ધતિ
5. બાગાયતી પાકોમાં ખેતીલક્ષી સંશોધન ભલામણો
6. Status of Summer Perl Millet in Gujarat
7. પશુપાલન વ્યવસાયમાં આવક બમણી કરવાના પગથિયા (DVD)

The President of the function, Shri R. C. Faldu Saheb, Hon'ble Minister of Agriculture, Fisheries and Animal Husbandry congratulated the scientists for their efforts in developing the agricultural technologies. He mentioned that role of Agricultural scientists cannot be ignored in doubling the income of farmers. He stressed upon the need to strengthen the research activities pertaining to increasing the yield with maintaining the natural resources so that productivity can sustained year after year, value addition and quality production with nutritional security. At the end, again he admired the role played by the Agricultural Universities in the growth of Gujarat state and nation.

At the end of the function, Dr. K. B. Kathiria, Director of Research & Dean, PG Studies, AAU, Anand on behalf of State Agricultural Universities & Kamdhenu University proposed vote of thanks and praised the facilities provided by the authorities and staff members of Junagadh Agricultural University, Junagadh for successful conduct of the 14th Combined Joint AGRESCO meeting of State Agricultural Universities and Kamdhenu University.

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