



DEPARTMENT OF LIVESTOCK PRODUCTION MANAGEMENT

College of Veterinary Science & Animal Husbandry

Navsari Centre (Kamdhenu University), Gandhinagar

Eru Char Rasta, Vijalpore, Ta: Jalalpore, Dist. Navsari - 396450



Teaching Faculty in Department

Sr. No.	Name	Designation	Contact Details	Joining Year in NAU	Qualification	Total Experience	Publications Research Papers
1	Dr. Rana Ranjeet Singh	Associate Professor & Head	9099062296 ranarsingh@kamdhenuuni.edu.in	2009	Ph.D.	13 Years	Research papers: 50 Book chapters : 01
2	Dr. Thakur Krishna Shankar Rao	Assistant Professor	9426921859 tksrao@kamdhenuuni.edu.in	2010	Ph.D.	110 Years	Research papers: 25 Book chapters : 02

ABOUT THE DEPARTMENT

The department is engaged in teaching, research and extension activities as briefly mentioned in following sections

a) Teaching: Department is engaged in fulfilling the teaching requirements of undergraduate & postgraduate students in the subject of Livestock Production and Management under Veterinary & Animal Science degree programmes.

b) Research:Department is engrossed in carrying out various research activities to find out novel technique/s and/or application/modification in any existing production augmenting livestock management techniques. The salient research achievements of the department are

- Completed 26 AGRESCO projects and presently we are having 01 externally funded project and 01 AGRESCO project.
- 26 M. V. Sc.&05 Ph.D. students have already completed their degree programmes.
- Presently,03 M.V.Sc. & 01 Ph.D. students are pursuing their studies.
- Department has 07 research recommendations to its credit.

c) Extension:In order to update the recent developments in the subject, department is imparting training to scientists, faculty members of agriculture and allied subjects, veterinary officers, livestock inspectors and students farmers etc under various schemes/projects. This department is also imparting training to the farmers through various shibirs and camps organized by University, Dairy Co-operatives, Animal Husbandry Department etc. We have organized

- 05 ASCAD training programmes for field Veterinary Officers
- 07 ASCAD training programmes for Livestock Inspectors
- 02 training programmes/scientist meet for Farmers
- 02 National seminars
- 02 Three-day training programmes
- 01 Five-day international online training programme
- 01 Fifteen-day skill development course
- 04 National webinars
- 01 Three months online certificate course
- 01 Twenty-one days online training programme
- 01 Farmers meet
- 02 Exposure visits for students
- 02 Distinguished lectures
- 01 Virtual farmers competition
- Developed Mobile application: Butting animal science (01)
- Developed short video film (01)etc

Above and beyond these activities, department is also providing consultancy services to the needy farmers.

Department has identified following Thrust Areas for Future Research

- Area specific, need-based livestock management practices for different species of livestock i.e., cattle, buffalo, goat, rabbit and poultry under different farming systems.

- Smart dairy farming technologies viz. Artificial intelligence, deep learning, machine learning, image processing etc.
- Application of animal behavior and welfare science as a productivity augmenting tool.
- Environmental sustainability issues (Water footprint, water quality and carbon footprint) in livestock rearing and adaptability of livestock species under coastal area.
- Development of model livestock farms for different animal species especially the “model dairy farm” for developing cost effective tools, equipments, software packages for farmer`s herd.
- Morphometric and biometric traits of livestock.
- Disease and production prediction and early warning system and managerial interventions at macro and micro level.
- Information and communication tools (Mobile Applications, Web portals, expert system setc) for farmers, students and scientists.
- Livestock waste management, recycling, up cycling, odour management and to explore new avenues for the value addition of livestock wastes.

ACHIEVEMENTS

a) AWARDS & RECOGNITIONS

1. Dr. C. M. Singh Award (Gold Medal) awarded to the best Ph.D. Scholar (2009) by IVRI, Izatnagar, Bareilly, U.P., India.
2. Best oral presentation award in National Seminar on sustainable development of tribal areas through integrated and eco-friendly approaches held from 11-13 December, 2009 at KVK, NAU, Waghai (Dang), Gujarat.
3. J N Pandey Best poster presentation award, 1st (As co-author) SAPI seminar-2012, XXI Annual Conference of Society of Animal Physiologists of India and National Symposium on Physiological Research in Changing Environmental Scenario for Sustainable Livestock and Poultry Production held at Vanbandhu College of Veterinary Science & Animal Husbandry, NAU, Navsari-396450, November, 6 – 8.
4. Best Poster presentation award, 2nd, ISAPM silver jubilee convention & national seminar on “Revisiting management policies and practices for indigenous livestock & poultry breeds as eco-friendly economic producers” held during October 9-11, 2014 at NAU, Navsari.
5. Best Oral presentation award, 2nd, ISAPM silver jubilee convention & national seminar on “Revisiting management policies and practices for indigenous livestock & poultry breeds as eco-friendly economic producers” held during October 9-11, 2014 at NAU, Navsari.
6. Best oral presentation award in ISAPM silver jubilee convention & national seminar on “Revisiting management policies and practices for indigenous livestock & poultry breeds as eco-friendly economic producers” held during October 9-11, 2014 at NAU, Navsari.
7. Best oral presentation award in national seminar on forest and tree-based land use system for livelihood, nutritional and environmental security organized by Navsari Agricultural University & Indian society of tree scientists, Solan, Himachal Pradesh during 21-23, December, 2016.

8. Best Poster Presentation Award in XXVI Annual Conference of SAPI and National Symposium, held at Bidar, Karnataka 21-22 December, 2017.
9. Elsevier Reviewer Recognition certificate awarded September, 2017, In recognition of the review made for Journal Animal Reproduction Science, Elsevier publication, Amsterdam, Netherland 2017.
10. Best oral presentation award- 2017, (As Co-author), XXVI Annual Conference of Society of Animal Physiologists of India (SAPI) and National Symposium held at College of Veterinary Science and Animal Husbandry, Bidar, Karnataka, 21-22 December 2017.
11. J N Pandey best poster award 2018, (As Co-author), XXVII Annual Conference of Society of Animal Physiologists of India (SAPI) and National Symposium organized at ICAR-NDRI, Karnal, Haryana, 27- 28 November 2018.
12. Best oral presentation award national conference on smallholder livestock producers` in India: opportunity and challenges and 25th convention of ISAPM, SDAU, Sardarkrushinagar, Gujarat during 11-13 April, 2018.
13. Best oral presentation award in National seminar on Secondary Agriculture: significance and scope in the era of globalization organized by NAU, Navsari during 27-29, November, 2019.
14. Best poster presentation award in National seminar on Secondary Agriculture: significance and scope in the era of globalization organized by NAU, Navsari during 27-29, November, 2019.
15. Best oral presentation award in National Canine practice and National Symposium on maximizing diagnosis, therapy and welfare in canine practice in current scenario, organized by college of veterinary science & animal husbandry, NDVSU, Jabalpur (M.P.) during 21-23rd January, 2020.
16. Best poster presentation award in the National seminar on secondary agriculture: Significance and scope in the era of globalization, sponsored by NAHEP-CAAST-NAU during November 27th to 29th 2019.
17. Best oral presentation award in the National seminar on secondary agriculture: Significance and scope in the era of globalization, sponsored by NAHEP-CAAST-NAU during November 27th to 29th 2019.
18. Best oral presentation award in the 17th National congress on canine practice and national symposium on "maximizing diagnosis therapy and welfare in canine practice in current scenario" organized by college of veterinary science and animal husbandry, NDVSU, Jabalpur (MP) during 21st to 23rd January 2020.
19. Best oral presentation award in the National conference on "Paradigm shift in livestock management to obtain high quality animal products for enhancing farm economy and entrepreneurship ISAPM-2020" organized by post-graduate institute of veterinary education and research, RAJUVAS, Jaipur during 4th to 6th February 2020.

b) RESEARCH PUBLICATIONS

Sr. No.

Published research papers

1. B.S. Divekar and L. H. Saiyed.2008. Constraints faced by professional Gir cattle owner of Anand district in Gujarat. Indian Journal of Field veterinarian 3(3):72-73.
2. B.S. Divekar and L. H. Saiyed.2008. Feeding practices followed by professional

- cattle owner of Anand district. *Indian Journal of Field veterinarian* 3(4):31-34.
3. Rana Ranjeet Singh, Triveni Dutt, H.C. Joshi, R. R. K. Sinha and Mukesh Singh. 2009. Effect of body condition score on performance traits in crossbred dairy cows. *Journal of Applied Animal Research* 36 (2), 283-286.
 4. Rana Ranjeet Singh, Triveni Dutt, A. B. Mandal, H.C. Joshi, H.N. Pandey and Mukesh Singh. 2009. Effect of body condition score on blood metabolite and production performance in crossbred dairy cattle. *Indian Journal of Animal Sciences* 79 (6), 629-633.
 5. Triveni Dutt, R. R. K. Sinha, R. R. Singh, Sanjay Kumar, Bharat Bhushan and Mukesh Singh. 2009. Economics of milk production under field condition. *Indian Journal of Animal Sciences* 79(7):706-709.
 6. R. R. K. Sinha, Triveni Dutt, Bharat Bhushan R. R. Singh and Mukesh Singh. 2009. Production and reproduction profile of cattle and buffaloes in Bareilly district of Uttar Pradesh. *Indian Journal of Animal Sciences* 79(8):786-787.
 7. R. R. K. Sinha, Triveni Dutt, R. R. Singh, Bharat Bhushan, Mukesh Singh and Sanjay Kumar. 2009. Feeding and housing management practices of dairy animals in Uttar Pradesh. *Indian Journal of Animal Sciences* 79(8):829-833.
 8. Rana Ranjeet Singh, Triveni Dutt, Amit Kumar, Mukesh Singh. 2010. Estimation of variances due to direct additive genetic and maternal effects for growth traits in Vrindavani cattle. *Journal of Applied Animal Research* 38: 145-148.
 9. Chauhan, I. S., Gupta, A. K., Khate, K., Chauhan, A., Rao, T. K. S., Pathak, S., Hazra, R. and Singh, M. 2010. Genetic and Non genetic factors affecting semen production traits in Karan Fries crossbred bulls, *Tropical Animal Health Production*, DOI 10.1007/s11250-010-9641-z.
 10. B.S. Divekar and L. H. Saiyed. 2010. Socio-economic and literacy status and milking practices followed in middle Gujarat by professional Gir cattle breeders. *Indian Journal of Field veterinarian* 4(4):50-54.
 11. B.S. Divekar and L. H. Saiyed. 2010. Housing and breeding practices followed by professional Gir cattle owner of Anand district. *Indian Journal of Field veterinarian* 5(4):9-12.
 12. R. J. Modi and N. B. Patel. (2010) Breeding practices in dairy animal of rural area under milk shed of North Gujarat. *Indian Journal of Field Veterian*. Vol. 5 April-june (2010)
 13. Rana Ranjeet Singh, Triveni Dutt, Amit Kumar and Mukesh Singh. 2010. Comparison of Sire Evaluation Methods for Milk Production in Vrindavani Cattle. *Indian Journal of Animal Sciences* 80 (5):448-450.
 14. R.R.K.Sinha, Triveni Dutt, Bharat Bhushan, R. R. Singh, M. Singh and Sanjay Kumar. 2010. Comparative studies of calf rearing and milking management practices in rural, semi-urban and urban areas of Bareilly district of Uttar Pradesh. *Indian Journal of Animal Sciences* 80(5):483-485.
 15. G P Sabapara, P M Desai, V B Kharadi, L H Saiyed and Rana Ranjeet Singh. 2010. Housing and feeding management practices of dairy animals in the tribal area of south Gujarat. *Indian Journal of Animal Sciences* 80 (10):1022-1027.
 16. G P Sabapara, P M Desai, Rana Ranjeet Singh and V B Kharadi. 2010. Breeding and health care management status of dairy animals in the tribal area of south Gujarat. *Indian Journal of Animal Sciences* 80(11): 92-95.
 17. R Ranjeet Singh, T Dutt, M Singh, A Kumar. 2010 . Association of udder and teat dimensions with production traits in Vrindavani cattle. *Indian Journal of Dairy Science* 63(6) 455.

18. Rana Ranjeet Singh, Triveni Dutt, Amit Kumar, A K S Tomar and Mukesh Singh. 2011. Evaluation of production and reproduction traits in Vrindavani cattle. *Indian Journal of Animal Sciences* 81 (3): 296–98.
19. Rana Ranjeet Singh, Triveni Dutt, Amit Kumar, A K S Tomar and Mukesh Singh. 2011. On-farm characterization of Vrindavani cattle in India. *Indian Journal of Animal Sciences* 81 (3): 267–71.
20. Rana Ranjeet Singh, Triveni Dutt, Amit Kumar. 2011. Genetic analysis of growth performance of Vrindavani cattle. *Indian Journal of Animal Sciences* 81 (5): 525–26.
21. Rana Ranjeet Singh, Triveni Dutt, Amit Kumar. 2011. Prediction of body weights of Vrindavani cattle using morphometric measurements. *Indian Veterinary Journal* 88 (9): 148-150.
22. Rao, T. K. S., Mohanty, T. K., Chauhan, J. S., Singh, M., Parveen, K., Meena, R. K. 2011. Freezing Protocol for Crossbred bull semen. *Indian Veterinary Journal*, Volume 88 (10): 71-73.
23. Kishor, Amrendra; Raina, VS; Mohanty, TK; Gupta, AK; Bishist, R; Singh, M; Rao, TKS. 2011. Evaluation of Antioxidants for Preservation of Cattle Semen. *Indian Veterinary Journal*, 88 (3):37.
24. G P Sabapara, P M Desai, Rana Ranjeet Singh, and V B Kharadi. 2012. Constraints of tribal dairy animal owners of south Gujarat. *Indian Journal of Animal Sciences* 82 (5): 538–542.
25. Thakur Krishna Shankar Rao, Mohanty.T.K, Gupta.A.K, Chauhan I.S., Singh M and Singh R.R. 2012. Efficacy of filtration of low grade ejaculates of crossbred bull semen. *Indian Veterinary Journal* 89 (11): 44-45.
26. Rao, TKS; Patel, NB; Fulsoundar, AB; Gamit, VK. 2013. Constraints limiting the livestock productivity of tribal community in high rain coastal region of India. *Research Journal of Animal Husbandry and Dairy Science*, 4 (2): 42-46.
27. NB Patel, JB Patel, TKS Rao, RR Singh, RJ Modi. 2013. Housing management practices of dairy animal in Patan district of North Gujarat region. *Indo-American Journal of Agricultural and Veterinary Sciences*, 1:31-37.
28. N. B. Patel, L H Saiyed, T. K. S. Rao, Rana Ranjeet Singh, R. J. Modi and G. P. Sabapara. 2013. Status and constraints of dairying in the tribal households of Narmada valley of Gujarat-*Indian Animal Science Reporter Journal* 7(3):83-89.
29. Singh, M., Raina, V. S., Mohanty, T. K., Gupta, A. K., Tripathi, M. K. and Rao, T. K. S. 2013. Effect of some selected amino acids on preservation of cattle bull semen in soybean based extender. *Veterinary Practitioner*, Vol. 14 (2): 261-262.
30. Patel, N. B., Patel, J. B., Fulsoundar, A. B., Rao, T. K. S. and Modi, R. J. 2014. Feeding management practices of dairy animals in patan district of north Gujarat region. *Indian Journal of Animal Production and Management*. Vol 30(3-4) 76-81.
31. Patel, NB; Kavadi, SD; Rao, TKS. 2014. Eco-friendly livestock management practices followed by tribal households of Narmada valley region of India. *Journal of Applied and Natural Science*, 6 (2): 512-518.
32. Rao, TKS; Patel, NB; Tyagi, KK. 2015. Eco friendly housing and feeding management of dairy animals in tribal area of high rain coastal India. *Research in Environment and Life Sciences*, 8(1): 75-80.
33. N. B. Patel, A. B. Fulsoundar T. K. S. Rao, R. R. Singh and J. M. Patel. 2015. Effect of body cooling systems on micro-climatic variable in semi -loose house for animals during hot-dry and hot-humid conditions of coastal India *Journal of Applied and Natural Science* 7 (2): 729 – 733.
34. Rao, T. K. S., Patel, N. B. and Gamit, K. C. 2015. Nature Friendly breeding, health

- care and milking management of diary animals in tribal area of high rain coastal Indian Journal of Environment and Bioscience, Vol. 29(2).
35. PM Gamit, Rana Ranjeet Singh, Amit Kumar, Sandhya Choudhary, VB Kharadi and AB Fulsoumar, (2015) Facets of Estrus Behavior in Surti Buffaloes. *Advances in Dairy Research* 3 (149): 1000149 doi: 10.4172/2329 888X.1000149.
 36. Prajapati V. S., Singh R. R., Kharadi V. B. and Chaudhary S. S. (2015) Status of Breeding and Health Care Management Practices of Dairy Bovines in the Rural and Urban Areas of South Gujarat of India. *Journal of Animal Science Advances* 5 (11): 1514-1521 DOI:10.5455/jasa.20151118111001 Peer reviewed.
 37. Vijay S Prajapati, Rana Ranjeet Singh, A B Fulsoumar and N B Patel (2015) Management practices of dairy animals in the Navsari district of South Gujarat. *Indian journal of Animal Production & management* 31 (3-4): 26-32.
 38. Piyush Dubey, Rana Ranjeet Singh, Sandhya S Choudhary and V B Kharadi (2015) Postpartum Female Sexual Behaviour in Surti Buffaloes. *Livestock Research International* 3 (4): 77-81.
 39. V. S. Prajapati, Rana Ranjeet Singh, Sandhya S Choudhary and N. B. Patel (2015) Knowledge Level of Dairy Farmers Regarding Recommended Dairy Management Practices. *Livestock Research International* 3 (4): 82-84.
 40. N.B. Patel, A.B. Fulsoumar, T.K.S. Rao, R.R. Singh, S.S. Chaudhry and J.M. Patel. 2016. Influence of hot-dry and hot-humid conditions on hematological and biochemical profile of Surti buffaloes (*Bubalis bubalis*) under different cooling system. *Buffalo Bulletin* (October-December 2016) 35 (4) 677-688.
 41. Prajapati V.S., Singh Rana Ranjeet and Chaudhari G.M. 2016. Socio-Economic Status of Livestock Farmers of Navasari District Of South Gujarat. *International Journal of Agriculture Sciences* 8,(13), 1182-1183.
 42. P. M. Gamit, Rana Ranjeet Singh, Amit Kumar, V. B. Kharadi and N. B. Patel. 2016. Relationship of postpartum interval to estrus, body condition score, milk yield and blood biochemical parameters in Surti buffaloes. *International Journal of Applied and Natural Science* 8 (2): 899 - 904 (2016).
 43. S. J. Jadav, Durgga R.V, K.K. Tyagi and R.R. Singh. 2016. Economic performance of rural and peri urban dairy Farmers. *Journal of Livestock Science.*, 7: 215-219.
 44. V. S. Prajapati, G. M. Chaudhari, V. L. Parmar, R R Singh and N B Jadav. 2016. Breeding practices in dairy animals under milkshed area of South Gujarat. *The Indian Journal of Veterinary sciences & Biotechnology*, 12(1): 51:53.
 45. Das, B., Kumar, N., Jadav, M. M., Solanki, J. B. and Rao, T. K. S. 2017. Physio-biochemical parameters: a potential tool for target-selective treatment of haemonchosis in the small ruminants. *Tropical Animal Health Production*, 49(8): 1577-1589.
 46. Rana Ranjeet Singh, Sandhya S. Choudhary, N. B. Patel and V K Singh. 2017. Constraints in adoption of various dairy animal management practices in the coastal areas of South Gujarat. *The Indian Journal of Veterinary Sciences & Biotechnology*. 12 (4): 57-59.
 47. V S Prajapati, R R Singh, N B Jadhav, P S Sharma and V Undhad 2017 Calf management practices in dairy animals of rural and urban area under milk shed of South Gujarat. *Research Journal of Animal Husbandry and Dairy Science* 8 (2), 99-102.
 48. Rana Ranjeet Singh, Piyush Dubey, SS Choudhary, Amit Kumar, NB Patel and VK Singh. 2017. Influence of body condition score on milk yield and reproduction parameters in Surti buffaloes. *Ruminant Science* 6 (1), 99-102.
 49. Rana Ranjeet Singh, SS Choudhary, NB Patel, Amit Kumar and VK Singh. 2017.

- Status of housing and feeding management practices of diary animals in the coastal area of South Gujarat. *Ruminant Science* 6 (2), 201-206.
50. Damor, V. M., Patel, N. B., Rao, T. K. S. and Patel, K. A. 2017. Constraints faced by the dairy farmers in Bharuch district of south Gujarat region. *Trends in Biosciences*, 10(34): 7259-7261.
 51. Sorathiya, LM; Fulsouadar, AB; Rao, TKS; Kumar, Niranjana. 2017. Prevalence and risk factors for gastrointestinal parasitism in traditionally maintained goat flocks of South Gujarat. *Journal of Parasitic Diseases*, 41 (1): 137-141.
 52. Rao, TKS; Mohanty, TK; Bhakat, M. 2017. Assessment of antioxidants for preservation of crossbred bull semen in Tris based extender. *Indian Journal of Animal Research*, 51 (6): 993-997.
 53. Rao, TKS; Mohanty, TK; Bhakat, M. 2017. Effect of vitamin E supplementation on semen and blood profile of vaccinated crossbred bulls. *Indian Journal of Animal Science*, 87 (4): 456-460.
 54. Rao, TKS; Mohanty, TK; Bhakat, M. 2017. Levamisole as an immunomodulator to ameliorate vaccination stress in cross bred bulls: Short communication, *Indian Journal Animal Science* 87 (7): 840-843.
 55. K A Patel, R R Singh, S S Chaudhary, M Choubey, V Damor. 2017. Effects of artificial rearing of Surti buffalo calves on milk yield, composition, somatic cell count and postpartum estrus interval in Surti buffaloes. *International Journal of Agriculture Sciences* 9 (46), 4775-4778.
 56. Piyush Dubey, Rana Ranjeet Singh, Sandhya S. Choudhary, Kuldeep K. Verma, Amit Kumar, P. M. Gamit, Shireen Dubey & Komal Prajapati. 2018. Post parturient neonatal behaviour and their relationship with maternal behaviour score, parity and sex in Surti buffaloes. *Journal of Applied Animal Research* 46 (1), 360-364.
 57. R. V. Vora, N. B. Patel, T. K. S. Rao, R. N. Gelani. 2018. Post Parturient Behavioural Profiles in Primiparous and Multiparous Gir Cows. *International Journal of Current Microbiology and Applied Sciences*, 7 (12): 2878-2883.
 58. Gamit, KC; Rao, TKS; Tyagi, KK; Chaurasia, S; Sriranga, KR; Patel, NB. 2018. Post-Kidding Dam-Kid interaction and serum profile in Single-And Twin-Foetus bearing surti goats: Short communication. *The Indian Journal of Small Ruminants*, 24 (1): 165-167.
 59. M Choubey, V R Patel, A P Raval and R R Singh. 2018. Effect of fenugreek seed supplementation on lactation performance of Surti buffaloes. *Indian Journal of Animal Sciences* 88 (3), 322-325.
 60. SS Chaudhary, VK Singh, RR Singh, SB Patel, TD Manat, LM Sorathiya. 2018. Effect of chromium supplementation on haemato-biochemical constituents and milk production in hot humid season in Surti buffaloes. *Ruminant Science* 7 (1), 97-100.
 61. Komal Prajapati, RanaRanjeet Singh, SS Chaudhary, Amit Kumar and NB Patel. 2018. Effect of extended photoperiod during winter season on production and blood biochemical parameters in Surti goats. *Ruminant Science* 7 (1), 109-112.
 62. Chaurasia, S., Vyas, K. N., Menaka, R., Panchal, K. M. and Rao, T. K.S. 2018. Age related gross morphological studies on the thymus in postnatal Surti goat (*Capra hircus*). *Indian Journal of Animal Research*, Print ISSN:0367-6722 / Online ISSN:0976-0555, DOI: 10.18805/ijar.B-3474.
 63. Chaurasia, S., Vyas, K. N., Menaka, R., Panchal, K. M. and Rao, T. K. S. 2018. Post-natal histomorphological changes in thymus of surti goat. *Indian Journal of*

- Small Ruminants, 24 (2): 288-292.
64. V K Singh, Sandhya S Chaudhary, Tanvi D Manat and Rana Ranjeet Singh. 2018. Effect of Yeast (*Saccharomyces cerevisiae*) supplementation on haematological parameters in Surti buffalo calves. The Indian Journal of Veterinary Sciences & Biotechnology 14:1 34-37.
 65. Gamit, KC; Rao, TKS; Patel, NB; Kumar, N; Chaudhary, SS; Solanki, TH; Manat, TD. 2019. Blood biochemical and hormonal profiles vis-a-vis production performance of single and twin kid bearing Surti goats (*Capra hircus*). Indian Journal of Animal Research, 53 (2): 270-274.
 66. Sandhya S Chaudhary, Singh Rana Ranjeet, Singh VK, Manat TD, Kharadi VB, Sorathiya L M. 2019. Effect of heat ameliorative measures on microclimate, physiological, blood biochemical parameters and milk production in lactating Surti buffaloes. Indian Journal of Animal Sciences 89 (1):97-104.
 67. Ketan A. Patel, Rana Ranjeet Singh, Sandhya S. Chaudhary, V. K. Singh and M. Choubey. 2019. Study on Conventional vs. Artificial Rearing of Surti buffalo calves. International Journal of Livestock Research 9 (3) 139-147.
 68. Ratre, Praveen; Singh Rana Ranjeet, Chaudhary Sandhya S, Chaturvedani AK, Patel Vipul R, Hanumant, Devkant; 2019. Effect of prebiotic and probiotic supplementation on growth performance and body measurement in pre-ruminant Surti buffalo calves. The Pharma Innovation Journal 8(3): 265-269.
 69. RR Singh, TKS Rao, VB Kharadi, NB Patel. 2019. Effect of temperament on milking behavior and milk yield in Surti buffaloes. Indian Journal of Animal Production and Management 35 (3-4), 81-84.
 70. RR Singh, TKS Rao, NB Patel, VB Kharadi. 2019. Array of existing breeding and health care management practices followed by dairy animal owners of coastal area of south Gujarat. Indian Journal of Animal Production and Management 35 (3-4), 11-14.
 71. VK Singh, SS Chaudhary, TD Manat, RR Singh 2019. Effect of supplementation of different yeast forms on rumen fermentation characteristics and microbial profile in postpartum Surti buffaloes. International Journal of Chemical Studies 7 (5) 189-193.
 72. S.K. Pradhan, B. Kumar, K.B. Banakara, V.R. Patel, H.R. Pandya and R.R. Singh. 2020. Effect of Boron supplementation on the performance and metabolism of minerals in broiler chicken. Animal Nutrition and Feed Technology 20: 39-49.
 73. YD Padheriya, RR Singh, SS Chaudhary, NB Patel. 2020. Effect of photoperiod on haematological parameters of Surti does and kids. The Indian Journal of Veterinary Sciences and Biotechnology 16 (2, 3 & 4), 67-71.
 74. Sanjay K. Pradhan, Satish B. Deshpande, Rana R. Singh and Vijaysingh S. Dabas 2021. Effect of Active Dry Yeast Supplementation on Nutrient Digestibility, Rumen Metabolites and Performances of Surti Goat Kids. Indian J. Anim. Nutr. 2021. 38 (1): 23-30.
 75. Sanjay K. Pradhan, B. Kumar, Kantesh B. Banakara, R.R. Singh, V.B. Kharadi, S.S. Chaudhary. 2021. Effect of Boron Supplementation on Bone Mineralization and Antioxidant Status in Broiler Chicken. Asian Journal of Dairy and Food Research, Volume 40 Issue 3: 309-314 (September 2021).
 76. A P Raval, V R Patel, L M Sorathiya, N B Patel and R R Singh. 2021. Effect of

dietary inclusion of vegetable oils on nutrient utilization and ruminal fermentation in Surti goats. Indian Journal of Animal Sciences 91 (11):987–990, November 2021.

c) RESEARCH PROJECTS (External Agency / Institutional Projects)

Sr. No.	Title	Funding Agency	Grant (in. Rs.)	Principal Investigator / Co PI	Completed / On-going
1.	Study on dairy husbandry practices in Navsari taluka of Navsari district	Institutional project (AGRESCO)	-	Dr. R. R. Singh	Completed
2.	Study on Milking Behaviour of Surti Buffalo.	Institutional project (AGRESCO)	-	Dr. R. R. Singh	Completed
3.	Influence of Body Condition Score on Performance and Blood Biochemical Profile in Surti Buffalo	Institutional project (AGRESCO)	-	Dr. R. R. Singh	Completed
4.	Study on dairy husbandry practices in Jalalpore taluka of Navsari district	Institutional project (AGRESCO)	-	Dr. G. P. Sabapara	Completed
5.	Study on dairy husbandry practices in Chikhli taluka of Navsari district	Institutional project (AGRESCO)	-	Dr. T. K. S. Rao	Completed
6.	To study diaphoretic pattern of Surti buffalo.	Institutional project (AGRESCO)	-	Co-PI: Dr. R. R. Singh	Completed
7.	Use of physical activity monitoring for estrus detection in Surti buffaloes.	Institutional project (AGRESCO)	-	Dr. R. R. Singh	Completed
8.	Study on behavioural facets of Surti buffaloes.	Institutional project (AGRESCO)	-	Dr. R. R. Singh	Completed
9.	Evaluation of feeding and managerial practices of pet dogs in the parts of South Gujarat region	Institutional project (AGRESCO)	-	Co-PI: Dr. R. R. Singh	Completed
10.	Effects of rubber mat bedding on the lying behavior, cleanliness and hoof and hock injuries of crossbred cows.	Institutional project (AGRESCO)	-	Dr. N. B. Patel	Completed
11.	Evaluation of buffalo	Institutional	-	Dr. G. P.	Completed

	management practices in peri-urban dairy farms of Surat city.	project (AGRESCO)		Sabapara	
12.	Study of Suckling behavior and mothering ability vis-à-vis production performance of Surti goat.	Institutional project (AGRESCO)	-	Dr. T. K. S. Rao	Completed
13.	Evaluation of phytogenic feed additive supplementation on growth performance, nutrient utilization, anti-oxidants and health status of Surti goat kids.	Institutional project (AGRESCO)	-	Co-PI: Dr. R. R. Singh	Completed
14.	Effect of fenugreek supplementation on milk yield and quality in lactating Surti buffaloes	Institutional project (AGRESCO)	-	Co-PI: Dr. R. R. Singh	Completed
15.	Economics of growth performance due to dietary inclusion of tanniferous leaves in kids infested with gastrointestinal helminthes	Institutional project (AGRESCO)	-	Co-PI: Dr. R. R. Singh	Completed
16.	Effect of feeding processed maize on fattening of male Surti kids	Institutional project (AGRESCO)	-	Co-PI: Dr. R. R. Singh	Completed
17.	Strategies to mitigate the impact of climate change	Institutional project (AGRESCO)	-	Co-PI: Dr. R. R. Singh	Completed
18.	Strategies to mitigate the impact of climate change: Effect of 75% green agromet on production, reproduction and stress parameters in Surti buffaloes.	Institutional project (AGRESCO)	-	Co-PI: Dr. R. R. Singh	Completed
19.	Effect of bedding materials on broiler performance	Institutional project (AGRESCO)	-	Co-PI: DR. N. B. Patel, Dr. R. R. Singh, T. K. S. Rao	Completed
20.	An investigation on skin temperature differentials in relation to estrus in Surti goats by infrared	Institutional project (AGRESCO)	-	Dr. R. R. Singh	Completed

	thermography.				
21.	Effect of various light sources on broiler performance	Institutional project (AGRESCO)	-	Co-PI: Dr. R. R. Singh	Completed
22.	Identification of prolific Surti goats on the basis of body linear traits and temperaments.	Institutional project (AGRESCO)	-	Dr. T. K. S. Rao	Completed
23.	Measurement of heat stress and its impact on behavior and production performance in surti buffaloes in different seasons.	Institutional project (AGRESCO)	-	Co-PI: Dr. R. R. Singh	Completed
24.	Haemato-biochemical and oxidative stress profiling in young Surti goats.	Institutional project (AGRESCO)	-	Co-PI: Dr. R. R. Singh	Completed
25.	Cutaneous thermal profiling of Surti does in different seasons	Institutional project (AGRESCO)	-	Co-PI: Dr. R. R. Singh	Completed
26.	Effect of heat ameliorative measures during dry period on production performance in subsequent lactation in Surti buffaloes	Institutional project (AGRESCO)	-	Co-PI: Dr. R. R. Singh	Completed
27.	Placental morphometry vis-à-vis neonatal behavior in Surti buffaloes	Institutional project (AGRESCO)	-	Dr. T. K. S. Rao	On Going
28.	Establishment of Secondary Agriculture Unit at NAU, Navsari under World Bank funded National Agricultural Higher Education Programme (NAHEP), ICAR, New Delhi	Externally funded: NAHEP-CAAST	24.0 crores	Co-PI: Dr. R. R. Singh	On Going

d) RESEARCH RECOMMENDATIONS

Recommendations for scientific community:

1. It is advised to maintain body condition score of Surti buffaloes between 3.25 to 3.5 at calving as it improves milk production (465.1 vs. 330.9 kg/ 100 day & peak yield 7.5 vs. 5.8 kg), postpartum interval to estrus (32.4 vs. 46.5 days), service period (61.9 vs. 75.5 days) and estrus intensity score (3.6 vs. 2.5).
2. For early selection of breeding male Surti kid at 60 day of age more than 2.5 suckling score and 1.0 maternal care score is recommended.

3. Thermal images of the vaginal and rectal surface can be used as a non-invasive tool for detecting estrus in Surti goats.
4. It is recommended to use additional measurement in body linear traits like heart girth (74.36 vs. 70.30 cm), height at wither (72.16 vs. 69.30 cm), height at croup (62.50 vs. 58.45 cm), tuber coxae distance (14.22 vs. 13.66 cm), clearance at udder (14.91 vs. 12.12 cm) and clearance at sternum (9.81 vs. 8.57 cm) for selecting prolific Surti goats as compared to singlet-bearing goats.

Recommendations for farmers:

5. Dairy farmers are recommended to follow chaffing and mixing of fodders, preserve fodders when available in excess availability, colostrums feeding to calves within two hours of birth, sanitation of shelter, mineral mixture supplementation and follow full hand milking with dry hands in Navsari and Jalalpore talukas of Navsari district.
6. It is recommended to farming community that the primiparous Surti buffaloes having docile temperament produce more milk (492.1 vs. 328.6 kg) during early lactation (100 days) than the animals having restless-nervous temperament. Therefore, farmers are advised to interact more generously with them particularly with first-calving Surti buffaloes.
7. The progressive farmers are recommended to use rubber mat (6 feet x 4 feet x 17 mm) on concrete floor to improve and minimize the limb affections of crossbred cows.

Recommendations as a Co-PI & Member in the AGRESKO Projects with other Departments: 10

e) COURSES OFFERED BY THE DEPARTMENT (Theory and Practical)

i) Undergraduate Courses

Sr. No.	Name of Course	Credits
1	UNIT-1: General livestock management	4+2
2	UNIT-2: Fodder production and conservation	
3	UNIT-3: Livestock production management-ruminants	
4	UNIT-4: Zoo animals production management	
5	UNIT-5: Animal welfare	
6	UNIT-6: Poultry production management	
7	UNIT-7: Diversified poultry production and hatchery management	
8	UNIT-8: Laboratory or rabbit or pet animal production	
9	UNIT-9: Swine or equine or camel, yak and mithun production management	

ii) Master degree courses

Sr. No.	Code	Course title	Credits
1.	LPM 601	Cattle and buffalo production and management	2+1
2.	LPM 602	Sheep and goat production and management	2+1
3.	LPM 603	Swine production and management	1+1
4.	LPM 604	Laboratory animal production and management	1+1
5.	LPM605	Shelter management	1+1
6.	LPM 606	Principles of environmental hygiene and waste management	2+0
7.	LPM 607	Climatology and animal production	1+0
8.	LPM 608	Poultry farm and hatchery management	2+1

9.	LPM 609	Farm animal behavior	1+0
10.	LPM 610	Integrated livestock farming system	2+1
11.	LPM 611	Equine production and management	1+1
12.	LPM 612	Wild life management and conservation	2+0
13.	LPM 613	Livestock business management	1+1
14.	LPM 691	Master's seminar	1+0
15.	LPM 699	Master's research	20

ii) Ph.D. Courses

Sr. No.	Code	Name of Course	Credits
1.	LPM 701	Advances in cattle and buffalo production and management	3+0
2.	LPM 702	Advances in sheep and goat production and management	2+1
3.	LPM 703	Advances in swine production and management	2+1
4.	LPM 704	Advances in laboratory animal production and management	1+0
5.	LPM 705	Advances in poultry production management	2+1
6.	LPM 706	Advances in environmental management	1+1
7.	LPM 707	Advances in equine management	2+0
8.	LPM 791	Doctoral seminar I	1+0
9.	LPM 792	Doctoral seminar II	1+0
10.	LPM 799	Doctoral research	45




DEPARTMENT OF LIVESTOCK PRODUCTION MANAGEMENT

College of Veterinary Science & Animal Husbandry

Navsari Centre (Kamdhenu University), Gandhinagar

Eru Char Rasta, Vijalpore, Ta: Jalalpore, Dist. Navsari - 396450



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Professional Experience	13 Years		
Job profile	Teaching, Research, Extension		
Exams cleared	Merit Scholarship-WBUA&F.Sc. Kolkata, ICAR-JRF, IVRI-Fellowship, ICAR-NET, CCC+ (SPIPA, Surat), Gujarati Vinay Examination.		
Additional competence	Certificate course on MathWorks's: fundamental, deep learning, image processing course, Python: basic and advanced deep learning course, Mobile app development, Farm data management, sharing and services for agriculture development, Intellectual property, Smart farming technologies and secondary agriculture.		
Additional Duties Performed	NCC Officer, Member of board of studies (veterinary science), Member in PME Cell, Member secretary in procurement & purchase committee, Co-PI in NAHEP-CAAST project, Sports advisor, Convener for study circle module of U. G. students, Class room in-charge etc.		
Publications	Research Papers: 53	Training manuals: 14	
	Popular Articles: 14	Souvenir/Compendium: 04	
	Lead Paper/Key Note address:10	Laboratory manual: 12	
	Abstracts: 35	Text book: 01	
Awards/recognitions	17		
Member in advisory committee of PG students	Major Advisor: 11 Minor advisor/member: 23		
Research Projects	Departmental projects: AS PI-06; As Co-PI-19 Externally funded project: Co-PI, NAHEP-CAAST		
Recommendations	For Farming Community:09 For Scientific Community: 08		
Courses taught	LPM-111, 121, 122, 211, 222, 311, 322 and 411, Unit-1, 3, 5, 9, PGS-503 & 506, LPM-603, 606, 607, 608, 609, 610 and 613, LPM-703,705 & 706 and Dairy products management (ABM).		
Competence building	1. International online training programme organized: 01 2. Skill development course organized: 01 3. Certificate course (3 months) organized: 01 4. 21 days training programme organized: 01 5. Webinars organized: 04		

6. Training programmes organized: 14
7. Summer School/Winter School/CAFT programmes attended: 03
8. Seminar/Symposium/Conference attended: 32
9. Mobile application developed: 01
10. Farmer's competition (virtual mode) organized: 01



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Professional Experience	11 Years	
Job profile	Teaching, Research, Extension	
Exams cleared	ICAR-JRF, ICAR-NDRI-Fellowship, NET, CCC+ (SPIPA, Surat)	
Additional Duties Performed	Member in UGTC confidential examination cell, Co-ordinator entrepreneurship training module, Member study circle,	
Publications	Research Papers: 25	Training manuals: 06
	Popular Articles: 14	Souvenir/Compendium: 02
	Lead Paper/Key Note address:10	Laboratory manual: 12
	Abstracts: 30	Book chapter: 03
Awards/recognition	04	
Member in advisory committee of PG students	Major Advisor: 7 Minor advisor/member: 12	
Research Projects	Departmental projects: AS PI-04; As Co-PI-6	
Recommendations	For Scientific Community:02	
Courses taught	LPM-111, 121, 122, 211, 222, 311, 322 and 411, Unit-2, 3, 4, 7, 8, 9 LPM-604, 608, 610, 611 and 612, LPM- 704, 707 and LPM-313 (Diploma Animal Husbandry course)	



Competence building	1. Training programmes organized as member: 04 2. Summer School/Winter School/CAFT programmes attended: 05 3. Seminar/Symposium/Conference attended: 24
Professional Membership	Indian Society of Animal production & Management (ISAPM)
	Society for Conservation of Domestic Animal Biodiversity (SOCDAB)
	Navsari Agricultural University Teachers' Association (NAUTA)

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