




## Livestock Research Station

### Faculty Profile

1	<b>Name:</b>	Dr. K. N. Wadhvani	
	<b>Designation:</b>	Research Scientist and Head	
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	<b>Phone No.:</b>	87809 64773, 94080 73355	
	<b>Joining Date:</b>	1987	
	<b>Qualification:</b>	Ph.D. (LPM)	
	<b>Experience:</b>	33 Years	
	<b>Publication:</b>		
i. Research Paper: 82			
ii. Books : 07			
iii. Chapters : 05			
iv. Articles : 19			
2	<b>Name:</b>	Dr. P. M. Lunagariya	
	<b>Designation:</b>	Assistant Research Scientist	
	<b>Email:</b>	<a href="mailto:drpravinml@aau.in">drpravinml@aau.in</a>	
	<b>Phone No.:</b>	98258 92716	
	<b>Joining Date:</b>	01-12-2006	
	<b>Qualification:</b>	Ph.D. (Animal Nutrition)	
	<b>Experience:</b>	15 Years	
	<b>Publication:</b>		
i. Research Paper: 35			
ii. Chapters : 10			
iii. Articles : 12			
3	<b>Name:</b>	Dr. J. H. Patel	
	<b>Designation:</b>	Assistant Research Scientist	
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	<b>Joining Date:</b>	23-05-2016	
	<b>Qualification:</b>	M.V. Sc. (LPM)	
	<b>Experience:</b>	05 Years	
	<b>Publication:</b>		
i. Research Paper: 05			
ii. Books : 01			
iii. Chapters : 02			
iv. Articles : 05			

## History

Established in 1979, this station is entrusted the responsibility of establishing a crossbred dairy herd which can thrive and produce good amount of milk in middle Gujarat Agro-climatic zone. Research has been taken up to study various aspects of management, reproduction, nutrition, adaptation and economics of milk production.

The farm started with two crosses viz. Jersey x Kankrej and Holstein Friesian x Kankrej. In 1984, HF x K crosses were removed from the herd and only J x K crosses were maintained. In 1991, looking to the performance of inter-se of J x K crosses, blood of HF animals was introduced in the animals building a cow with 25 % HF x 25 % J x 50 % K, the Triple bred. In 2006, the breeding policy of the farm was again revised and research was started on HF x K crosses. At present, the farm has HF x K crosses. Another scheme, entitled “Introduction of mechanization on a dairy farm” is going at the research Station to take care of the paucity of skilled labour since February 2011. Under this project introduce CCTV monitoring systems, installation of bulk milk cooler and automatic pipeline milking machine has been completed. In future, mechanization in feeding through Total Mixed Ration machine (TMR) and machine cleaning of floors will be taken up.

Third scheme “Conservation and improvement of indigenous cattle at Anand” was sanctioned in March, 2016 only. The major objective of the scheme is to work on A1 / A2 milk protein in indigenous and crossbred cattle of Gujarat. In addition studies on innate immunity in cattle will also be taken up.

## Department Details:

### Project 1: LIVESTOCK RESEARCH STATION

**Date of Starting:** March, 1979

**Funding Agency:** Non-Plan

**Budget Head:** 5353

**Principal Investigator:** Dr. K. N. Wadhvani

Research Scientist & Head

Livestock Research Station

Veterinary College, AAU, Anand - 388 110

**Co-Principal Investigator:** Dr. P. M. Lunagariya

Assistant Research Scientist

LRS, Anand.

**Co-Principal Investigator:** Dr. J. H. Patel

Assistant Research Scientist

LRS, Anand.

### Project 2: STRENGTHNING OF LRS

**Date of Starting:** February 1986

**Funding Agency:** State Government

**Budget Head:** 12353

**Principal Investigator:** Dr. K. N. Wadhvani  
Research Scientist & Head  
Livestock Research Station  
Veterinary College, AAU, Anand - 388 110

**Co-Principal Investigator:** Dr. P. M. Lunagariya  
Assistant Research Scientist  
LRS, Anand.

**Co-Principal Investigator:** Dr. J. H. Patel  
Assistant Research Scientist  
LRS, Anand.

**Objectives for projects 1 & 2:**

- A. To establish a crossbred dairy herd having genetic inheritance of 50% Kankrej and 50% exotic cattle
- B. To study different management problems of crossbred animals
- C. To provide reliable basic data necessary for planning large scale cattle development programme
- D. To supply superior bull-calves to different agencies and farmers involved in crossbreeding

**Status:** On-going

**Project-3: Conservation and Improvement of Indigenous Cattle at Anand.**

**Date of Starting:** August-2008

**Funding Agency:** State Government

**Budget Head:** 12973

**Principal Investigator:** Dr. K. N. Wadhvani  
Research Scientist & Head,  
Livestock Research Station,  
Veterinary College, AAU, Anand - 388 110

**Co-Principal Investigator:** Dr. P. M. Lunagariya  
Assistant Research Scientist  
LRS, Anand.

**Co-Principal Investigator:** Dr. J. H. Patel  
Assistant Research Scientist  
LRS, Anand.

**OBJECTIVES:**

- A. To establish a small herd of Elite Gir cattle (100 cows) at LRS, Anand, to conserve and improve Gir genotype under eco-system of middle Gujarat

- B. To serve as a nodal agency in middle Gujarat for supply of superior males and females of Gir breed for *in-situ* conservation
- C. To develop package of practices for management, health, nutrition & reproduction of Gir cattle.

**Project 4: Introduction of Mechanization on a dairy farm**

**Date of Starting:** August-2008

**Funding Agency:** State Government

**Budget Head:** 12303-07

**Principal Investigator:** Dr. K. N. Wadhvani  
Research Scientist & Head,  
LRS, Veterinary College, AAU, Anand

**Co-Principal Investigator:** Dr. P. M. Lunagariya  
Assistant Research Scientist  
LRS, Anand.

**Co-Principal Investigator:** Dr. J. H. Patel  
Assistant Research Scientist  
LRS, Anand.

**OBJECTIVES:**

- A. Introduction of mechanization in dairy animals' farm, demonstration and training
- B. To impart training to veterinarians, other professionals and supportive professionals in dairy farming to develop entrepreneurship and self employment

**Project 5: RKVY Scheme B. H.**

**Funding Agency:** State Government

**Budget Head:** 18557-78

**Principal Investigator:** Dr. K. N. Wadhvani  
Research Scientist & Head  
LRS, Veterinary College, AAU, Anand

**Co-Principal Investigator:** Dr. P. M. Lunagariya  
Assistant Research Scientist  
LRS, Anand

**Co-Principal Investigator:** Dr. J. H. Patel  
Assistant Research Scientist  
LRS, Anand

## **Achievements and list of Research Publication:**

### **Recommendation:**

Recommendation for Scientific Community:

1. Crossbred cattle with 50 % kankrej and 50 % exotic inheritance developed at LRS, Anand are well adopted to agro-climatic condition of middle Gujarat. Under optimum feeding and management, production of 2500 kg and even higher milk per standard lactation (300 days), birth weight around 23 kg, growth rate 450 g/day, age and weight at first calving 41 months and 315 kg, respectively, and service period and calving interval of 120 and 407 days, respectively, were observed and thus these crossbred are recommended as suitable dairy animals for farmers of middle Gujarat.
2. Estrus Synchronization protocol involving i/vg insertion of CIDR for 7 days in combination with estradiol valerate i/m 1.0 mg on first day followed by i/m injection of PGF<sub>2α</sub> 500µg on sixth day and estradiol valerate 0.75 mg 24 hrs later while removing CIDR with double inseminations performed at 48 and 72 hrs after PGF<sub>2α</sub> injection resulted in 100 % ovulatory estrus induction and more than 50 % conception rate at induced estrus in postpartum anoestrus Kankrej cows and cost effective compared to Ovsynch or Ovsynch + CIDR protocol (CR 33.33 & 50.00 %). Hence CIDR is advocated.
3. The transrectal ultrasound scanning using 5 MHz linear transducer on day 26 and 40 post – AI in kankrej cows revealed sensitivity up to 85.71 and 93.75 %, specificity 75.00 and 100.00 % and diagnostic accuracy up to 80.77 and 96.15 %, respectively, for early pregnancy. Hence, the use of USG at day 40 post – AI is advocated for early pregnancy diagnosis in cattle with its advantages of instant result and detecting fetal viability over plain rectal palpation.
4. There is a reduction of 39.73 and 33.91 percent in feed cost per kilo gain in body weight of crossbred calves (HF X Kankrej) from birth to three months of age reared on self made milk replacer (1:10 dilution) consisting of 15 per cent milk, 11 per cent casein, 18 percent maize, 18 percent soyameal, 15 percent soya seed, 8 percent jiggery, 12 percent palm oil and 3 percent minerals, vitamins and salt over milk feeding (control) and feeding commercially available milk replacer.
5. Minimum Temperature, Morning Relative Humidity and Wind Speed are responsible for 66 % of total climatic variations in milk yield. Minimum Temperature and Morning Relative Humidity are negatively correlated, while Wind Speed has positive impact on milk yield.
6. At calving average BCS (on 5 point scale) should be 3.50 to 3.75 for obtaining optimum milk production.
7. Supplemented feeding of rumen protected choline (33.5 %) in total mixed ration @ 40 g/day during 21 pre-calving to 120 post calving day to lactating cows economize milk

production by 29.18 %, reduce dry matter intake for milk production by 36.14 % and total digestible nutrients / kg milk by 34.69.

8. Dairy farmers are recommended that in comparison to sole paddy straw feeding to crossbred cows, feeding of concentrate mixture @ 1 kg/d during dry period and 50 % of milk production during lactation, 10 kg hybrid napier green fodder, mixture of cereal and legume straw (50 % paddy straw: 50 % pigeon pea straw) on ad lib basis and 30 g mineral mixture / day increases net profit by 29.21 %.

### **Achievements:**

#### **Awards /Honours/Recognitions/Appreciations:**

Dr. B. S. Divekar, Assistant Professor was awarded for Best Paper Award-2014 entitled 'Monitoring postpartum plasma minerals profile and fertility without and with estrous synchronization therapies at day 90 in suckled anestrus / sub estrus Kankrej cows' by The Society for Veterinary Science and Biotechnology, RAJUVAS, Bikaner, Rajasthan, 7-8, October, 2015.

#### **Publications:**

##### **Year-2015**

##### **(i) International journal**

1. Nathani, N.M., Patel, A.K., Mootapally, C. S., Reddy, B., Shah, S. V., Lunagaria, P. M., Kothari, R. K. and Joshi, C. G. (2015). Effect of roughage on rumen microbiota composition in the efficient feed converter and sturdy Indian Jaffrabadi buffalo (*Bubalus bubalis*). *BMC Genomics*. **16**:1116-1131.

##### **(ii) National journal**

1. Hadiya, K. K., Dhama, A.J., Nakrani, B.B. and Lunagariya, P. M. (2015). Estrus induction, follicular dynamics and fertility response to mid-cycle PGF<sub>2α</sub>, CIDR and Ovsynch protocols in subfertile Gir and Crossbred cows. *Indian Journal of Animal Reproduction*. **36** (1): 23-27.
2. Lunagariya, P. M., Shah, S.V., Desai, B.D., Pandya, D.P. and Divekar, B.S. (2015). Management of Bovine Ephemeral Fever in Crossbred cattle. *Intas Polivet*. **16** (II): 411-413. (Clinical Article)
3. Lunagariya, P. M., Divekar, B.S. and Nauriyal, D.S. (2015). Diagnosis and Management of Dermatophytosis in a Heifer. *Intas Polivet*. **16** (II): 310-312. (Short Communication).

##### **Year - 2016**

##### **(i) International journal**

1. Lunagariya, P. M. and Pande, M.B. (2016). Effect of levels of lucerne straw in total mixed ration on nutrient intake and digestibility in bullocks. *International Journal of Science, Environment and Technology*. 5(6): 3922-3928.

2. Lunagariya, P.M., Vyas, H. U., Chaudhary, D.D., Patel, A.C. and Patel, J. K., (2016). Impact of bypass fat FLD on milk yield, adoption, constrains faced and suggestion of dairy farmers of Ahmedabad district of Gujarat. *International Journal of Current Research*. 8(10): 41990-41992.
3. Shukla, R., Shah, S.V., Pandya, P.R., Lunagariya, P.M., Parmar, Monika and Divekar, B.S. (2016). Impact of feeding milk replacer on growth rate and blood parameters in Holstein x Kankrej crossbred calves. *International Journal of Science, Environment and Technology*. 5(6): 3847-3855.
4. Lunagariya, P. M., Patel, P. V., Shah, S. V., Mathakiya, R. A. and Bhanderi, B. B. (2016). The diagnosis, treatment and control of tick born disease - Theileriosis on a dairy farm. *Journal of Science Research International*. 1(1): 1- 7.
5. Patel, J., Patel, R., Lunagariya, P.M., Divekar, B., and Chauhan, J. (2016). Analysis of polymorphism at Growth-hormone loci in Gir and Kankrej, Indian Cattle. *International Journal of Science and Nature*. 7(3):587-590.

**(ii) National journal**

1. Lunagariya, P. M. and Pande, M.B. (2016). Effect of level of Lucerne Straw in Total Mixed Ration on Rumen Fermentation Pattern and Blood Metabolites in Bullocks. *The Indian Journal of Veterinary Sciences & Biotechnology*. 12(2):41-47.

**B. Research papers presented in seminar/symposia workshop etc. in 2016**

**(ii) National level**

1. Lunagariya, P. M., Gupta, R. S., Parnerkar, S., Mehta, B. M. and Hadiya, K. K. (2016). The effect of supplementation of exogenous fibrolytic enzymes in TMR on milk yield, composition and feed conversion efficiency in HF crossbred cows. A paper presented in National seminar on “Biotechnological approaches in management of health and reproductive disorders in Livestock for sustainable production” organized at College of Vet. Sci. & AH, AAU, Anand during 16-17<sup>th</sup> December, 2016.
2. Lunagariya, P. M., Gupta, R. S. and Parnerkar, S. (2016). The effect of in vitro incorporation of exogenous fibrolytic enzymes in total mixed ration on digestibility and nutritive value for crossbred cows. A paper presented in National seminar on “Biotechnological approaches in management of health and reproductive disorders in Livestock for sustainable production” organized at College of Vet. Sci. & AH, AAU, Anand during 16-17<sup>th</sup> December, 2016.
3. Shah, S. V., Lunagariya, P. M., Parmar, B. C. and Divekar, B. S. (2016). Reproductive disorders recorded at an organized farm during a period of ten years. A paper presented in National seminar on “Biotechnological approaches in management of health and reproductive disorders in Livestock for sustainable production” organized at College of Vet. Sci. & AH, AAU, Anand during 16-17<sup>th</sup> December, 2016.
4. Parmar, M., Shah, S. V., Divekar, B. S. and Lunagariya, P. M. (2016). Effect of season on production and reproduction parameters of crossbred cows. A paper presented in National seminar on “Biotechnological approaches in management of health and reproductive disorders in Livestock for sustainable production” organized at College of Vet. Sci. & AH, AAU, Anand during 16-17<sup>th</sup> December, 2016.

5. Ravi Shukla, Shah, S. V., Pandya, P. R., Lunagariya, P. M., Pandya, S.S., and Divekar, B. S. (2016). Effect of feeding milk replacer on nutrients intake, feed efficiency and disease incidences in Holstein x Kankrej crossbred calves. A paper presented in National seminar on “Biotechnological approaches in management of health and reproductive disorders in Livestock for sustainable production” organized at College of Vet. Sci. & AH, AAU, Anand during 16-17<sup>th</sup> December, 2016..
6. Divekar, B. S., Trivedi, M.M. and Shah, S. V. (2016). Breeding practices followed by dairy farmers of Kheda and Panchmahal districts of middle Gujarat. A paper presented in National seminar on “Biotechnological approaches in management of health and reproductive disorders in Livestock for sustainable production” organized at College of Vet. Sci. & AH, AAU, Anand during 16-17<sup>th</sup> December, 2016.
7. Divekar, B. S. and Trivedi, M.M. (2016). Milking management practices followed by dairy farmers of Kheda and Panchmahal districts of middle Gujarat. A paper presented in National seminar on “Biotechnological approaches in management of health and reproductive disorders in Livestock for sustainable production” organized at College of Vet. Sci. & AH, AAU, Anand during 16-17<sup>th</sup> December, 2016.

## **Year-2017**

### **(i) International journal**

1. Lunagariya, P. M., Gupta, R. S. and Parnerkar, S. (2017). In vitro evaluation of total mixed ration supplemented with exogenous fibrolytic enzymes for crossbred cows. *Veterinary World*. 10(3): 281-285.
2. Modh, R. H., Islam, M.M., Modi, Patel, Y.G., Modi, R. J. and K.N. Wadhvani (2017). Effect of parity on udder and teat biometry and its association with milk yield in Gir cows. *International Journal of Science, Environment and Technology*. 6(3): 2068 – 2073.
3. Khatri S. B., Trivedi, M. M., Patel, Y. G. and Rajpura, R. M. (2017). Udder and teat measurements and their relation with milk production in buffaloes. *International Journal of Advanced Biological Research*, 7 (3) 582-584.

### **(ii) National journal**

1. Lunagariya, P. M., Shah, S. V., Patel, A. C., Shekh, M. A. and Pandya, P. R. (2017). Effect of exogenous fibrolytic enzymes on milk and components yield as well as on feed efficiency and body weight in Holstein Friesian x Kankrej crossbred cows after peak lactation. *Trends in Biosciences*. 10(43):8947-8951.
2. Surya Prakash, M., Arya, J. S., Lunagariya, P. M. and Pathan, M. (2017). Assessment of enzyme status and its correlation with milk production during different stages of lactation in Indigenous and Crossbred cows. *Trends in Biosciences*. 10(44): 9201-9205.
3. Surya Prakash, M., Arya, J. S., Lunagariya, P. M. and Pathan, M. (2017). Evaluation of hematological constituents and its correlation with milk production during different stages of lactation in Indigenous and Crossbred cows. *Trends in Biosciences*. 10(48): 9613-9620.
4. Patel, Y.G. and Trivedi, M.M., Nauriyal, D. S. and Patel, A. C. (2017). A Study on Relationships between Somatic Cell Count (SCC) and Some Udder Traits in Crossbred Dairy Cows. *Trends in Biosciences*, 10(22): 4418-4020.



5. Rathwa, S. D., Vasava, A. A., Pathan, M. M., Madhira, S. P., Patel, Y. G. and Pande, A. M. (2017). Effect of season on physiological, biochemical, hormonal, and oxidative stress parameters of indigenous sheep. *Veterinary World*, 10(6): 650-654.
6. Dharni, A.J., Theodore, V.K., Panchal, M.T., Hadiya, K.K., Lunagariya, P.M. and Sarvaiya, N.P. (2017). Effect of peripartum nutritional supplementation on postpartum fertility and blood biochemical and steroid hormone profile in crossbred cows. *Indian J. Anim. Res.*, 51 (5): 821-826.
7. Shukla, R., Shah, S.V., Pandya, P.R., Lunagariya, P.M., Pandya. S.S. and Divekar, B.S. (2017) Effect of feeding milk replacer on dry matter intake and feed efficiency in Holstein x kankrej crossbred calves. *The Indian Journal of Veterinary Sciences & Biotechnology*. 12(3): 105-111.
8. Divekar, B.S. and Trivedi, M.M. (2017). Milking practices followed by dairy farmers of Kheda and Panchmahal districts of middle Gujarat. *The Indian Journal of Veterinary Sciences & Biotechnology*. 12(3): 23-26.
9. Lunagariya, P.M., Shah, S.V., Gupta, R.S., Parnerkar, S. Pansuriya, H., Khaire, K. and Patel, G.R. (2017). Effect of supplementation of exogenous fibrolytic enzymes in total mixed ration on rumen fermentation pattern in dairy cows. *The Indian Journal of Veterinary Sciences & Biotechnology*. 12(3): 99-104.

## **B. Number of Research paper presented at Seminar / symposium etc. for 2017**

### **(i) National level**

1. Abstract paper published at National Seminar on “Livestock Resources Management under Changing Climate Scenario” organized during 17-19<sup>th</sup> May, 2017. Lunagariya, P. M. and Shah, S. V. (2017). The effect of higher plan of nutrition on body growth of crossbred (HF X K) heifers. Pg.172.

## **Year – 2018**

### **(i) International journal**

1. Shekh, M. A., Parnerkar, S., Lunagariya, P. M. and Parmar, D. J. (2018). Nutrients intake and nutrients digestibility of weaner lambs as affected by incorporation of non-conventional ingredients in total mixed ration. *International Journal of Agriculture Sciences*. 10(10): 6047-6049. (ISSN: 0975-3710 & E-ISSN: 0975-9107).
2. Surya Prakash, M., Pathan, M. M., Arya, J.S. and Lunagariya, P. M. (2018). Assessment of Glucose, Total Protein, Albumin and Cholesterol Level and Its Correlation with Milk Production during Different Stages of Lactation in Indigenous and Crossbred Cows. *Int. J. Curr. Microbiol. App. Sci.* 7(04): 1248-1256. (doi: <https://doi.org/10.20546/ijcmas.2018.704.139>)
3. Surya Prakash, M., Arya, J. S., Lunagariya, P. M. and Pathan, M. M. (2018). Assessment of Hormone Status and Its Correlation with Milk Production during Different Stages of Lactation in Indigenous and Crossbred Cows. *Int. J. Curr. Microbiol. App. Sci.* 7(04): 3632-3639. (doi: <https://doi.org/10.20546/ijcmas.2018.704.409>)
4. Lunagariya, P. M., Shah, S. V., Devalia, B. R., Patel, A. C. and Pandya, P. R. (2018). An in vitro dose optimization of exogenous fibrolytic enzymes in total mixed ration for crossbred

cows. *Int. J. Curr. Microbiol. App. Sci.* 7(10): 330-338. (doi: <https://doi.org/10.20546/ijcmas.2018.710.035>)

5. Patel, Y.G. and Trivedi, M.M. (2018). Effect of stage of lactation and parity on occurrence of subclinical mastitis. *International Journal of Science, Environment and Technology.* 7(1): 250-253.

## **(ii) National journal**

1. Solanki, J.B., Thakre, B.J., N. Kumar, Patel, D.C. and Patel, Y. G. (2018). Cerebral Babesiosis in a Gir bullock and its successful therapeutic management. *The Indian journal of veterinary science and biotechnology*, 14 (2):74-75.
2. Surya Prakash, M., Arya, J. S., Lunagariya, P. M. and Pathan, M. (2018). Assessment of mineral and electrolyte status and its correlation with milk production during different stages of lactation in Indigenous and Crossbred cows. *Trends in Biosciences.* 11(2): 126-130.

## **B. Number of Research paper presented at Seminar / symposium etc. for 2018**

### **(i) International level**

1. Lunagariya, P.M., Shah, S.V. and Patel, Y.G. (2018). Reproductive performance of crossbred cows as an important phenomenon on dairy farm. Pg. 141., abstract (poster) presented at International symposium on “Productivity Enhancement through Augmenting reproductive Efficiency of Livestock for Sustainable Rural Economy” organized by ISSAR (Indian Society for Study of Animal Reproduction) and Dept. of Veterinary Gynaecology and Obstetrics, CVSc&AH, AAU, Anand.
2. Patel, Y.G., Shah, S.V. and Lunagariya, P.M. (2018). Reproductive performance of Kankrej cows as an important phenomenon on dairy farm. Pg. 141., abstract (poster) presented at International symposium on “Productivity Enhancement through Augmenting reproductive Efficiency of Livestock for Sustainable Rural Economy” organized by ISSAR (Indian Society for Study of Animal Reproduction) and Dept. of Veterinary Gynaecology and Obstetrics, CVSc&AH, AAU, Anand.
3. Dharni, A.J., Hadiya, K.K., Lunagariya, P.M., Sarvaiya, N.P. and Shah, S.V. (2018). Role of nutrition in body weight gain and early onset of puberty and sexual maturity in (HF x F) crossbred heifers. Pg. 117., abstract (poster) presented at International symposium on “Productivity Enhancement through Augmenting reproductive Efficiency of Livestock for Sustainable Rural Economy” organized by ISSAR (Indian Society for Study of Animal Reproduction) and Dept. of Veterinary Gynaecology and Obstetrics, CVSc&AH, AAU, Anand.

### **(ii) National level**

1. Abstract paper published at XVII Biennial Animal Nutrition Conference on “Nutritional Challenges for Raising Animal Productivity to Improve Farm Economy” organized during 1-3<sup>rd</sup> February, 2018. (a). Lunagariya, P. M., Shah, S. V., Devalia, B. R., Patel, A. C. and Pandya, P. R. (2018). An in vitro dose optimization of exogenous fibrolytic enzymes in total

- mixed ration for crossbred cows. Pg.433. (b). Sorathiya, K. K., Patel, K. T., Prajapati, D. T., Lunagariya, P. M. and Parnerkar, S. (2018). Effect of total mix ration on rumen fermentation and microbial protein synthesis in crossbred calves. Pg. 12.
2. Sheikh, Y., Shah, S.V., Lunagariya, P.M., Koringa, P.G., Jakhesara, S., Joshi, R.S., Patel, A.C., Rank, D.N. and Joshi C.G. (2018). Genotyping for  $\beta$ -casein gene using PCR-RFLP in HF crossbred and indigenous cattle of Gujarat state. Pg. 137., abstract paper published at National symposium on “One health: veterinary pharmacology and toxicology approaches” organized by Dept. of Veterinary pharmacology and Toxicology, CVSc&AH, AAU, Anand-388001 during 5-7<sup>th</sup> December, 2018.
  3. Modi, R.J., Modh, R. H., Islam, M. M., Patel, Y.G. and Wadhvani, K. N. (2018). Study on pH and Somatic cell count in Association with subclinical mastitis in Gir cows. Souvenir of National conference –ISAPM-2018 on Smallholders livestock producers’ in India: Opportunities and Challenges held at SDAU, Sardarkrushinagar during 11 to 13th April, 2018. Pp: 170.
  4. Patel, Y.G., Modh, R. H., Islam, M. M., Trivedi, M. M., and Wadhvani, K. N. (2018). Study on parity and stage of lactation in association with subclinical mastitis in Gir cows. Souvenir of National conference –ISAPM-2018 on Smallholders livestock producers’ in India: Opportunities and Challenges held at SDAU, Sardarkrushinagar during 11 to 13th April, 2018. Pp: 170.
  5. Modh, R. H., Islam, M. M., Patel, Y.G., Modi, R.J., and Wadhvani, K. N. (2018). Study on udder quarter and distance of teat end to floor in association with subclinical mastitis in Gir cows. Souvenir of National conference –ISAPM-2018 on Smallholders livestock producers’ in India: Opportunities and Challenges held at SDAU, Sardarkrushinagar during 11 to 13th April, 2018. Pp: 169.
  6. Patel, Y.G. and Trivedi M. M. (2018). Relationship between udder and teat biometry and incidences of subclinical mastitis in crossbred cows. Souvenir of National conference – ISAPM-2018 on Smallholders livestock producers’ in India: Opportunities and Challenges held at SDAU, Sardarkrushinagar during 11 to 13th April, 2018. Pp: 160.
  7. Patel, R. P., Modi, R.J., Islam, M. M., Patel, Y.G. and Wadhvani, K. N. (2018). Comparative body weight of Indigenous sheep on water deprivation during summer season. Souvenir of National conference –ISAPM-2018 on Smallholders livestock producers’ in India: Opportunities and Challenges held at SDAU, Sardarkrushinagar during 11 to 13th April, 2018. Pp: 115.
  8. Patel, A. D., Islam, M. M., Modi, R.J., Patel, N. R., Patel, Y.G. and Wadhvani, K. N. (2018). Production performance of HF \* K crossbred cows during different generations under intensive production system. Souvenir of National conference –ISAPM-2018 on Smallholders livestock producers’ in India: Opportunities and Challenges held at SDAU, Sardarkrushinagar during 11 to 13th April, 2018. Pp: 141.
  9. Patel, N. R., Islam, M. M., Modi, R.J., Patel, Y.G. and Wadhvani, K. N. (2018). Performance of HF \* K crossbred cows during different generations under intensive production system. Souvenir of National conference –ISAPM-2018 on Smallholders livestock producers’ in India: Opportunities and Challenges held at SDAU, Sardarkrushinagar during 11 to 13th April, 2018. Pp: 148.
  10. Islam, M. M., Modh, R. H., Patel, Y. G., Modi R. J. and Wadhvani K. N. (2018). Effect of parity on udder and teat biometry and its association with milk yield in Gir cows. Souvenir of

National conference –ISAPM-2018 on Smallholders livestock producers’ in India: Opportunities and Challenges held at SDAU, Sardarkrushinagar during 11 to 13th April, 2018. Pp: 06.

11. Monika Parmar, Shah, S. V., Darji, V. B. and Patel, Y. G., (2018). Effect of month and year on daily milk yield of crossbred cows. Souvenir of National conference –ISAPM-2018 on Smallholders livestock producers’ in India: Opportunities and Challenges held at SDAU, Sardarkrushinagar during 11 to 13th April, 2018. Pp: 07.
12. Patel, A. D., Islam, M. M., Modi, R.J., Patel, N. R., Patel, Y.G. and Wadhvani, K. N. (2018). Reproductive performance of HF \* K crossbred cows during different generations under intensive production system. Souvenir of National conference –ISAPM-2018 on Smallholders livestock producers’ in India: Opportunities and Challenges held at SDAU, Sardarkrushinagar during 11 to 13th April, 2018. Pp: 149.

## **Year - 2019**

### **(i) International journal**

1. Patel Ashwini J., Patel, Sanjay., Amipara, G.J., Lunagariya, P.M., Parmar, D.J. and Rank, D.N. (2019). Prediction of body weight based on body measurements in crossbred cattle. *Int. J. Curr. Microbiol. App. Sci.* 8(3): 1597-1611.  
(doi: <https://doi.org/10.20546/ijemas.2019.803.186>)

### **(ii) National journal**

1. Lunagariya, P. M., Gupta, R. S., Shah, S.V., and Patel, Y. G. (2019). Digestibility of Nutrients as Influenced by Supplementation of Exogenous Fibrolytic Enzymes in Dry Nonpregnant Cows. *Ind J of Vet Sci and Biotech.*, 14(4):45-48.

## **B. Number of Research paper presented at Seminar / symposium etc. for 2019**

### **(ii) National level**

1. Islam, M. M., Patel, R. P., Modi, R. J., Patel, Y. G. and Wadhvani, K. N. (2019). Study on blood biochemical profile of Indigenous sheep under water deprivation during summer season. Souvenir of National conference on “Innovations in animal production for sustainability and doubling farmers’ income & XXVI annual convention of the Indian society of animal production and management” held at KVASU, Kerala during 23rd to 25th January, 2019. Pp:262.
2. Patel, Y. G. and Trivedi, M. M. (2019). Relationship between udder shape and parities in crossbred cows. Souvenir of National conference on “Innovations in animal production for sustainability and doubling farmers’ income & XXVI annual convention of the Indian society of animal production and management” held at KVASU, Kerala during 23rd to 25th January, 2019. Pp:264.
3. Modi, R. J., Patel, R. P., Islam, M. M., Patel, Y. G. and Wadhvani, K. N. (2019). Physiological responses of Indigenous sheep under water deprivation during summer season. Souvenir of National conference on “Innovations in animal production for sustainability and doubling farmers’ income & XXVI annual convention of the Indian society of animal

production and management” held at KVASU, Kerala during 23rd to 25th January, 2019. Pp: 265.

4. Patel, R. P., Modi, R. J., Islam, M. M., Patel, Y. G. and Wadhwani, K. N. (2019). Haematological parameter of Indigenous sheep under water deprivation during summer season. Souvenir of National conference on “Innovations in animal production for sustainability and doubling farmers’ income & XXVI annual convention of the Indian society of animal production and management” held at KVASU, Kerala during 23rd to 25th January, 2019. Pp: 266.