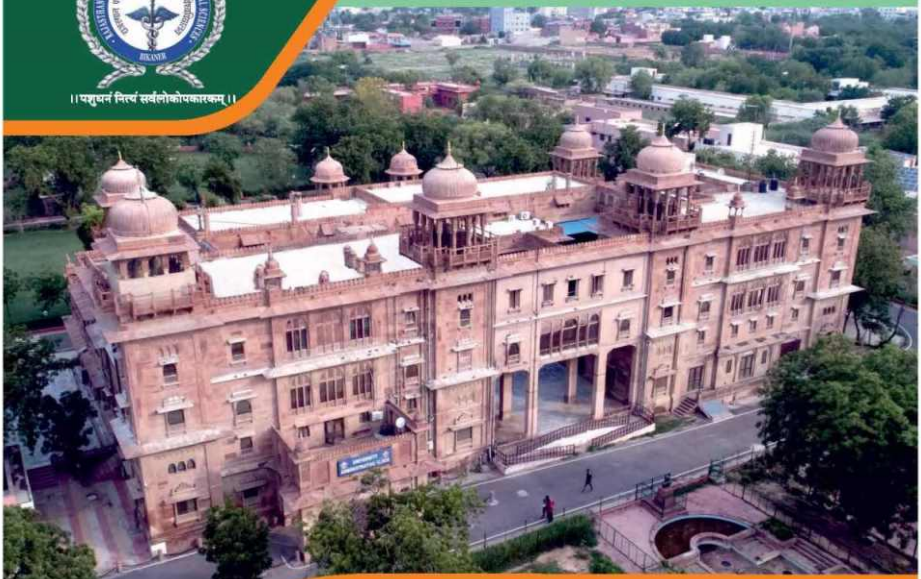

Annual Report
2022-23

Rajasthan University of Veterinary and Animal Sciences

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ANNUAL REPORT
2022-23

।पशुधनं नित्यं सर्वलोकोपकारकम्।

Rajasthan University of Veterinary and Animal Sciences

Bikaner-334 001

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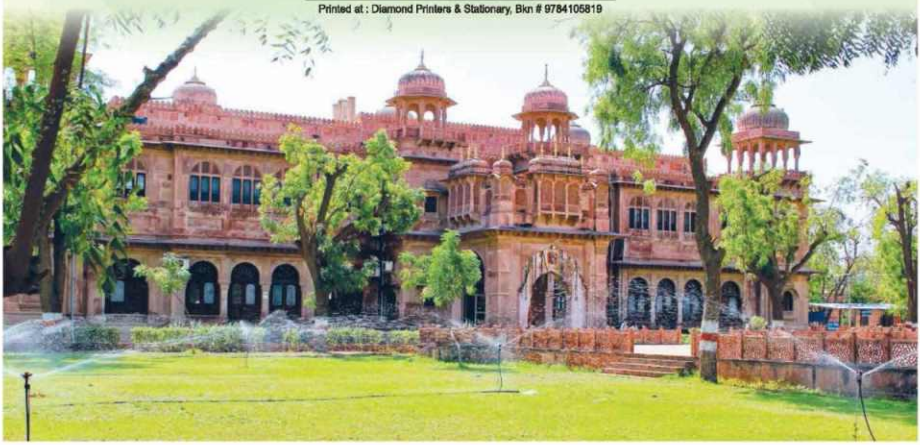

Prof. (Dr.) Satish K. Garg
Vice-Chancellor

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Foreword

It gives me immense pleasure in presenting the Annual Report of Rajasthan University of Veterinary and Animal Sciences, Bikaner for the Year 2022-23. As per the mission and vision of the University, we are marching ahead through committed and concerted efforts of teachers, students and non-teaching staff of the University irrespective of the financial and human resource constraints. University has been striving hard for excellence in academics and research for generation of skilled professionals and technologies. Over the years, we have excelled in dissemination of scientific know-how and adoptable technologies for promoting and improving scientific animal husbandry in an endeavour to economic conditions of farmers and livestock owners.

Annual Report encompasses the different activities and achievements of University in the field of teaching, research, extension and infrastructural developments and also portrays wide range of other activities undertaken in different constituent colleges and other units of the University during the year 2022-23.

It is a matter of great pride that, Hon'ble Governor of Rajasthan and Chancellor of RAJUVAS, Shri Kalraj Ji Mishra, visited this University in July, 2022 and inaugurated the newly constructed Samvidhan Park in the University. It is also a matter of great pride for the University that it organized two Convocations during the year. Apart from the routine degrees of BVSc & AH, MVSc and Ph.D. academic programmes, Honorary Degree of Doctorate of Science (Honoris causa) was conferred upon for the first time by our University during the 6th convocation held on 21.03.2023.

RAJUVAS has the distinction that during 2022-23, 65 of its students were selected for Master's and 12 for Ph.D. degree programmes in different national institutions through All India Entrance Examination conducted by Indian Council of Agricultural Research, New Delhi. During the year under report, University organized one International Conference, two National Conferences, three Workshops, one webinar and one Academia-Industries Interaction Programme to showcase the University activities at national level, wherein, teachers and scientists from different State Agricultural and Veterinary Universities visited RAJUVAS. RAJUVAS has taken initiatives in developing linkages with other academic and non-academic organizations in an endeavour to accelerate academic, research and extension activities along with some activities under CSR. During this period, University signed two such MOUs apart from the MOU with Red Cross Society of India.

Operational areas of RAJUVAS have further increased during the year under report with the declaration of three new Veterinary Colleges at Sirohi, Lalsot (Dausa) and Bassi (Jaipur) and one Pashu Vighyan Kendra at Jojawar (Pali). With the declaration of these new colleges, RAJUVAS will be having 12 constituent veterinary colleges in the years to come and it will be the only Veterinary University in the country to have twelve constituent and seven affiliated private Veterinary Colleges.

University has been successfully increasing its outreach to farmers and other stakeholders through three on-going veterinary colleges, 16 PVKs, one KVK and nine Livestock Research Stations, apart from seven constituent Animal Husbandry Diploma Institutes. For the benefit of farmers, University organized different types of on-campus and off-campus training programmes which were funded by State Government under State Plan and also through ATMA.

I am happy that even with limited human resource, University has been marching ahead and progressing on all fronts with the support of Government of Rajasthan. I place on record my sincere thanks to Hon'ble Governor of Rajasthan and Chancellor of University, Hon'ble Minister, Animal Husbandry, GOR and Principal Secretary, Animal Husbandry, GOR for their always available support and guidance. Hard work and dedicated efforts of all the officers of the University, teachers and other staff of the University are also highly laudable. I compliment Chief Editor of the Annual Report, Prof. (Dr.) Basant Bais, Director, PME, RAJUVAS, Bikaner and all the members of the Advisory Board for their hard work and tremendous efforts to compile and present the Annual Report of Year 2022-23 well in time. They have meticulously concised various activities and achievements of the University for the period under report.

I am sure the Annual Report will further increase the visibility of University. I believe, RAJUVAS will travel extra miles to achieve excellence in academics and research for serving farmers and livestock owners of the State.

Jai-Hind.

(Satish K. Garg)

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Executive Summary

The Rajasthan University of Veterinary and Animal Sciences (RAJUVAS), Bikaner had taken up various activities and accomplished several successes in teaching, research and extension activities during the year 2022-23. RAJUVAS is an institution having well qualified faculty for academic and research activities and has produced competent and skilled human resource in the field of veterinary and animal sciences. Many of its alumini are working in many prestigious and research institutions in India and abroad. University is providing technical and scientific support for transforming animal husbandry sector from sustainability to improved profitability. Improved production in association with productivity spurt has led the state to become leader in milk, meat and wool production with the support of scientific and technological interventions and favorable policy environment. The University has three running constituent Veterinary Colleges for graduate and post graduate degree programmes in veterinary and animal sciences i.e. CVAS, Bikaner, CVAS, Navania, Vallabhnagar (Udaipur), PGIVER, Jaipur and two colleges for a professional graduate degree programme in Dairy and Food Technology i.e. the College of Dairy Science and Technology (CDST) Bikaner and College of Dairy and Food Technology (CDFT) Bassi (Jaipur). Seven affiliated private Veterinary Colleges in Jaipur, Chomu, Sikar, Dungarpur, Bharatpur, Tonk and Karauli are also functional. Construction of College of Veterinary & Animal Sciences, Jodhpur and College of Veterinary & Animal Sciences, Nawa, Nagaur are in progress. Three constituent Veterinary Colleges were announced in State Budget during 2022-23 at Mandawa (Jhunjhunu), Kotputali and Bharatpur and four more new constituent veterinary colleges have been announced in State Budget 2023-24 at Bassi (Jaipur), Sikar, Sirohi and Dausa.

The graduate degree programme is as per Veterinary Council of India's Minimum Standards of Veterinary Education Regulation 2016. Accordingly, RAJUVAS is offering 5½ years B.V.Sc. & A.H., two years Master's degree in various subjects and 3 years Doctoral degree (Ph.D.) in 16 subjects in all the three presently running veterinary colleges.

Two years Animal husbandry Diploma is being conducted in 7 constituent and 84 affiliated AHDP institutes, which have the total capacity to train around 5200 para-veterinarian per year. University also has one Krishi Vighyan Kendra, 17 Pashu Vigyan Kendras and 9 Livestock Research Stations.

University campus has picturesque landscape and historical palatial buildings with clean and wide roads. The campus presents a spectacle of architecture, ethnic and natural beauty harmony.

As per the mandate, the University envisaged "Teaching, Research and Extension" programmes in the field of Veterinary & Animal Sciences. RAJUVAS educates and trains the students through its various educational and training programmes to make them skilled professionals to face global challenges and for economic prosperity of the people of state. Teaching is under the administrative control and direction of Chairman of the Faculty of Veterinary and Animal Sciences, Deans of the constituent colleges and Heads of Academic Departments.

Teaching or Academics

- The academic activities of the University is being carried out in all the three constituent veterinary colleges, 7 private veterinary colleges, two Dairy and Food Technology colleges and 91 AHDP institutes.
- During 2022-23, a total of 820 students were admitted in different constituent colleges of university for degree and diploma programmes. Total 298 students were admitted in B.V.Sc.&AH, 123 students in M.V.Sc, 33 students in Ph.D. degree programmes, 53 in B.Tech (Dairy and Food Technology) and 313 students in Animal Husbandry Diploma Programme (AHDP).
- Two convocations were held during 2022-23 viz. fifth convocations on 30 April 2022 and sixth convocation on 21 March 2023.
- Total Degrees awarded in the fifth and sixth convocations of university held during reporting period were 548 B.V.Sc.&A.H., 263 M.V.Sc. and 73 Ph.D degrees.
- In fifth convocation 217 B.V.Sc.&A.H., 167 M.V.Sc. and 39 Ph.D. degrees were awarded whereas in sixth convocation 331 B.V.Sc.&A.H., 96 M.V.Sc. and 34 Ph.D. degrees were awarded.
- During 2022-23, among 91 AHDP colleges, 4483 students completed their Animal Husbandry Diploma Programme (AHDP).
- Students of RAJUVAS, Bikaner excelled in the All-India Entrance Examination conducted by Indian Council of Agricultural Research (ICAR), New Delhi through National Testing Agency (NTA) for admissions in PG and Ph.D degree programmes in veterinary sciences in different agricultural and veterinary universities of India. During the reporting

year 65 students were selected through ICAR's All India Entrance Examination AIEEA (PG.) and 12 students were selected for ICAR's All India Entrance Examination AIEEA (Ph.D).During 2022-23, ICAR-ASRB NET examination was not conducted.

- The Veterinary Clinical Complexes of RAJUVAS are well equipped with modern facilities which include large and small animal operation theatres, ICU for pets, and are fully operational in all the constituent veterinary colleges of university. The Clinic has various facilities for diagnosis and treatment of animal diseases, advanced diagnostic procedures like CT scan, radiography, sonography, digital X-Ray machine, ophthalmology and dentistry units etc. with advanced equipments facility. For examination of blood, serum, urine and faeces, Disease diagnostic laboratory is well equipped. There is also facility for stay of attendants of animal patients. During 2022-23, a total of 16517 cases were attended for treatment among which 8755 cases were attended in CVAS, Bikaner alone followed by 8733 in PGIVER and 2754 in CVAS, Navania clinics.
- During 2022-2023, a total of 2122 samples of blood, faecal, milk, urine, skin scrapings and serum were examined in Veterinary Diagnostic Laboratories.
- During the year under report, clinical services were provided by faculty of clinics and post graduate students of clinical departments in adopted village of university and gaushalas.
- Routine farm practices viz. de-worming and vaccination of livestock and poultry maintained at Livestock Farm Complex were conducted whereas sick animals were provided appropriate treatment.
- ILFC is serving as a model for UG, PG and Ph.D teaching and also for internship students to train them regarding dairy farming, poultry farming and other farm activities. The income generated from poultry unit of Bikaner poultry farm during 2022-23 was Rs. 21,98,555/- and from large ruminants unit was Rs. 1,35,029/-.
- Different indigenous milk products like Paneer, Lassi, ghee, skimmed milk were prepared and sold at RAJUVAS milk parlour and the Revenue generation from the sale of various milk products during the year 2022-23 was Rs. 9,28,658/-.
- Well developed digitalized library with RFID and good number of books, journals, computer with internet facility and reading space is available in all the constituent colleges of University.
- Library collection consists of textbooks, reference books, e-books, e-Journals, manuals, encyclopaedias, dictionaries and annual reports. A total of 56136 general books, book bank, social welfare books of various streams and 203 E-Books are available at CVAS, Bikaner, 6593 general books at CVAS, Navania and 3417 general books and 3957 in book bank are available in PGIVER, Jaipur library.

Research

- During the reporting year, 30 projects were operational. Out of these 19 externally funded projects were running at various Livestock Research Stations (LRS's) and in different departments of constituent colleges. Out of these five projects were funded by ICAR, 11 by State plan and 03 under RKVY, and 11 intramural university funded, Revolving Fund projects were also functional. Total amount sanctioned for these projects during 2022-23 was 8594.30 lacs.
- Revenue Generation by Directorate of Research through Livestock Research Stations's during 2022-23 was Rs. 10.72 Crore.
- During 2022-23, 27 Ph.D and 78 M.V.Sc. theses were submitted from various departments in different subjects of veterinary and animal sciences.
- During the period under report, University published 274 research publications among which 162 publications were from CVAS, Bikaner, 54 from PGIVER, Jaipur and 58 from CVAS, Navania (Udaipur).

Extension

- The extension activities of University are carried out under Directorate of Extension Education through University's colleges, Krishi Vighyan Kendra, Pashu Vigyan Kendras and centres sanctioned under State plan for livestock, dairy, poultry and fish farmers.
- During 2022-23, Directorate of Extension Education organized 9 trainings under Agricultural Technology Management Agency (ATMA) in which total 278 farmers were benefitted.
- 48 training programmes were organized by KVK Nohar for farmers on different aspects of agriculture, horticulture, home science and animal husbandry in which 1323 farmers participated.
- Total 724 off campus/online and 108 on campus trainings were organized by various Pashu Vigyan Kendras of University. Through these trainings, 22604 farmers were benefited. University also organized many training programmes via digital mode.

- 40 Trainings were organized by different constituent colleges of University, state plan centres and Livestock Research Station, Bikaner. Total 1494 participants were benefitted through these training programmes.
- To provide services for animal disease diagnosis and treatment, testing of feed and fodder as well as animal products Lab facilities were established at all Pashu Vighyan Kendras. Total 3949 samples were analysed and 3686 farmers were benefitted during the year.
- Five exhibitions were organized by DEE, PVK Kota and KVK Nohar at Ravindra Rangmanch, Bikaner, International Camel Festival, NRCC, Bikaner, Krishi Mahotsav, Kota, Kisan Mela, SKRAU, Bikaner and Mallinath Pashu Mela, Barmer.
- Directorate of Extension Education regularly published "Pashu Palan Naye Aayaam" a monthly bulletin on 1st day of every month. Two training manuals were also published by DEE, on ASCAD training programme viz. Unnat Pashu Palan, Javaik Pashu Palan and scientific animal husbandry and management.
- In 2022-23, 8 programmes of *"Dhine Re Batya"* were broadcasted through 17 Aakashwani Kendra of Rajasthan for half an hour from 5.30 PM to 6.00 PM on third Thursday of every month.
- In year 2022-2023 Under "Mera Gaon Mera Gaurav" 35 teams of multidisciplinary scientists adopted 104 villages. Total 2316 activities were conducted in which total 14470 farmers and livestock owners were benefitted.
- Directorate of Extension Education, RAJUVAS, Bikaner organized Farmer Scientist Interaction and Exhibition on "Garib Kalyan Sammelan" by KVK, Nohar, Hanumangarh-II on 31 May, 2022.
- One Kisan Mela cum Farmer-Scientist Interaction was organized by KVK, Nohar, Hanumangarh-II on 26 April, 2022.

Seminars/Conference/Workshops etc.

- 22nd Indian Veterinary Congress and 29th Annual Conference and National Symposium of IAAVR was organised on 8th-9th April 2022. During this conference about 100 research papers were read and poster presentation was done in various scientific sessions in which about 450 scientists, animal husbandry experts, researchers and students from various colleges and industries across the country participated.
- A three days National Congress on Canine Practice and Symposium on "Newer Concepts and Approaches in Small Animal Practice and Welfare" and 18th Annual Convention of Indian Society for advanced canine Practice was organised during 22-24 September 2022.
- The three-day International Conference of the Indian Association of Veterinary Anatomists organized on "Advancements in Anatomical Studies: The Stepping Stone in Transforming Livestock and Wildlife Sector while Achieving the Global Sustainable Development" on dated 20-22 December 2022. More than 250 scientists, subject experts, field practitioners, research scholars and students from the country and abroad participated in this conference and more than 100 Papers and posters were presented by subject experts in the 18 different sessions.
- One day seminar on "Environmental nutrition and social and economic empowerment along with sustainability in dairy sector" was organized on 1st June 2022.
- A seminar on "Awareness of society for rabies" was organized on 28th September, 2022
- A workshop on "Gobar-Gaumutra Prasanskaran Prashikshan Abhiyan" was organized in collaboration with Rajasthan Gau Seva Parishad on 30 May, 2022 to develop Bikaner as a model district in the field of Gobar-Gaumutra Prasanskaran. Various representatives of different departments viz., Agriculture, Animal Husbandry, NABARD, ATMA, Agricultural University, Women and Child development participated in the workshop.
- National webinar on "Sustainability in the dairy sector as well as Environment, Nutritional and Socioeconomic empowerment" was organized on 1st June 2022.
- Under the National Agricultural Higher Education Project (NAHEP), an Academia- Industry Interaction Programme was organized on 07th February, 2023.
- One day workshop on "Development of Soft Skill for Entrepreneurship among Veterinary Graduates" was held at CVAS, Bikaner in collaboration with ICAR-National Academy of Agricultural Research Management, Hyderabad under NAHEP on 13.03.2023. 100 students got benefitted through this workshop.
- Under the National Agricultural Higher Education Project (NAHEP), a four-days workshop on entrepreneurship and skill development for veterinary students was organized from 16th-21st March, 2023.

Students participation and Recognition

- A contingent of 39 students from constituent colleges of RAJUVAS participated in All India Agricultural

Universities Games & Sports meet "Agriuni sports" held at CCSHAU, Hisar from 20-24 February, 2023.

- Ph.D. Young Scientist Award was awarded to Dr. Chand for her postgraduate research in National Conference of veterinary preventive and internal medicine on practical approach to animal health and welfare in the current perspective of climate change organized by College of Veterinary Medicine, Anand, Gujarat from 7-9 October, 2022. In this conference. Dr. Priyanka Kadela for her excellent research and Dr. Meenal for best research paper presentation were also honoured.
- An exposure visit was organized for II B.V.Sc & A.H. students under Innovation Grant of National Agriculture Higher Education Project (IG- NAHEP) of ICAR at CVAS, Mathura and IVRI, Izatnagar from 20-24 September, 2022.
- Budding Vet Programme was conducted for the Fourth Year and Internee students of CVAS, Bikaner on 07th June, 2022 by the Virbac Animal Health Pharmaceutical, Mumbai.
- An expert lecture on the topic Opportunities for veterinarians internationally was held on 29th August, 2022 for the students by an alumnus of the University Dr. Rohish Kaura, who is pursuing his doctorate from Estonian University of life Sciences, Estonia.
- Students Election was conducted peacefully on 26th August, 2022 and result was declared on 27th August, 2022 at all campuses of RAJUVAS.
- Internship and PG students were deputed to different districts of Rajasthan under supervision of respective Joint Directors for providing their services in Lumpy affected areas.
- Interclass Sports and Cultural week "SPIRIT-2023" was held from 17-23.01.2023 at all constituent Colleges of RAJUVAS, Bikaner .Various sports, games, cultural, fine arts and literary events were conducted during this week.
- An Educational tour cum exposure visit of 4th year B.V.Sc.&A.H. Students was organized from 29-30th November 2022 at Banas Dairy and college of Veterinary & Animal Science, Dantiwada, Gujarat. A total of 45 Students were involved in the tour.
- Five days Educational Tour of second year B.V.Sc.& A.H. students was carried out from 20-24 September, 2022 to visit DUVASU, Mathura and IVRI, Bareily.

Moment of Pride

- Hon'ble Vice Chancellor Prof. (Dr.) Satish Kumar Garg was conferred with "Distinguished Veterinarian Award (Diva)" by IAAVR Society in the two-day 22nd Indian Veterinary Congress and IAAVR's 29th Annual Conference and National Symposium on 08-09 April, 2022 at CVAS, Navania, Udaipur.
- Prof. Satish Kumar Garg, Hon'ble Vice-Chancellor was bestowed with "Life Time Achievement award" during 6th International Conference on "Current Issues in Agricultural Biological and Applied Sciences for Sustainable Development" organized by Uttarbanga Agricultural University, West Bengal from 11-13 June, 2022. This award was presented for his excellent services in teaching and research in the field of veterinary sciences.

Awards and Recognition by faculty and students

- Total 96 faculty and students were awarded and recognized for their excellence and expertise in their field of specialization by reputed authorities or recognized societies.
- National Academy of Animal Nutrition and Animal Welfare honored Prof. R.K. Dhuria, Director Extension Education, RAJUVAS, Bikaner with Fellow Award (in conference on Integrated Nutrition, Health and Extension Approaches for Sustainable Livestock Production organized at Nanaji Deshmukh Veterinary Science University, Jabalpur during 21-22 September, 2022) for his special research and excellent work done in the field of animal nutrition.
- RAJUVAS expertise in ophthalmology has been recognized at national level. Dr. S.K. Jhirwal was invited as a leading veterinary ophthalmologist under National Continuing Education Program at Indore (MP) from 2-4 September, 2022.
- Dr. Suresh Kumar Jhirwal, Assistant Professor, CVAS, Bikaner elected as member of Rajasthan State Veterinary Council, Jaipur.
- Dr. Devi Singh Rajput, Assistant Professor CVAS, Bikaner awarded with Innovative Extension Educationist Award and Dr. Tikam Chand Goyal, Assistant Professor, CVAS, Navania (Udaipur) awarded with Young Extension Scientist Award during 4th National Conference of Society for Veterinary and Animal Husbandry Extension (SVAHE) organized at CVAS, Palampur, HP from 6-8 May 2022.

Capacity Building and Skill Development

- A five days training programme on disease diagnosis was organized by Apex Centre of CVAS, Bikaner from 21-25 June, 2022 under SC-SP of ICAR, New Delhi. In this training 25 scheduled caste students of

the constituent colleges of the university participated.

- Farmer Scientist Interaction and Exhibition on Garib Kalyan Sammelan was organized by Krishi Vigyan Kendra, Nohar, Hanumangarh-II as per the instructions of ICAR-ATARI, Jodhpur on the theme of Azadi Ka Amrit Mahotsav under the ages of RAJUVAS, Bikaner on 31st May, 2022. Total 590 progressive farmers were benefitted in this programme.
- A five-day Hands-on orthopedic training for field veterinarians on use of pinning and plating techniques in small animal (pets) fracture management was conducted by Department of Veterinary Surgery & Radiology, CVAS, Bikaner from 25-29 July 2022 under ICAR-AINP on DIMSCA. A total of 20 veterinarians from different states of the country participated in this training.
- Under the skill development training programme of Ministry of Rural Development, Government of India, 74 women were trained about goat rearing and vermiculture on 4th August, 2022.
- A Farmer-Livestock owners and Agriculture Fair was organized on 16th November, 2022 under the joint auspices of Deputy Director Agriculture and PD, ATMA, Sriganganagar. District Collector honoured 75 progressive cattle owners. More than 900 cattle owners and farmers from different districts participated in the programme.
- On the completion of four years of tenure of the Government of Rajasthan, an exhibition was organized by the RAJUVAS, Bikaner. The development works done by the University during last four years and success stories based on various welfare schemes of the state government were highlighted through posters at Ravinder Rangmach, Bikaner on 22-24 December, 2022. Hon'ble Minister of Disaster Management Sh. Govind Ram Meghwal, Hon'ble Minister of Energy Sh. Bhawar Singh Bhati, Chairman of Keshkala Board Sh. Mahendra Gehlot, Divisional Commissioner, Bikaner Dr. Neeraj K. Pawan, District Collector, Bikaner Bhagwati Prasad Kalal, public representatives and officials appreciated the exhibition.
- A five days training for field Veterinarians on fracture management by pinning and plating techniques in dogs was organized from 10-14 October, 2022 by the Department of Veterinary Surgery and Radiology, CVAS, Bikaner. A total of 20 Veterinarians from 12 states of the country participated in this training and total of 10 lectures and practical demonstrations were given by the subject experts.
- A 12-day Government of India-sponsored training programme of Aapda Mitra Scheme was organized from 31st October to 11 November, 2022 at Animal Disaster Management Technology Centre RAJUVAS, Bikaner. The training includes 40 trainees belonging to NCC, NSS, Civil Defence Department.
- An animal biomedical waste disposal awareness programme was organized by Biomedical Waste Disposal and Technology Centre of RAJUVAS on 10th November and 30 November 2022.
- A one-day training camp on proper management and disposal of animal bio-medical waste was organized on 21st December, 2022 for LSAs and on 22 December, 2022 for PG students.

New Initiatives during 2022-23

- Hon'ble Governor of Rajasthan Sh. Kalraj Mishra inaugurated the newly constructed constitutional park at RAJUVAS, Bikaner on 29 July, 2022. Hon'ble Governor Sh. Kalraj Mishra said that the constitutional park will be helpful in strengthening the democratic faith in the young generation studying in the universities and will motivate the youth to perform their duties in the interest of the country by connecting with the national consciousness.
- Hon'ble Governor inaugurated the Centre for Ethno Veterinary Practices and Alternative Medicines, Bikaner on 29 July, 2022.
- Hon'ble Governor , Hon'ble Minister of Agriculture and Animal Husbandry Sh. Lalchand Kataria, Principal Secretary to the Governor Mr. Subir Kumar and Founder Vice-Chancellor of RAJUVAS, Prof. A.K. Gahlot, OSD to Governor Sh. Govindram Jaiswal also launched 'RAJUVAS Official Mobile App' on 29 July, 2022.
- The newly constructed administrative building of Krishi Vigyan Kendra, Nohar (Hanumangarh-II) was inaugurated by MLA, Nohar Sh. Amit Chachan, Vice- Chancellor Prof. Satish K. Garg and Director ICAR-ATARI, Jodhpur Dr. S.K. Singh on 17th August, 2022.
- Hon'ble Chief Minister of Rajasthan Sh. Ashok Gehlot inaugurated the newly constructed building of 16th Pashu Vigyan Kendra of RAJUVAS on 23rd December, 2022.
- To set up Embryo Transfer Technology (ETT) laboratories in all the three constituent Veterinary Colleges of RAJUVAS, viz. CVAS, Bikaner, CVAS, Navania (Udaipur) and PGIVER Jaipur, the Government of Rajasthan has sanctioned Rs. 4.00

crores for the construction work of the laboratory and Rs. 2.00 crore for equipments for each college. In the next two years, the university will make available good quality embryos for implantation in indigenous cows, which will definitely benefit the livestock farmers of the state.

- Offices of Students' Union RAJUVAS and Veterinary Students' Association of College of Veterinary and Animal Science, Bikaner were inaugurated on 07.01.2023. The office of student union at CVAS, Navania was inaugurated on 12th January 2023. The office of the Veterinary Student Union at PGIVER, Jaipur on 10th October, 2022.
- The new campus of CDFT at Agra Road, NH-22, Bassi, Jaipur was inaugurated on 15th December 2022.
- New gymnasium for the students at CVAS Bikaner was inaugurated on 4th April, 2022 for all round development of the students. This new gymnasium has been equipped with modern facilities like trade mill, multi-station, indoor exercise, cycle, bench press, pull-up and push-up bar etc.
- Newly renovated College Canteens were inaugurated, at PGIVER, Jaipur on 7th November, 2022, CVAS, Bikaner on 14.02.2023 and CVAS, Navania on 18th March, 2023.
- On 2nd March, 2023, the bank building located in the institute premises of PGIVER, Jaipur after renovation was inaugurated by Prof. Satish K. Garg, Hon'ble Vice-Chancellor, RAJUVAS, Bikaner.

Memorandum of Understanding (MoU)

- A memorandum of understanding (MoU) was signed in between RAJUVAS, Bikaner and Rajasthan branch of Red cross society, New Delhi at Raj Bhagwan Jaipur on 21.04.2022. Keeping in mind various human aspects on disaster management, environment, sanitation, climate changes, health services and blood donation etc.
- A Memorandum of Understanding (MoU) was signed between Girraj Industries, Sirsagate, Sirsaganj, Distt, Firozabad, Uttar Pradesh and RAJUVAS on 28.07.2022 for transfer of technology of Thanela disease herbal medicine prepared by the Centre for Ethno Veterinary Practices and Alternative Medicines RAJUVAS, Bikaner.

Celebrations

- 131st Birth anniversary of Dr. B.R. Ambedkar was celebrated with great enthusiasm in all the constituent colleges and Institutes of RAJUVAS, Bikaner on 14th April, 2022.
- World Veterinary Day was celebrated at all the constituent colleges and Institutes on 30th April 2022. A quiz, essay writing and debate competition for students and a Farmer's meet was held on the occasion of World Veterinary Day. Different cultural programmes like songs, group dance, skit, mono-acting were presented by the students.
- 13th Foundation Day of RAJUVAS was celebrated on 18.05.2022 in all the constituent colleges and Institutes. Debate and essay competitions were conducted on this occasion and winner students were given certificates during the main function. A blood donation camp was organized on this occasion. Students, faculty members and employees participated enthusiastically. Various activities and competitions were also organized for students. Different cultural programmes like songs, solo dances, group dances etc. were presented by the students and total 195 units of blood from different units of RAJUVAS was donated.
- World Milk Day was celebrated on 01.06.2022 in all the constituent colleges and Institutes of RAJUVAS . Debate and essay competitions were organized for students on this occasion.
- 18th International Yoga Day was celebrated on 21st June, 2022 in all the constituent colleges and Institutes of RAJUVAS. The theme of this year's Yoga Day was "Yoga for Humanity". All teaching and non-teaching staffs and students of the institutes practiced different Yoga and Pranayam under the guidance of instructors.
- World Zoonosis Day was celebrated on 6th July 2022 in all the constituent colleges and Institutes of RAJUVAS. A public awareness program was organized for the livestock farmers on this occasion.
- As per the instructions of the UGC, five-day exhibition from 10-14 August, 2022 was organized in University to celebrate 14th August as the Partition Vibhishika Memorial Day.
- 76th Independence Day (Azadi Ka Amrit Mahotsav) was celebrated with great enthusiasm on all campuses of RAJUVAS. Vice-Chancellor Prof. Satish K. Garg hoisted the national flag at "Diwan-e-Aam" and paid his gratitude to the country's freedom fighters, immortal martyrs and martyrs who sacrificed their lives for the country's freedom and called for unity, integrity and development of the country. Students, faculty and non-teaching staff were honoured for their excellent performance, remarkable services in

teaching, research and extension. After this, intensive tree plantation was done by the faculty members and staff in the university campus.

- Hindi Diwas was celebrated in all campuses of RAJUVAS on 14th September, 2022. Hindi essay writing, poetry competition, debate competition was organized on the occasion
- World Rabies Day was celebrated on 28th September, 2022. An awareness programme was organized at DPS, Bikaner on World Rabies Day by the Center for Biomedical Waste Disposal and Technology, RAJUVAS, Bikaner.
- World Food Day 2022 was celebrated on 16th October 2022 at CDFT, Bassi, Jaipur aimed at reducing the food hunger among the community as well as prevent the hidden hunger of valuable nutrients by scientific as well as tradition way of nutrition.
- 153rd Birth Anniversary of Mahatma Gandhi was celebrated with full enthusiasm at CVAS, Bikaner. NSS volunteers contributed in cleanliness drive along with faculty members.
- 159th birth anniversary of Swami Vivekananda was celebrated as "राष्ट्रीय युवा दिवस" on 12th January, 2023.
- 74th Republic Day was celebrated with great fervour and gaiety on 26th January 2023 in all University Campus. Hon'ble Vice Chancellor Prof. Satish K. Garg unfurled the national flag in university. The whole campus came alive with spirit of patriotism. University Merit Holder students were felicitated on this occasion. Cultural programme was presented by students and staff members.
- Fresher's Day was organized for welcoming the newcomer's of the first year B.V.Sc.&A.H. at CVAS, Bikaner, CVAS Navania, and PGIVER, Jaipur.
- Orientation programme for the newly admitted students of first professional B.V.Sc.&A.H. was organized at all university campuses on 26th December, 2022.
- Farewell programme was organized for the passing out 2016 batch by the students of Batch 2017 on 16.03.2022. All the students shared their memories of degree period and pledged to serve the animals and the nation as veterinarian

University Social Responsibility Activities

- A *Pashupalak sangosthi* was organised on 30th May, 2022. In which a large number of livestock owners actively participated in this *sangosthi* and their quarries regarding dairy farming and goat farming were sorted out.
- An Animal treatment camp was organised on 16th May, 2022 in which total 350 animals were treated for different ailments.
- A krishak gosthi was organized in coordination with Department of Agriculture, Bikaner on 5th August, 2022 under the chairmanship of District Collector Bhagwati Prasad kalal under MATI Pariyojna at village Gadhwala for awareness twowards Symptoms, Prevention and control of Lumpy Skin Disease outbreak.
- A Sangosthi on "Zoonotic Diseases and Bio-Medical Waste Disposal" was organised by Animal Bio-Medical Waste Disposal Technology Centre, RAJUVAS at adopted village Garhwala on 06 August, 2022.
- A Computer Literacy Programme was organized at Gadhwala village on 30 August, 2022.
- An animal health camp for Lumpy Skin Disease was organized in adopted village Gadhwala during 13-17 September, 2022. About 341 cases of Lumpy Skin Disease, Parasitic infestations, Pica, Anoestrous were treated and given medicines in the health camp.
- Cleanliness drives were organized in Gadhwala on 31st October, on 28th February, 2023 under Swachhta Abhiyaan 2.0. Volunteers of college NSS unit actively participated in this drive.
- A Senior Citizen cum Ayurvedic Health camp was organized in coordination with Department of Ayurveda, Govt. of Rajasthan, Bikaner on 29th November, 2022 in which 130 were benefitted including 60 senior citizens.
- A Health Camp was organized in coordination with Department of Medical Health and Family Welfare, Bikaner, GOR on 15th December, 2022. In which 131 people were benefitted in the camp. A good number of women actively participated in the camp.
- A Sangosthi on "Role of students in adult literacy" was organised in Gadhwala to motivate the students to make literate their family members and neighbours.
- An Animal Biodiversity Conservation Awareness Camp in adopted village Garhwala was organized on 3rd December, 2022 in which the livestock owners were made aware about the importance of Animal Biodiversity and its conservation.
- Veterinary university organised animal disease immunity awareness and immune-booster distribution camp in adopted village Garhwala in coordination with Indian Red Cross Society, Bikaner.

University Organogram

CHANCELLOR

ACADEMIC COUNCIL

RESEARCH COUNCIL

EXTENSION EDUCATION COUNCIL

BOARD OF MANAGEMENT

VICE-CHANCELLOR

Registrar

Comptroller

Deans of the Colleges

Director Research

Director Extension Education

Controller of Examination

Dean Student Welfare

Dean Post Graduate Studies

Director PME

Director Clinic

Director Works (Estate Office)

Director HRD

Public Relation Cell

Placement Cell

Librarian Central Library

Constituent Colleges

- College of Veterinary and Animal Science, Bikaner
- College of Veterinary and Animal Science, Navania, Udaipur
- Post Graduate Institute of Veterinary Education & Research, Jaipur
- College of Dairy Science & Technology, Bikaner
- College of Dairy Science & Food Technology, Basni, Jaipur

Affiliated Colleges

- Apollo College of Veterinary Medicine, Jaipur
- Mahatma Jyotiba Fula College of Veterinary and Animal Science, Chomu
- Amrawali Veterinary College, Sikar
- M.B. Veterinary College, Dungarpur
- R.R. College of Veterinary and Animal Science, Dausi, Tonk
- Mahatma Gandhi Veterinary College, Bharatpur
- Shourabh College of Veterinary Science, Kheda, Hindaunchy, Karauli

Research Station

- I.R.S, Bikaner
- I.R.S, Beechwal (Bikaner)
- I.R.S, Kodamdesar (Bikaner)
- I.R.S, Nohar (Hanumangarah)
- I.R.S, Chandan (Jaisalmer)
- I.R.S, Vallabhnagar (Udaipur)
- I.R.S, Bojunda (Chittorgarh)
- I.R.S, Dug (Jhalawar)
- I.R.S, Dholpur

State Plan Centres

1. Apex Centre for Animal Disease Investigation, Monitoring and Surveillance
2. Centre for Etheno Veterinary Practice & Alternative Medicines
3. Centre for Conservation of Animal Biodiversity
4. Centre for Organic Animal Product Technology
5. Centre for Excellence for use of Space based Technology in Animal Science
6. Centre for Studies on Wild Life Management & Health
7. Centre for Disaster Management Technology for Animal
8. Vaccinology & Biological Product Research Centre
9. Animal Bio Medical Waste Disposal Technology Centre
10. Engineering and Technology Centre for Animal Science
11. Livestock Feed Resource Management and Technology Centre

Krishi Vigyan Kendra

- Nohar

Pashu Vigyan Kendra

- Nagaur
- Bharatpur
- Sri-Ganganagar
- Chittorgarh
- Kota
- Churu
- Dungarpur
- Jhunjhunu
- Tonk
- Sirohi
- Dholpur
- Lunkaransar
- Jodhpur
- Jobner
- Jalore
- Jhalawar
- Jojawar

Coordinator AHDP

IUMS Cell

Security Office

Pool Office

Patent Cell

ICAR Nodel Office

Introduction

The Rajasthan University of Veterinary and Animal Sciences (RAJUVAS), Bikaner is a constituted body corporate established under Sub-section (3) of Section 1 of the Rajasthan University of Veterinary and Animal Sciences Act, 2010. The University has been established with the following objectives

- Making provision for imparting education towards development of quality human resource in different branches of study in Veterinary and Animal Sciences.
- Furthering the advancement of learning and conducting of research.
- Undertaking extension education.
- Promoting partnership and linkage with National and International education institutions.
- Establishing vital linkage with the concerned line departments working in the fields of animal husbandry, fisheries and dairy development, animal technology in the State, by whatever name called, governed by the Govt. of Rajasthan as well as the Central Govt.

Vision

- To train and produce skilled and competent human resource
- To generate suitable technologies and transfer new technical knowledge to stakeholders
- To enhance income of farmers and livestock owners through Animal Husbandry

Mission

- To augment livestock productivity, profitability and sustainability in Rajasthan
- To promote liaisoning and linkages with National and International Research and educational Institutes, specialized in the field of veterinary, animal husbandry, dairy fishery science technologies
- To plan, coordinate, organize and guide the extension education programmes to ensure efficient working of the extension education activities

Role and Mandate

The RAJUVAS is envisaged to accomplish the following roles under the mandate of the University:

- To plan, initiate, guide, co-ordinate and monitor the research in the field of Veterinary and Animal Science.
- To maintain liaison with State and central government, ICAR, DST and other National and International Funding agencies for obtaining the financial support for various Veterinary and Animal Sciences research programmes.
- To monitor animal health programme through disease investigation and surveillance.
- To impart quality professional education.
- To develop technologies suitable for promoting animal production in the state of Rajasthan.
- To transfer the technologies to field functionaries.
- To develop a center of higher learning, research and extension in the field of Veterinary and Animal Science.

Goal

- Empowerment of the society in terms of economic upliftment, entrepreneurship development and employment generation through Animal Husbandry.

Organizational Setup

The functioning of university is governed by various bodies and authorities of the university which exercise their powers at various levels to coordinate and regulate administration focused at education, research and extension activities. The organizational setup of university is in almost conformity with other agricultural, veterinary and academic universities.

A. Authorities of the University

His Excellency, the Governor of Rajasthan is the Chancellor of the University. Vice Chancellor is the Academic Head and Principal Executive officer of the University. The University is governed by the following Authorities.

1. Board of Management
2. Academic Council
3. Faculty Chairman
4. Board of Studies
5. Research Council
6. Extension Education Council
7. Planning Board
8. Finance Committee

Besides these the Vice-Chancellor has also constituted a core Advisory Committee, Public Relation Cell, Director, Prioritization, Monitoring and Evaluation (DPME), Director Clinics, Dean Students Welfare, University Students Placement Cell, IUMS, Dean Postgraduate Studies, Director works, Controller of Examination, ICAR Nodal Office and R&V NCC Squadron and Regiment.

1. Board of Management (BOM)

The Board of Management (BOM) is the highest administrative body empowered to monitor supervise and control the university affairs. The BOM is the policy making body responsible for the management of the university.

Ex-officio Chairperson of the BOM

Hon'ble Vice-Chancellor, RAJUVAS, Bikaner

Ex-officio members of BOM

- Principal Secretary, Animal Husbandry, Dairy& Fisheries Department, GOR
- Additional Principal Secretary, Finance Department Government of GO Managing Director of Rajasthan Co-operative Dairy Federation,
- Director Animal Husbandry, of GOR
- Director of Fisheries, GOR Rajasthan ,
- Registrar, RAJUVAS, Bikaner.
- Two members are nominated by Hon'ble Governor of Rajasthan
- Three members are nominated by Vice-Chancellor.
- Four members by Government of Rajasthan
- One member is nominated by Veterinary Council of India.

2. Academic Council

The Academic Council is the principal academic body which controls and frame all the academic regulations and responsible for making standards of instructions, education and examination in the university.

Vice-Chancellor

Chairman

Registrar

Member Secretary.

Members of the Council

- Secretary to Government, Department of the Animal Husbandry Dairy and Fisheries
- Managing Director of Rajasthan Co-operative Dairy Federation, Director, Animal Husbandry, GOR
- Director Fisheries, GOR
- Chairperson, Faculty of Veterinary and Animal Science, Bikaner
- Dean, CVAS, Navania, Vallabhnagar
- Dean, P.G.I.V.E.R
- Dean, Post Graduate Studies
- Dean, Students Welfare,
- Director Research
- Director Extension Education
- Director, PME
- Director Clinics
- Ten members amongst Head of the Departments to be nominated by Vice-Chancellor
- Three persons having special or practical experience in different aspect of veterinary and animal science to be nominated by Vice-Chancellor.

3. Faculty Chairman

To look after the work of teaching, research and extension in the fields of veterinary and animal science, dairying, fisheries and allied sciences in the state of Rajasthan Dean and Faculty Chairman is appointed by the Vice Chancellor.

4. Board of Studies

Board of Studies is for framing the curricula for under graduate and post graduate programmes and to make recommendations to academic council for establishment of new departments, abolition/subdivision or reconstitution of the existing departments. The Board of Studies of the faculty of Veterinary and Animal Science has been constituted as:

Dean of Faculty

Chairperson of the Board of studies

Members of the Board of studies (BOS)

- Deans of the constituent and affiliated colleges,
- Four Principals of affiliated Animal Husbandry Diploma Institutions,
- All Heads of the Departments-cum-Chairperson of Committees of Courses
- Conveners of the Committees of Courses of the concerned departments,
- One senior faculty member from each Department nominated by the Dean of Faculty
- Two External Experts nominated by the Dean and Chairman of the Faculty approved by the Academic Council.
- Senior most Head of the Department shall be the Member Secretary of BOS

5. Research Council

The Research Council is policy making body on research activities of the university. The set up of council is as below:

Vice-Chancellor

Chairman

Director Research

Member Secretary.

Members of Research Council

- Managing Director of Rajasthan Co-operative Dairy Federation,
- Director of Animal Husbandry, GOR,
- Director of Fisheries, GOR,
- Director of Extension Education
- Deans of Constituent colleges
- Directors of the University,
- Heads of the Departments,
- All Incharges of Livestock Research Stations,
- All Principal Investigators of research schemes and projects Four co-opted members as members of the council. The research in University is under the control of Director of Research with its head-quarter at Bikaner.

6. Extension Education Council

The Extension Education Council (EEC) is policy making body on extension activities of the university with Vice-Chancellor as its Chairman and Director Extension Education as its Member Secretary.

Vice-Chancellor

Chairman

Director Extension Education

Member Secretary.

Members of Extension Education Council

- Managing Director of Rajasthan Co-operative Dairy Federation,
- Director of Animal Husbandry, GOR,
- Director of Fisheries, GOR,
- Director of Research
- Deans of Constituent colleges
- Directors of the University,
- Heads of the Departments
- All Incharges of Pashu Vigyan Kendra
- All Incharges of Krishi Vigyan Kendra (KVKs)
- Two eminent persons in the field of Extension Education from outside nominated by the Vice-Chancellor,
- Two progressive livestock or fisheries farmers nominated by Vice-Chancellor
- CEO, URMUL Trust, Bikaner.

7. Planning Board

The Planning Board of RAJUVAS shall advise generally on the planning and development of the University and keep under review the standard of education and research in the University. The Board has the right to advise the Board of Management, Academic Council, Research Council and Extension Education Council on any academic, research and extension matter. The Planning Board shall consist of the Vice-Chancellor, RAJUVAS as ex-officio chairperson and not more than eight persons of high academic standing nominated by the Vice-Chancellor.

8. Finance Committee

The Finance Committee of university advise on matters related to administration of property and funds of university.

Vice-Chancellor
Chairman

Comptroller
Member Secretary

Members of Finance Committee

- Principal Secretary to the Government Animal Husbandry, Dairying and Fisheries Department
- Principal Secretary Finance Department
- Dean, College of Veterinary and Animal Science, Bikaner are its members.

B. Other Functional Units

1. Core Advisory Committee

The Vice-Chancellor has constituted Core Advisory Committee and nominated Registrar as its Member Secretary. The meeting of the above committee will be presided by Hon'ble Vice-Chancellor. Chairman Faculty and Dean, CVAS, Bikaner, Dean Post Graduate Studies, Director Extension Education, Director Clinics, Director Research, Veterinary and Animal Science, Dean, CVAS, Navania, Vallabhnagar, Dean Students 'Welfare, Controller of Examinations, Director, PME and Comptroller are the members of the committee.

2. Public Relations Cell

The Public Relations Cell is engaged in disseminating policies, programmes, research, extension and developmental activities of RAJUVAS for welfare of people of the state in particular and country as whole.

Public Relations Cell since its inception publishing newsletter quarterly named as "RAJUVAS Newsletter" including all research, extension and educational activities conducted during particular quarter. Four issues of RAJUVAS Newsletter were released during this year. This cell also published the RAJUVAS Calendar, RAJUVAS in Headlines and New Year Greetings in this year. This cell is also responsible for giving publicity to Press & Media.

3. Dean Students' Welfare

The office of the Dean Students' Welfare started working in the May 2010 with the establishment of the new University. Dean Students' Welfare coordinating the sports, cultural activities initiated by the State Government and Indian Council of Agricultural Research and Veterinary Council of India, National Service Scheme, National Cadet Corps. DSW coordinating literary, fine arts competitions and personality development programmes in the constituent colleges. It also acts as a nodal centre to promote cooperation and fellowship among students on campuses. DSW encourage students to give expression to their talents to enrich our social fabric and improve campus life besides pursuing their academic targets. The election of the student's union of University was not conducted due to COVID-19 pandemic.

4. Directorate of Prioritization, Monitoring and Evaluation (DPME)

The Directorate of Prioritization, Monitoring and Evaluation was established in the year 2010-11, with the objective to plan and monitor education, research, extension activities, human resource, finance etc. Directorate of Prioritization, Monitoring and Evaluation is responsible to explore and establish the priorities, monitor ongoing activities and evaluate the complete activities of the University. The directorate is responsible for coordinating all the units of the university in terms of seeking information, compilation and preparation of various types of university documents viz: Annual reports, Varshik Pragati Prativadan for vidhan-sabha etc. for furnishing to ICAR, GoR and various Agricultural Universities.

5. University Student's Placement Cell

To create and enhance the career opportunities to veterinary graduates and postgraduates, University Placement Cell was established by RAJUVAS. This cell is maintaining a computerized database of veterinary graduates and postgraduates. With the help of this database, the cell sponsors list of students to the recruiting agencies for employment opportunities. A software company has developed and installed the software programme for University placement Cell and is now in operation.

6. Integrated University Management System (IUMS)

IUMS is web enabled application that takes care of almost all the functions of University. RAJUVAS has achieved new-found operational efficiency after successful implementation of the Integrated University Management System. After Implementation of IUMS, the University effectively manages the student's entire academic cycle beginning from pre-admission to alumni management; taking them through admission, academics, fee management,

exams and results processing with issuance of the degree/certificate. System also helped university in generation of various Dynamic & Analytical reports for planning & decision making. University has also implemented Employee/Student portal that has given great ease to students & employees in their normal day-to-day activities and interaction with university.

Now, Students applies their exams through online portal and get various notifications related to their attendance, fee, exams & results. Employee applies/ approves their leaves through employee portal, generates their salary slips, get loan and advances details online. It also helped RAJUVAS in documentation required in appointment letters, creation of masters, maintenance of increments, other allowances like arrears, calculation of supplementary bills, advances taken against salary, etc. The various modules were installed in IUMS i.e. OSES-On Screen Evaluation & Advanced Examination Management, Pre-Admission, Recruitment, Self Service Portal (SSP), HRMS, Payroll & Establishment, Stores & Purchase, Budget Management, Placement Service, VC & Administrative Offices, GPF & Pension, Financial Accounts, Admission & Academics, Examination & Results, Veterinary Hospital Management, Live-Stock & Farm Management, Industry University Interaction, Alumni Management, Research, Letter Movement System, File Movement System, Attendance & Fee management System, Meetings & Committee Management, Events & Seminar Management, Assets & Estate Management, Mail Server & SMS Server, Smart Class, Library Automation through RFID Technology.

7. Dean Post-Graduate Studies

The responsibility of the Dean, PGS is mainly to plan, articulate, coordinate, monitor and achieve the new dimension of post-graduate education and student research in consultation with the Deans of constituent colleges and Heads of the Departments. It is one of the prime responsibilities of Dean, PGS to maintain high standards of PG education and research at the University. At present, the University offers Master of Veterinary Science and Doctor of Philosophy degree programmes in 17 disciplines. More than 550 students got approved their theses in M.V.Sc. and Ph.D. since its establishment. This office conducts Pre-PG test for M.V.Sc and Ph.D. programmes annually for admission in various disciplines. Besides this, the approval of programmes of work and plan of research for thesis, appointment of examiners, evaluation of theses and to maintain records of PG and Ph.D. students are carried out.

8. Directorate of Clinic

The Directorate of clinic was created with the objectives to run the clinical services at all the campuses of RAJUVAS and to make such services as referral facilities. The post and office of Director Clinic is at the University head office. At all the three campuses namely CVAS, Bikaner, CVAS, Navania, Udaipur, PGIVER, Jaipur and the three clinical departments as Veterinary Gynaecology and Obstetrics, Veterinary Medicine and Veterinary Surgery and Radiology are providing, the clinical services to the farmers and animal owners 24X7.

Time to time out skirt animal treatment camps are also organized specially in rural areas. A regular ambulatory service is in practice at all campuses which not only provide clinical services at distant places within the city but also become a good clinical academic learning for students. Under all the Veterinary Clinical Complexes everywhere a state-of the-art Clinical Diagnostic Laboratory is working. One pet animal ICU is developed at Bikaner VCC campus. Separate indoor ward facilities are there for indoor animal patients at Surgery, Medicine and Gynecology & Obstetrics departments. Farmers' hostel facility is developed with all essential facilities.

9. Controller of Examinations

The Controller of Examinations office is responsible for the enrolment of student in various academic programme (UG, PG, Ph.D. and Two-year Diploma programme), preparation of question papers, conduction of examinations, evaluation of answer scripts, declaration of results and issuing of Mark sheet, grade sheets and transcript. For the first time in the history of Rajasthan, the University has implemented On Screen Evaluation and Advanced Examination Management System (OSES), which may act as a catalyst to change the existing examination evaluation process. The unique strength of this project lies in its comprehensive and ground-breaking approach to reduce errors and save time in examination evaluation process. Using OSES system in the examination the university is able to declare the result of the different programme within 2-3 weeks after the examinations.

10. Directorate of Works (Estate Office)

Directorate of Works (Estate Office) plays an instrumental role in the management of assets of the University and responsible for the administration and management of Estates Residential/Office Accommo-dation of RAJUVAS at Bikaner, Jaipur, Udaipur and other stations of the University located in different districts. The Estate Office deals with the entire activities involved in construction of building, their maintenance, maintenance of water and electricity supply as well as record keeping of all buildings and infrastructure.

11. Directorate of Human Resource Development

Human resource is the most crucial, vital and dynamic resource to achieve the objectives and goals of the

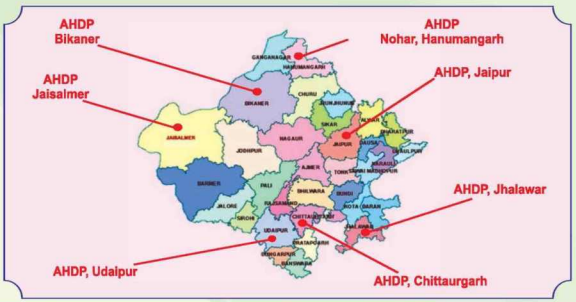
University. There is always need to have a systematic approach to develop and improve competency of the human resource in terms of Skills, Knowledge and Attitude, Behaviour through appropriate training and development programmes from time to time. In order to strengthen and facilitate training and capacity building of all categories of the stakeholders, the Directorate of HRD shall be created to carry out activities with the purpose to ensure the growth and management of the faculty/ staff/students/entrepreneurs/farmers etc. in pursuance of the mandate of the university. Directorate of Human Resource Development is responsible to overall monitoring, implementation, evaluation and management of HR needs and requirements of the University.

12. ICAR Nodal Office

ICAR nodal office is a link office between the university and ICAR. This office explores the logistics, amenities of the university and justifying the needs of the university raises the financial demands under various heads from ICAR. It also communicates with the ICAR regarding students' fellowships of the ICAR sponsored students and also monitors the proper and timely utilization of funds provided by the ICAR. The office also monitors the allocation of ICAR funds after discussion with the university.

13. R&V NCC Squadron and Regiment

In order to inculcate the spirit of community service amongst students, there are two NCC units functional at CVAS, Bikaner and CVAS, Navania (Udaipur). 1 R&V NCC Sqn located at CVAS, Bikaner is fully equipped with horse line (having 13 army horses), an arena for exercising and show equestrian sports. 2 R&V Regiment located at CVAS, Navania, Udaipur (having 26 army horses) is the largest R&V Regiment of India with an arena for exercising, horse shelter, drill ground and show equestrian sports. These units provides institutional training as well as various camp trainings, National integration, Advance leadership, Summer camp, Rock climbing, Para jumping, Mountaineering, Army attachment camp, Republic day camp etc.



Officers of the University

Vice-Chancellor	Prof. (Dr.) Satish Kumar Garg
Chairperson of the Faculty and Dean, CVAS, Bikaner	Prof. (Dr.) A.P. Singh
Dean, College of Veterinary and Animal Science, Navania, Vallabhnaga, Udaipur	Prof. (Dr.) R.K. Joshi
Dean, Post Graduate Institute of Veterinary Education and Research (PGIVER), Jaipur	Prof. (Dr.) Sheela Choudhary
Director Research	Prof. (Dr.) Hemant Dadhich
Director, Extension Education	Prof. (Dr.) R.K. Dhuria
Director, Prioritization, Monitoring and Evaluation	Prof. (Dr.) Basant Bais
Director, Human Resource Department	Prof. (Dr.) B. N. Shringi
Dean, Post Graduate Studies, Bikaner	Prof. (Dr.) A.P. Singh
Dean, College of Dairy Science and Technology, Bikaner	Prof. (Dr.) Hemant Dadhich
Dean, College of Dairy and Food Technology,	Prof. (Dr.) D.S. Meena
Director, Clinics	Prof. (Dr.) Praveen Bishnoi
Dean, Student Welfare	Prof. (Dr.) Praveen Bishnoi
Controller of Examination	Prof. (Dr.) Urmila Pannu
Director, Works (Estate Office)	Er. Praveen Mohan Mittal
Comptroller	Sh. Banwari Lal Sarwa
Registrar	Smt. Bindu Khatri
OSD to Vice-Chancellor	Prof. (Dr.) R.K. Dhuria
Convener, Public Relation Cell	Prof. (Dr.) R.K. Dhuria

Important Meetings of University

12th Meeting Board of Studies (BOS)	20.04.2022
26th Meeting of Board of Management	28.04.2022
21th Meeting of Academic Council	28.04.2022
22th Meeting of Academic Council	30.05.2022
04th Meeting of Council Officers	15.06.2022
08th Meeting of Research Council	17.06.2022
08th Meeting of Extension Education Council	29.06.2022
27th Meeting of Board of Management	28.08.2022
12th Meeting of Finance Committee	06.10.2022
05th Meeting of Council Officers	07.01.2023
23th Meeting of Academic Council	16.01.2023
28th Meeting of Board of Management	18.01.2023
Meeting of Dean & Director	20.02.2023
13th Meeting Board of Studies (BOS)	25.02.2023
Meeting of Dean & Director	13.03.2023
24th Meeting of Academic Council	20.03.2023
29th Meeting of Board of Management	20.03.2023


35th Board of Management
Meeting

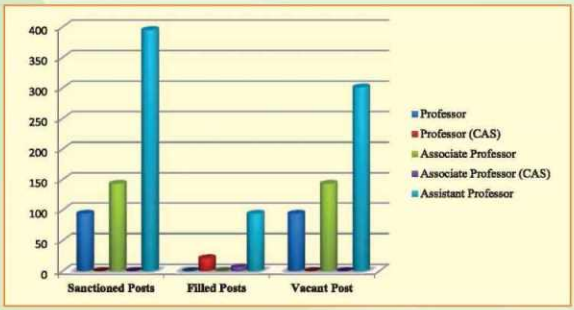

22nd Meeting of
Academic Council
स्वागतम्

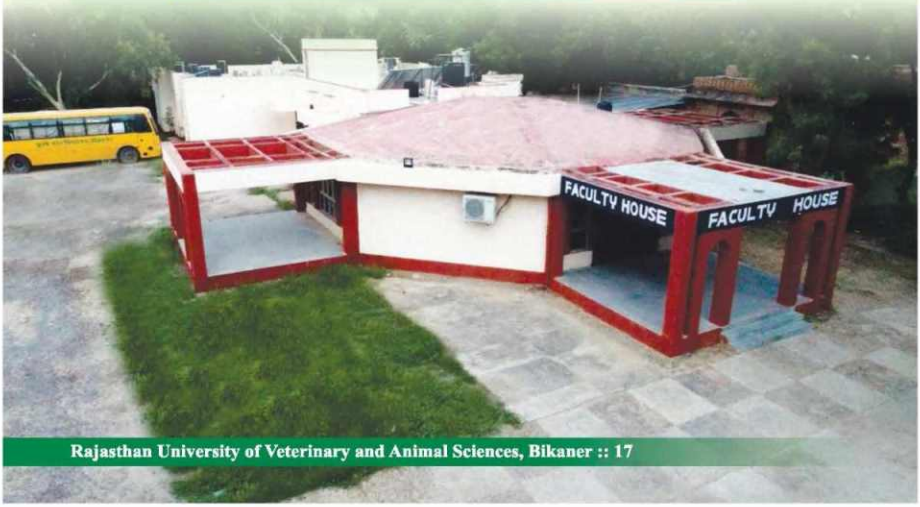

Board of Management
स्वागतम्

Faculty Strength

The Cadre-wise Strength of Teaching & Administrative Staff of RAJUVAS (as on March 2023).

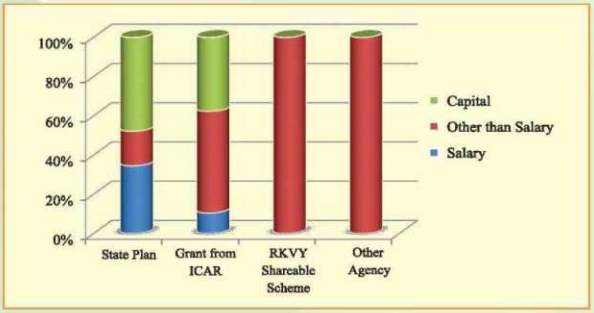
Sr. No.	Name of Post	Sanctioned	Filled	Vacant
1	Professor	94	-	94
2	Professor under CAS	-	21	-
3	Associate Professor	143	-	143
4	Associate Professor under CAS	-	6	-
5	Assistant Professor	395	94	301
	Total	**632**	**121**	**538**





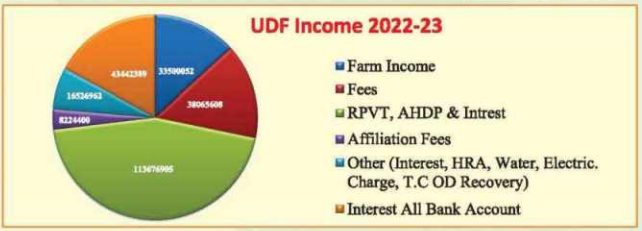
Finance and Budget

Particulars	2022-23			(Rs. In Lac)
	Salary	Other than Salary	Capital	Total
State Plan	6438.00	3300.00	8933.20	**18671.20**
Grant from ICAR	42.00	208.20	151.50	**401.70**
RKVY Shareable Scheme	0.00	585.00	0.00	**585.00**
Other Agency	0.00	33.86	0.00	**33.86**
G. Total	**6480.00**	**4127.06**	**9084.70**	**19691.76**



UDF Income 2022-23

S. No.	Head	Amount (in Rs.)
1	Farm Income	33500052.00
2	Fees	38065608.00
3	RPVT, AHDP & Interest	113676905.00
4	Affiliation Fees	8224400.00
5	Other (Interest, HRA, Water, Electric. Charge, T.C OD Recovery)	16526962.00
6	Interest All Bank Account	43442389.00
	Total	**253436316.00**



University Colleges and Institutes

College of Veterinary and Animal Science, Bikaner

The College of Veterinary & Animal Science was started as the government college and named as the Rajasthan Veterinary College. Later on, it became a part of the faculty of Medicine and Veterinary of the Rajasthan University, Jaipur. In 1962, a separate Rajasthan Agriculture University was started and the college became the part of the faculty of this University. In 1964, college was affiliated with the University of Udaipur. This University was renamed as Mohan Lal Sukhadia University and then Sukhadia University. The Rajasthan Agricultural University (RAU), formerly a part of the Sukhadia University, Udaipur, became a separate entity on 1st of August 1987. RAU has been renamed as Swami Keshwanand Rajasthan Agricultural University, Bikaner (SKRAU, Bikaner on June 09, 2009. In May 2010, it becomes the part of the Rajasthan University of Veterinary and Animal Sciences (RAJUVAS), Bikaner.

The college has 17 well established departments having well equipped laboratories with sophisticated instruments and gadgets; a well-developed library with 56136 books, journals and thesis; a workshop; three examination halls of the capacity of >200 students; clinical complex having indoors, outdoors, dormitory and outpatient departments of major clinical departments with richest clinical facilities like CT Scan, Ultra Sonography, laproscopy, dentistry, laser surgery ; apex centre for animal disease diagnosis, monitoring and surveillance etc. The college also have animal biotechnology laboratory, a radioisotope laboratory, computer facilities, LAN server, central instrumentation facility, animal house, canine welfare society, placement cell, internet facility and 24x7 days a week clinical and hospital facility, diagnostic laboratory, NCC (R&V) squadron unit, numerous research projects. Much stress is being laid over improved practical training to the students. Every department is equipped with smart classroom to facilitate improved teaching.

The facilities for students are excellent in terms of 6 boys' hostels, 2 girls' hostels; spacious canteen and an elegant auditorium. The college is having ample student and faculty amenities. Staff colonies of the college have 92 quarters for all cadres. Ample playgrounds like football, hockey, basketball, tennis, volleyball, kabaddi, badminton, tennis, football, hockey, pavilion etc. and a well equipped gymnasium within the campus. Heritage buildings amalgamate very well with the latest ones on the campus. The campus is having a branch of ICICI Bank and a post-office, located just attached to the campus. The college is offering four academic programmes namely Bachelor of Veterinary Science and Animal Husbandry (B.V.Sc.&A.H.), Master of Veterinary Science (M.V.Sc.), Doctor of Philosophy (Ph.D) and Animal Husbandry Diploma Programme (AHDP) following programmes of study.

During 2022-23 College of Veterinary and Animal Sciences, Bikaner admitted 100 students (100 seats are sanctioned) for B.V.Sc.&A.H., 67 for M.V.Sc. and 22 for Ph.D. degree programmes in CVAS, Bikaner. In two year Animal Husbandry Diploma Programmes 41 students were admitted. A total of 34 ICAR's All India Entrance Examination AIEEA (PG) from CVAS, Bikaner. During the reporting year 44 Students completed their M.V.Sc. and 16 students completed their Ph.D from CVAS, Bikaner. Total 162 research papers were published in journals by the faculty of CVAS, Bikaner during 2022-2023.

College of Veterinary and Animal Science, Navania, Vallabhnagar, Udaipur

College of Veterinary and Animal Science, Navania is the second constituent veterinary college of the RAJUVAS, which is situated in the southern region of Mewar in Udaipur district. This college was registered under registration No.P.14 (18) Edu.-4/2007 dated 28.5.2007 and the first batch of B.V.Sc. &A.H. was started on 10th September, 2007.

The premises of the college are spread over an area of 892 bighas (224 hectares) of land. The College possesses well-equipped laboratories, an adequate number of classrooms, library, computer lab, stores, canteen and clinical and research facilities. The College is developing as an institution of academic excellence, including research and extension, in the field of Veterinary and Animal Sciences.

The institute is running four academic programmes namely Bachelor of Veterinary Science and Animal Husbandry (B.V.Sc. & A.H.), Master of Veterinary Science (M.V.Sc.), Doctor of Philosophy (Ph.D) and Animal Husbandry Diploma Programme (AHDP). College has been included in the first schedule of Indian Veterinary Council act 1984. The facilities

for students are excellent in terms of one boys' hostel with capacity of having 99 rooms and one girls hostel of 94 room capacity; canteen and an elegant open auditorium. The R&V Regiment located at CVAS, Vallabhnagar, Udaipur (having 26 army horses) is the largest R&V Regiment of India with an arena for exercising, horse shelter, drill ground and show equestrian sports.

All the 17 departments are well equipped with instruments, chemicals, laboratories, teaching materials etc. The college has established a TVCC with fully fledged facilities and ILFC having large animal(cattle and buffalo) unit, small animal unit, Poultry Unit, Vermicompost Unit, Fish Culture pond, Pet unit, Hydroponics Unit, Silage Unit, Biogas Based Electric Production Unit etc.

During 2021-22 College of Veterinary and Animal Sciences, Navania, Vallabhnagar admitted 100 students (100 seats are sanctioned) for B.V.Sc. & A.H., 34 for M.V.Sc. and 5 for Ph.D. degree programmes in CVAS, Navania. In two year Animal Husbandry Diploma Programmes 48 students were admitted. A total of 20 Students were selected for ICAR's All India Entrance Examination AIEEA (PG) from CVAS, Navania. During the reporting year 10 Students completed their M.V.Sc. and 3 completed their Ph.D from CVAS, Navania . Total 58 research papers were published in journals by the faculty of CVAS, Navania during 2022-2023. One International, One national conference and One symposium were organized by the college during reporting year. Fifteen faculty/students recognized for receiving award during 2022-23.

Post Graduate Institute of Veterinary Education and Research (PGIVER), Jaipur

PGIVER was established in 2012 at Jaipur, as a constituent college of Rajasthan University of Veterinary and Animal Sciences, Bikaner. Further in 2015- B.V.Sc. & A.H. course at Jaipur started after duly granted permission of Veterinary Council of India, New Delhi with effect from 29.10.2015. The main campus of the Institute is located at National Highway-21, Agra Road, Jamdoli, Jaipur on 18.90 acres (75608 sq.m.) of land where a newly constructed academic and administrative building with academic departments, administrative block and library being functional, Veterinary Clinical Complex building with 4 clinical departments and OPD and IPD are functional and Livestock Farm Complex having dairy, sheep & goat and poultry unit has been established. Besides the main campus, the institute is in possession of 1.52 acres of land at B-2 Bypass, Mansarovar, Jaipur, where the AHDP course is being conducted along with research projects and the university office. In addition to this, the institute has 14.22 acres of land at Kho- Nagorian, Jaipur for the purpose of feed and fodder production and NCC unit including an equine unit. The institute is running four academic programmes namely Bachelor of Veterinary Science and Animal Husbandry (B.V.Sc. & A.H.), Master of Veterinary Science (M.V.Sc.), Doctor of Philosophy (Ph.D) and Animal Husbandry Diploma Programme (AHDP).

The institute has a unique campus, which alongside main college, farms and teaching veterinary clinical complex buildings, has 17 core academic departments covering clinical, para-clinical and non-clinical aspects of veterinary science and animal husbandry curricula. Well-equipped sports facilities and attractive leisure time opportunities are offered to the students and employees of the institute. The facilities for students are excellent in terms of one boys' hostel with capacity of having 68 rooms with 204 beds and one girls hostel of 51 room capacity with 153 beds facility; During 2022-23 PGIVER, Jaipur admitted 98 students (100 seats are sanctioned) for B.V.Sc. & A.H., 22 for M.V.Sc. and 6 for Ph.D. degree programmes. In two year Animal Husbandry Diploma Programmes 44 students were admitted. A total of 5 Students were selected for ICAR's All India Entrance Examination AIEEA (PG) from PGIVER. During the reporting year 24 Students completed their M.V.Sc. and 11 Ph.D. Total 54 research papers were published in journals by the faculty of PGIVER, Jaipur during 2022-2023. Nineteen faculty/students recognized for receiving award during 2022-23

College of Dairy Science and Technology (CDST), Bikaner

The College of Dairy Science & Technology (CDST), Bikaner is a constituent College of Rajasthan University of Veterinary and Animal Sciences (RAJUVAS), Bikaner. In order to create technical professionals, the Hon'ble Chief Minister of Rajasthan, has announced new colleges for a professional graduate degree programme in Dairy and Food Technology in the budget announced in the year 2021.

The CDST, Bikaner is fully operational as per fifth Dean's committee recommendation of ICAR. A four-year Undergraduate Programmes B. Tech. in Dairy Technology was started in year 2021 with well-established and well-equipped Laboratories, plant & machineries in each department and other facilities viz., smart classrooms, Games/Sports.The college is blessed with young and dynamic faculty with wide exposure. A graduate in Dairy Technology is well-qualified to give their services in cooperatives, banks, government, and private sector industries. Dairy Technology graduate would be eligible in central and state government jobs for the posts of dairy extension officers, food safety officers, food analyst etc. Presently the College of Dairy Science and Technology, has started their schedule at Department of Livestock Production and Management, RAJUVAS, Bikaner. During 2022-23 in First yr. B. Tech. in Dairy Technology 36 students were admitted.

College of Dairy and Food Technology, (CDFT) Bassi, Jaipur

The college of Dairy & Food Technology (CDFT), Bassi, Jaipur is a constituent College of Rajasthan University of Veterinary and Animal Sciences (RAJUVAS), Bikaner. The CDFT, Bassi, Jaipur is fully operational as per Fifth Dean's committee recommendation of ICAR with Two four-year Undergraduate Programmes viz., B. Tech. in Dairy Technology and B. Tech. in Food Technology were started in year 2021. The college is developing its infrastructure with well-established and well-equipped Laboratories, plant & machineries (Dairy and Food) in each department and other facilities viz., smart classrooms, Games/Sports. A graduate in dairy/food technology is well-qualified to give their services in cooperatives, banks, Government, and private sector industries. Dairy/ Food Technology graduate would be eligible in central and state government jobs for the posts of dairy extension officers, food safety officers etc. Presently the College of Dairy & Food Technology (CDFT) has started their schedule at Campus-PGIVER, NH-21, opposite Chanda Garden, Agra Road, Jamdoli, Jaipur. During 2022 -23 In First yr. B. Tech. in Dairy Technology 12 students and B. Tech. in Food Technology 5 students were admitted.

Animal Husbandry Diploma Programme Institutes

The university is imparting two years Animal Husbandry Diploma Programme in constituent AHDP institutes and institutes affiliated to University, which have the capacity to train about in 2022-23, 4420 students were admitted in first year AHDP. Admission for AHDP programmes are being done on merit drawn on the basis of marks of Senior Secondary (10+2) or equivalent. There are 50 seats in each institute.

All seats (100%) of constituent colleges and affiliated Government institutes as well as 85% seats of all affiliated private institutions are State seats and filled from Rajasthan domicile, to be filled by merit-cum-reservation, as per rules. At present 91 institutions (both constituent and affiliated) are available for admission. Out of which, seven institutes are constituent colleges of university located at CVAS Bikaner, PGIVER Jaipur, CVAS, Navania Udaipur, LRS Nohar Hanumangarh, LRS Chandan Jaisalmer, LRS Bojunda Chittorgarh, LRS Dug Jhalawar and four are state Govt institutes located at Jaipur, Kota, Jodhpur and Udaipur and 84 institutes are private affiliated institutes located at different parts of Rajasthan.

Intake Capacity and Students Strength

Intake Capacity in Constituent Veterinary Colleges of RAJUVAS

S. No.	Name of college	Total No of Seat	State	Payment	VCI/ICAR
Intake Capacity (B.V.Sc. & A.H.)					
1	College of Veterinary & Animal Science Bikaner	**100**	35	50	15 VCI
2.	College of Veterinary & Animal Science, Navania, Vallabhnagar, Udaipur	**100**	35	50	15 VCI
3	Post Graduate Institute of Veterinary Education & Research, Jaipur	**100**	35	50	15 VCI
Intake Capacity (M.V.Sc.)					
1	College of Veterinary & Animal Science Bikaner	**61**	29	21	11 ICAR
2.	College of Veterinary & Animal Science, Navania, Vallabhnagar, Udaipur	**34**	15	13	6 ICAR
3	Post Graduate Institute of Veterinary Education & Research, Jaipur	**42**	19	18	5 ICAR
Intake Capacity (Ph.D.)					
1	College of Veterinary & Animal Science Bikaner	**29**	14	8	7 ICAR
2.	College of Veterinary & Animal Science, Navania, Vallabhnagar, Udaipur	**12**	9	3	--
3	Post Graduate Institute of Veterinary Education & Research, Jaipur	**25**	13	7	5 ICAR

Intake Capacity (M.V.Sc) Department wise in Constituent Veterinary Colleges

S. No.	Total No of Seat (Department Wise)	CVAS, Bikaner			CVAS, Navania, Udaipur			PGIVER, Jaipur		
		State	Payment	ICAR	State	Payment	ICAR	State	Payment	ICAR
1.	Animal Genetics & Breeding	01	-	01	01	01	01	01	01	01
2.	Animal Nutrition	02	02	01	02	01	01	02	02	01
3.	Animal Reproduction, Gynecology and Obstetrics	02	02	--	01	01	--	01	01	--
4.	Livestock Production Management	03	02	01	01	01	01	01	01	01
5.	Livestock Product Technology	01	01	01	--	01	--	01	01	--
6.	Veterinary Anatomy and Histology	02	02	01	01	01	01	--	--	--
7.	Veterinary Animal Husbandry & Extension	02	01	--	--	--	--	02	01	--
8.	Veterinary Biochemistry	01	01	01	--	--	--	01	01	--
9.	Veterinary Clinical Medicine, Ethics and Jurisprudence	02	01	--	02	02	--	03	03	--
10.	Veterinary Microbiology	01	01	--	02	01	--	01	01	--
11.	Veterinary Parasitology	01	--	01	01	01	--	01	01	01
12.	Veterinary Pathology	02	02	01	02	02	01	01	01	01
13.	Veterinary Pharmacology and Toxicology	02	02	01	--	--	--	--	--	--
14.	Veterinary Physiology	01	--	01	01	01	--	01	01	--
15.	Veterinary Public Health and Epidemiology	01	01	--	01	--	--	01	01	--
16.	Veterinary Surgery and Radiology	05	03	01	--	--	01	02	02	--
	Total	**29**	**21**	**11**	**15**	**13**	**06**	**19**	**18**	**05**

Intake Capacity (Ph.D.) Department wise in Constituent Veterinary Colleges

S. No.	Total No. of Seat (Department Wise)	CVAS, Bikaner			CVAS, Navanis, Udaipur			PGIVER, Jaipur		
		State	Payment	ICAR	State	Payment	ICAR	State	Payment	ICAR
1.	Animal Genetics & Breeding	--	--	01	01	01	--	01	01	01
2.	Animal Nutrition	01	--	01	01	01	--	01	01	01
3.	Animal Reproduction, Gynecology and Obstetrics	01	01	--	01	--	--	01	--	--
4.	Livestock Production Management	02	01	01	--	--	--	01	01	01
5.	Livestock Product Technology	--	--	--	--	--	--	01	--	--
6.	Veterinary Clinical Medicine, Ethics and Jurisprudence	01	--	--	01	01	--	02	02	--
7.	Veterinary Microbiology	01	01	--	01	--	--	01	--	--
8.	Veterinary Pathology	01	01	01	01	--	--	01	--	01
9.	Veterinary Public Health	01	--	--	--	--	--	01	--	--
10.	Veterinary Surgery and Radiology	02	01	01	--	--	--	01	01	01
11.	Veterinary Anatomy and Histology	01	01	01	01	--	--	--	--	--
12.	Veterinary Physiology	--	--	01	01	--	--	--	--	--
13.	Veterinary Parasitology	--	--	--	01	--	--	--	--	--
14.	Veterinary Animal Husbandry & Extension	01	01	--	--	--	--	02	01	--
15.	Veterinary Biochemistry	01	--	--	--	--	--	--	--	--
16.	Veterinary Pharmacology and Toxicology	01	01	--	--	--	--	--	--	--
	Total	14	08	07	09	03	--	13	07	05

Student Strength College wise during 2022-23

CVAS, Bikaner

B.V.Sc.&A.H					Total	M.V.Sc.		Total	Ph.D			Total	2 Years Diploma in A.H.		Total	G. Total
I	II	III	IV	Intern		I	II		I	II	III		I	II		
103	82	61	69	71	386	67	52	119	22	23	9	54	41	48	89	648

CVAS, Navanis, Vallabhnagar

I	II	III	IV	Intern	Total	I	II	Total	I	II	III	Total	I	II	Total	G. Total
103	75	57	77	69	381	34	27	61	5	3	8	16	48	50	98	548

PGIVER, Jaipur

I	II	III	IV	Intern	Total	I	II	Total	I	II	III	Total	I	II	Total	G. Total
98	72	62	64	69	365	22	25	47	6	1	5	12	44	48	92	516

Intake Capacity and Student strength in constituent Dairy Colleges RAJUVAS, Bikaner

S. No.	Name of college	Total No of Seat	Seat Filled		Total
Intake Capacity (B.Tech.)			I	II	
1	College of Dairy Science & Technology, Bikaner	40	36	6	42
2	College of Dairy and Food Technology, Bassi, Jaipur				
	A. Dairy Technology	40	12	2	14
	B. Food Technology	40	5	4	9
	Grand Total	120	53	12	65

Student Strength in Constituent Animal Husbandry Diploma Institutes

S.N.	Name of the constituent Animal Husbandry Diploma Institutes	AHDP		Total
		I	II	
1.	College of Veterinary & Animal Science, Bikaner	41	48	89
2.	College of Veterinary and Animal Science, Udaipur	48	49	97
3.	Post Graduate Institute of Veterinary Education and Research Jaipur	50	47	97
4.	Livestock Research Station, Hanumangarh	47	47	94
5.	Livestock Research Station, Jaisalmer	39	46	85
6.	Animal Husbandry Diploma Institute Livestock Research Station, Chittorgarh	45	50	95
7.	AHDP Livestock Research Station, Dist. Jhalawar	43	48	91

Ph.D and M.V.Sc Theses Completed

Ph.D Theses from CVAS, Bikaner

S.No.	Name of Students	Name of Advisor	Title of Thesis	Name of Department
1	Anil Harsh	Dr. Urmila Pannu	Molecular characterization, polymorphism and association studies of Diacylglycerol Acytransferase (DGAT1) gene in *Camelusdromedarius*	Animal Genetics and Breeding
2	Hitesh Purohit	Dr. Urmila Pannu	Phenotypic and molecular characterization of Sanchori cattle	Animal Genetics and Breeding
3	Bhupendra Kaswan	Dr. R.K. Dhuria	Effect of supplementation of Tulsi leaf powder (*Ocimum sanctum*) and vitamin E on growth performance, nutrient utilization and carcass characteristics in broiler chicks	Animal Nutrition
4	Shyam Sunder Siyag	Dr. R.K. Dhuria	Effect of supplementation of Black pepper (*Piper nigrum*) and Coriander (*Coriander sativum*) as feed additive on performance and carcass characteristics of broiler chicks	Animal Nutrition
5	Devender Kumar	Dr. J.S. Mehta	Deciphering the seasonal variations in semen functional and biochemical attributes in buffalo bulls	Veterinary Gynaecology and Obstetrics
6	Lokesh Tak	Dr. Basant Bais	Study on development and quality assessment of herbs fortified functional chicken soup powder utilizingbroiler, spent hen and Kadaknath meat	Livestock Products Technology
7	Kritika Dhial	Dr. B. N. Shringi	Preparation of CRISPER plasmid constructs for use in editing pathogenic genes of *Pseudomonasaeruginosa*	Veterinary Microbiology
8	Mahender Milind	Dr. B. N. Shringi	Genetic diversity among *E. coli* isolates from camel and poultry with respect to some antibiotic resistance genes	Veterinary Microbiology
9	Sonia Sharma	Dr. Hemant Dadhich	Clinico-pathological, bacteriological and molecular studies of intestinal ailments in sheep (*Ovisaries*)	Veterinary Pathology
10	Kuldeep Kumar	Dr. A.P. Singh	Study on acaricidal efficacy of polyherbal formulations against tick and mite infestation in cattle	Veterinary Medicine
11	Ankita Sharma	Dr. A.P. Singh	Studies on antioxidative and immunogenic effect of polyherbal formulation in bovine theileriosis in cattle calves	Veterinary Medicine
12	Sunil Arora	Dr. Sunita Pareek	Environmental correlates vis-à-vis physiological lilts in Sirohi goat from Udaipur, Rajasthan enfolding hormones, water deficit markers, metabolic regulators, oxidative stress indicators and organ function variables	Veterinary Physiology
13	Ashok Dangi	Dr. Pankaj Kumar Thanvi	Gross, histological and ultrastructural studies on the spleen of camel	Veterinary Anatomy
14	Raj Kumar	Dr. Praveen Bishnoi	Evaluation of laparoscopic and conventional methods of ovariohysterectomy in dogs	Veterinary Surgery & Radiology
15	Kasinath	Dr. Praveen Bishnoi	Study on sedative and preanaesthetic effects of dexmedetomidine alone and its combination with butorphanol and ketamine in camel (*Cameluss dromedaries*)	Veterinary Surgery & Radiology
16	Richa Chourasia	Dr. Praveen Bishnoi	Application of double string of pearls (SOP) plates forr fracture fixation of long bones in canines	Veterinary Surgery & Radiology

M.V.Sc Theses from CVAS, Bikaner

S.No.	Name of Students	Name of Advisor	Title of Thesis	Name of Department
1	Anil	Dr. Manju Nehra	Genetic trends in production and reproduction traits of Surti buffaloes using animal model	Animal Genetics and Breeding
2	Rajesh Kumar	Dr. Manju Nehra	Prediction of first lactation 305-days milk yield using artificial neural networking in Surtibuffalo	Animal Genetics and Breeding
3	Radha Rani	Dr. Virendra	Principal component analysis versus multiple regression analysis to predict lifetime production of Kankrej cattle	Animal Genetics and Breeding
4	Palak Gupta	Dr. R.K. Dhuria	Effect of dietary supplementation of Linseed oil (*Linumusitatissimum*) on nutrient utilization and semen quality of Marwari horses	Animal Nutrition
5	Anisha	Dr. Dinesh Jain	Effect of supplementation of Lemon Peel powder (*Citrus limon*) as herbal feed additive on performance of broiler chicks	Animal Nutrition
6	Sarita Mahicha	Dr. Rajesh Nehra	Effect of Thyme (*Thymus vulgaris*) leaf powder as feed additive on the performance of broiler chicks	Animal Nutrition
7	Shikha Bishnoi	Dr. N.S. Rathore	Optimization of polymerase chain reaction amplification of viral p32 Gene from LSD Virus	Veterinary Biochemistry
8	Sita Ram	Dr. A.K.Pandey	Optimization of polymerase chain reaction amplification of viral RPO30 gene from LSD virus	Veterinary Biochemistry
9	Vikram Godara	Dr. Devi Singh Rajput	Impact of COVID-19 on livestock and allied sectors	Vety & A.H. Extension Education
10	Deepak Singh Naruka	Dr. S. Sharma	Studies on certain haemato-biochemical profiles in normal calving and dystocia affected cows	Veterinary Gynaecology and Obstetrics
11	Sourabh Daria	Dr. Ashok Kumar	Studies on ultrasonographic, haematological and immunological markers changes during oestrous cycle in mares	Veterinary Gynaecology and Obstetrics
12	Pooja	Dr. Pramod Kumar	Studies on genital organ biometry and evaluatin of during protein during different phases of the estrous cycle of Marwari goats	Veterinary Gynaecology and Obstetrics
13	Pawan Kumar Sharma	Dr. Amit Kumar	Effect of melatonin administration on reproductive performance of Magra rams during non breeding season	Veterinary Gynaecology and Obstetrics
14	Vishal Yadav	Dr. S. Dholpuria	Effect of addition of *Spirulinaplatensis* extract to semen extender on cooled and post thaw semen quality of Marwari stallion	Veterinary Gynaecology and Obstetrics
15	Sunita Khurav	Dr. Tara Bothra	Effect of supplementation of Manjistha (*Rubiacordifolia*) powder on performance of broiler chicks	Livestock Production & Management
16	Vinod Bajiya	Dr. Rajni Arora	Study on performance and welfare of cattle in gaushala in arid region of Rajasthan	Livestock Production & Management
17	Lokesh Kumar	Dr. Rajni Arora	Effect of lemon and orange peel essential oils onperformance of broilers reared under treated bedding material with dry neem leaves during summer season	Livestock Production & Management
18	Jena Ram	Dr. Basant Bais	Production and quality evaluation of herbs enrichedcookies developed from Kadaknath meat powder replacing oat flour	Livestock Products Technology
19	Ranjana	Dr. Basant Bais	Development and quality evaluation of zeera and ajwainfortified cookies prepared from Kadaknath meatpowder by replacing bajra flour	Livestock Products Technology
20	Shivali Khandelwal	Dr. Taruna Bhati	Characterization of animal and human methicillin resistant*Staphylococcus aureus*isolates	Veterinary Microbiology
21	Archana Choudhary	Dr. Hemant Dadhich	Pathomorphological and haemato-biochemical study of intestinal affections with special reference to enteritis in goats (*Capra hircus*)	Veterinary Pathology
22	Nikhil Kumar Sharma	Dr. Manisha Mehra	Pathomorphological and biochemical analysis in kidney of buffalo (*Bubalusbubalis*)	Veterinary Pathology
23	Gaurang Sharma	Dr. Pratishtha Sharma	Effect of quercetin over lead induced toxic effect on pulmonary artery of goat (*Capra hircus*)	Veterinary Pharmacology & Toxicology
24	ShourbhBithu	Dr. Ashok Gaur	Effect of naringin over cadmium induced toxic effect on pulmonary artery of goat (*Capra hircus*).	Veterinary Pharmacology & Toxicology
25	ShusmitaChoudhary	Dr. R.K. Singh	Therapeutic management of colibacillosis in neonatal cattle calves using polyherbal anti-diarrhoeal formulation	Veterinary Medicine
26	Sandeep Gautam	Dr. Sita Ram Gupta	Studies on immuno-therapeutic and antioxidative potential of *Phyllanthusemblica*(Amla) in bovine subclinical mastitis	Veterinary Medicine
27	GunjanKatara	Dr. R.K. Singh	In vitroand in vivostudy on therapeutic efficacy of polyherbal formulation against cattle tick and mite	Veterinary Medicine
28	Meenal	Dr. A.P. Singh	Study on cardioprotective effect of polyherbal formulation in bovine theileriosis in cattle calves	Veterinary Medicine

S.No.	Name of Students	Name of Advisor	Title of Thesis	Name of Department
29	ManjuKumari	Dr. J.P.Kachhawa	Sero-epidemiological studies of brucellosis in cattle	Veterinary Medicine
30	SharmilaKumari	Dr. Sita Ram Gupta	Evalution of immune –therapeutic property of Kalonji (*Nigella sativa*) in subclinical mastitis in cattle	Veterinary Medicine
31	Maya Mehara	Dr. DeepikaGoklaney	Studies on bacteriological profile of bio-medical waste and assessment of efficacy of autoclave, microwave and incinerator	Veterinary Public Health
32	KuldeepFageria	Dr. Praveen Kumar Pilania	Epidemiological studies on gastrointestinal parasites of sheep population	Veterinary Parasitology
33	Rakesh Kumar	Dr. Praveen Kumar Pilania	Epidemiological studies on gastrointestinal parasitic infections of goat in Rajasthan	Veterinary Parasitology
34	Vishav Bharti	Dr. Praveen Kumar Pilania	Study on haemoprotozoan infections in dairy animals of Bikaner region	Veterinary Parasitology
35	Om Prakash Meel	Dr. Pankaj Kumar Thanvi	Gross, histological and histochemical studies on the kidney of buffalo	Veterinary Anatomy
36	Prem Chand Tard	Dr. Pankaj Kumar Thanvi	Gross, histological and histochemical studies on the spleen of buffalo	Veterinary Anatomy
37	Anil Chodhary	Dr. Ashok Dangi	Gross, histological and histochemical studies on the adrenal gland of buffalo	Veterinary Anatomy
38	KanikaYadav	Dr. S.K. Jhirwal	Smartphone ophthalmoscopy for fundus examination in apparently healthy dogs	Veterinary Surgery & Radiology
39	Saloni Mishra	Dr. S.K. Jhirwal	Biometric assessment of eye in healthy dogs using B-mode ultrasonography and computed tomography	Veterinary Surgery & Radiology
40	Rama Kishan	Dr. MahendraTanwar	A comparative study of retervial of cystic calculi through laparoscopic assisted cystotomy and conventional cystotomy in dogs	Veterinary Surgery & Radiology
41	BhavanaSalvi	Dr. MahendraTanwar	Comparison of single port, double port and triple port laparoscopic assisted ovariectomy in dogs	Veterinary Surgery &Radiology
42	AnkitaKumari	Dr. SakarPalecha	Diagnostic imaging of various affection of Head in dogs using computed radiography and computed tomography	Veterinary Surgery & Radiology
43	Om Prakash Chabarawal	Dr. SakarPalecha	Diagnostic imaging and surgico-therapeutic management of disorders of elbow and stifle joints in dogs- A clinical study	Veterinary Surgery & Radiology
44	BijalYadav	Dr. Anil Kr. Bishnoi	Clinical use of locking compression plate system (LCP) and platelet rich plasma (PRP) for management of long bone fracture in dogs	Veterinary Surgery & Radiology

M.V.Sc Theses from CVAS, Navania

S.No.	Name of Students	Name of Advisor	Title of Thesis	Name of Department
1	Rajendra Kumar Meel	Dr. Dinesh Manoharrao Chavhan	Quality evaluation of Tulsi and Giloy extract incorporated chicken meatballs	Livestock Products Technology
2	PankajChayal	Dr. R. K. Nagda	A study on survivability of Sirohi goat kids under farm and field condition	Animal Breeding and Genetics
3	TeenaGurjar	Dr. Rajesh Singathia	Virulence and antimicrobial resistance genes profiling of *E. coli* strains isolated from diarrhoeic lambs	Veterinary Microbiology
4	Rahul Krishaniya	Dr. B. S. Saini	Assessment of oxidative stress biomarkers and liver semiotics during peripartum period in Gircattle	Veterinary Physiology & Biochemistry
5	JitendraChopdar	Dr. M. C. Sharma	Effect of different feeding management systems on growth performance and behaviour pattern of Sirohi goat kids	Livestock Production Management
6	KokilaHimat	MamtaKumari	Clinico-Pathological studies on experimentally induced arsenic toxicity in mice and its amelioration with *Aeglemarmelos*	Veterinary Pathology
7	GarimaRathore	Dr. S.K. Sharma	Clinical and haemato-biochemical characterization of skin diseases of cattle in southern part of Rajasthan	Veterinary Medicine
8	ChitraSakarwal	Dr. SanweerKhatoon	Studies on status of occurrence of endo andecto-parasites in dogs of Udaipur, (Rajasthan)	Veterinary Parasitology
9	Naveen Kumar	Dr. Mitesh Gaur	Effect of different concentrations of trehalose on cryopreservability of Surti buffalo (*Bubalusbubalis*) bull semen	Veterinary Gynaecology and Obstetrics
10	HansrajKarela	Dr. Hina Ashraf Waiz	Effect on performance, hormonal profile and histopathology of broiler chickens raised under various light regimens	Livestock Production Management

Ph.D Theses from PGIVER, Jaipur

S.No.	Name of Students	Name of Advisor	Title of Thesis	Name of Department
1	Ashok Baindha	Dr. Sanjay Kumar Rewani	Entrepreneurial intention of veterinary students in India	Veterinary and Animal Husbandry Extension Education
2	Barkha Gupta	Dr. G.S. Gottam	A study on bioactive components and antibiotic residues in milk and haemato-biochemical profile in Bikaneri and Jaisalmeri camel during various seasons in Rajasthan	Veterinary Biochemistry
3	Manish Agrawal	Dr. Rohitash Dadhich	Pathomorphological and haemato-biochemical studies of various skin disorders in dogs (*Canis familiaris*) in Jaipur	Veterinary Pathology
4	Nirmal Kumar Jeph	Dr. Dharm Singh Meena	Studies on *Brucella spp.* infection among dairy animals through serological and molecular methodologies	Veterinary Medicine
5	Sarita Kumari	Dr. Anurag Pandey	Assessment of bioactive potential of sheep blood plasma protein hydrolysates and its utilization in functional mutton sausage	Livestock Products Technology
6	Subhita Kumari	Dr. Sanjita Sharma	Study on behaviour and milk attributes of lactating camel on replacing conventional roughage with arid tree leaves	Livestock Production Management
7	Sarjna Meena	Dr. Rohitash Dadhich	A cytohistopathological study on gastro-intestinal tract disorders of goats (*Capra hircus*) in Jaipur district	Veterinary Pathology
8	Subhash Chand	Dr. Sanjay Kumar Rewani	Analysis of drought-led risk to animal husbandry in Rajasthan	Veterinary and Animal Husbandry Extension Education
9	Vijay Prakash Saini	Dr. Sheela Choudhary	Effect of supplementation of *Lactobacillus plantarum* and *Saccharomyces cerevisiae* and their combination on performance of broiler rabbits	Animal Nutrition
10	Vikas Galav	Dr. Rohitash Dadhich	Histopathological, immunohistochemical and molecular studies on canine mammary tumours in Jaipur	Veterinary Pathology
11	Yogendra Pal Singh	Dr. Mukesh Chand Parashar	Evaluation of phacoemulsification versus manual small incision cataract surgery for white cataract in dogs	Veterinary Surgery and Radiology

M.V.Sc Theses from PGIVER, Jaipur

S. No.	Name of Students	Name of Advisor	Title of Thesis	Name of Department
1	Abhay Kumar Meena	Dr. Chander Shekhar Sarswat	Comparative study of tris- egg yolk-glucose and coconut water based extenders for cooled storage (4°C) of canine semen	Veterinary Gynaecology and Obstetrics
2	Akanksha Choudhary	Dr. Rashmi Singh	Diagnosis of babesiosis in dogs using conventional and molecular methods	Veterinary Medicine
3	Akshay Ahari	Dr. Sanjita Sharma	Study on behavioral pattern of camel calves in arid region of Rajasthan	Livestock Production Management
4	Anita Sewag	Dr. Jitendra Bargujar	Studies on standardization of ultrasonographic features of prostate gland in dogs	Veterinary Medicine
5	Balkrishan Yadav	Dr. M.C. Parashar	Comparative evaluation of positive profile end threaded intramedullary pinning and elastic nailing technique for femoral fracture in dogs	Veterinary Surgery and Radiology
6	Dilip Singh Meena	Dr. Nazeer Mohammed	Diagnostic and therapeutic approach to diabetes mellitus in canines	Veterinary Medicine
7	Gaurav Agrawal	Dr. Dharm Singh Meena	Studies on prevalence of paratuberculosis using conventional and molecular tools	Veterinary Medicine
8	Geeta Choudhary	Dr. Sheela Choudhary	Effect of supplementation of Neem (*Azadirachta indica*) leaves powder and multienzyme on performance of broiler chickens	Animal Nutrition
9	Hardik Sharma	Dr. Madan Mohan Mali	Clinico-therapeutic studies on ascites of hepatic origin in dogs	Veterinary Medicine
10	Jyoti Meena	Dr. Subhash Chand	A study on awareness of zoonosis among livestock owners in Jaipur district of Rajasthan	Veterinary and Animal Husbandry Extension Education
11	Keshav Gaur	Dr. Monika Karnani	Effect of dietary supplementation of amla fruit powder (*Emblica officinalis*) and multienzyme on performance of broiler chickens	Animal Nutrition
12	Krishan Yadav	Dr. Chandra Shekher Sarswat	Efficiency of three extenders for dog semen preservation at refrigeration temperature	Veterinary Gynaecology and Obstetrics
13	Mamta Chandel	Dr. Prakash Chandra Sharma	Effect of Temperature Humidity Index (THI) on semen quality of crossbred bull	Animal Genetics and Breeding
14	Manaswini Sharma	Dr. Anurag Pandey	Development and quality assessment of paneer incorporated with White Pepper (*Piper nigrum*) and Cinnamon (*Cinnamomm verum*)	Livestock Products Technology

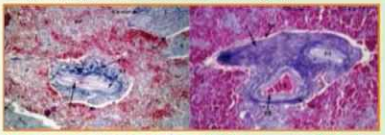
S. No.	Name of Students	Name of Advisor	Title of Thesis	Name of Department
15	Nirmal Singh Rajawat	Dr. Ashok Baindha	Study on goat management practices followed by goat farmers in semi-arid eastern plain of Rajasthan	Veterinary and Animal Husbandry Extension Education
16	Nischay Singh	Dr. Sanjita Sharma	Study on sheep husbandry practices in Shekhawati region of Rajasthan	Livestock Production Management
17	Prachi Dhaka	Dr. G.S. Gottam	A study on hemato- biochemical alterations in diarrhoeic cattle calves during different seasons in Jaipur	Veterinary Physiology
18	Rahul Kumar Meena	Dr. Bhavana Rathore	Assessment of anthelmintic resistance in gastrointestinal nematodes of goats in and around Jaipur region of Rajasthan	Veterinary Parasitology
19	Roshan Kumar Buradia	Dr. Navav Singh	Effect of sprinkler with fan on growth and behaviour of Murrah buffalo calves in semi arid region of Rajasthan	Livestock Production Management
20	Shiv Kumar Basotia	Dr. Sandeep Kumar Sharma	Detection of antibiotic resistance and its associated genes of *Staphylococcus aureus* obtained from cattle mastitis in Jaipur	Veterinary Microbiology
21	Vijay Kumar Meena	Dr. Anurag Pandey	Studies on effect of chia seed (*Salvia hispanica*) incorporation on quality characteristics of mutton nuggets	Livestock Products Technology
22	Vikram Singh Gurjar	Dr. Rashmi Singh	Clinico-hemato-biochemical changes and therapeutic management of babesiosis in dogs	Veterinary Medicine
23	Vishal Singh	Dr. Manju	Effect of supplementation of *Coriandrum sativum* and multienzyme on performance of broiler chickens	Animal Nutrition
24	Vishnu Kumar Sharma	Dr. Satyaveer Singh	Clinical study on laparoscopic assisted ovariectomy using three portal technique in female dogs	Veterinary Surgery and Radiology

Academic Research Highlights

1. Gross, histological and ultrastructural studies on the spleen of camel (*Camelus dromedarius*)

The morphological studies were conducted on the 6 spleens of camel. It revealed that spleen was single largest lymphoid ductless gland in the body. The camel spleen was situated in the left dorsal part of the abdominal cavity. It was reaching up to the pelvic inlet and extending obliquely from the anterior border of the seventh lumber transverse process to the posterior border of the third lumbar transverse process. It was crescent-shaped, with a body, head, and tail. It was dark brown colour tinged with violet. The average weight of the spleen was about 365 gm but the weight mainly depended upon the amount of blood contained in it. The volume was roughly 470 ml on average. The typical spleen was 45 cm in length, 14 cm in width at its widest point, and 7 cm in width at its narrowest point. The camel's spleen had a hilus, two surfaces, two borders, and two extremities.

The microscopic studies of 6 spleens showed that the capsule of the spleen was lined with an outer layer of mesothelial cells. The smooth muscle fibres were arranged in three layers along with collagen, reticular and elastic fibres. the capsule of the camel spleen is characteristically thick and divided into outer connective tissue and inner smooth muscle layers constituting about 1}3 and 2}3 of the capsule thickness, respectively. camel they were uniquely divided into vascular and avascular trabeculae. The splenic parenchyma or stroma was composed of white pulp and red pulp. White pulp of spleen was lymphoreticular tissue consisting of lymphocytes, plasma cells and macrophages enmeshed in reticular network. The white pulp was composed of two components called as splenic nodules or Malphigian corpuscles or lymphatic nodule and peri-arterial lymphatic sheath. The red pulp filled the spaces between the white pulp and trabeculae. It consisted of pulp arterioles, sheathed capillaries, terminal capillaries, splenic sinusoids, splenic cords and numerous smooth muscle fibers. Megakaryocytes were observed in the red pulp.



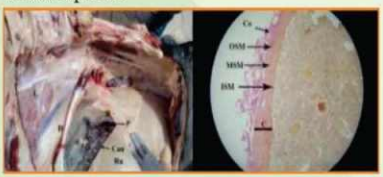
2. Gross, Histological and Histochemical studies on the kidney of buffalo

An investigation was carried out on 10 rectums collected from recently slaughtered adult pigs. The rectum of pig was tubular in shape, caudally opened into the anal canal and extended in a straight line in the pelvic cavity. The average length was 17.85± 0.39 cm, diameter 2.92± 0.10 cm at cranial, 3.23 ± 0.11 cm at middle and 2.92 ± 0.09 cm at caudal part and volume was 129.50 ± 10.31 ml. The outer surface was whitish in colour whereas, inner surface was light pink. Histologically, rectal wall was composed of four layers: tunica mucosa, tunica submucosa, tunica muscularis and tunica serosa or adventitia. Tunica mucosa consisted of three layers: the lining epithelium, lamina propria and muscularis mucosae (lamina muscularis). Lamina propria of tunica mucosa contained collagen, reticular and few elastic fibers and lymphoid tissue.Tunica submucosa layer made up of loose connective tissue with numerous small and large blood vessels. Tunica muscularis composed of inner circular muscle layer and outer longitudinal muscle layer. Tunica serosa or tunica adventitia was outermost layer of rectal wall consisted of loose connective tissue with many blood vessels. The peritoneal portion of rectum was covered by tunica serosa and retroperitoneal portion of rectum covered by tunica adventitia. Tunica mucosa, tunica submucosa, tunica muscularis and tunica serosa or tunica adventitia contained collagen fibers and reticular fibers but elastic fibers were seen around the blood vessels in the layer of the rectum of pig. The lining epithelium and tunica submucosa showed negative reaction while the lamina muscularis and tunica muscularis showed positive reaction for glycogen in McManus PAS stain. All layers of rectum showed PAS negative reaction for glycogen and mucopolysaccharide for McManus after treatment with saliva. The lining epithelium showed strong positive reaction for sulphated mucosubstance in PAS-Alcian blue pH2.5 stain while moderate for PAS-Alcian blue pH-1.0 stain and negative for PASAlcian blue pH-0.4 stain. The keratinized stratified squamous epithelium showed positive reaction for prekeratin and keratin.

3. Gross, Histological and Histochemical studies on the spleen of buffalo

A study was conducted on 20 Indian Buffalo. The spleen was an elongated elliptical in shape and bright purple colour. It was fixed in position by gastrosplenic and phrenicosplenic ligaments. In the spleen of the buffalo two surfaces, two borders, and two ends were observed. The average weight, volume, and length were recorded as 708.55 ± 46.786 gm, 703.30 ± 49.45 ml, and 41.34± 1.194

cm, respectively. The average width was 13.823±0.465 cm and average thickness was 8.333±0.433 mm.The histological studies of spleen showed that its capsule was composed of smooth muscle fibers, collagenous, elastic and reticular fibers. The space between the capsule and trabeculae was filled by the splenic pulp or stroma, which consisted of white pulp and red pulp. The white pulp was a lymphoreticular tissue made up of macrophages, plasma cells, and lymphocytes that were enmeshed in a reticular network. The central artery was found in the splenic nodules with an eccentric position. The splenic sinusoids were poorly developed and less abundant. The penicillar arteries, also known as the pulp arteries, had a radiating pattern. The histochemical studies of spleen showed that its capsule and trabeculae showed intensely strong reactions to carbohydrate. The white pulp showed moderate reaction at pH 0.4 and pH 1.0 while weak reaction at pH 2.5.



4. Gross, Histological and Histochemical studies on the adrenal gland of buffalo

The present investigation was carried out on 20 pairs of adrenal glands from apparently healthy and recently slaughtered adult female buffaloes. The adrenals were situated at the some distance from cranial aspect of the kidney embedded in perirenal fat. The right adrenal gland was irregular elongated triangular and the left was flat and "C" shaped. Each gland was reddish-brown in colour. The left adrenal gland was slightly heavier, longer, thicker and wider than the right one. Histologically, the adrenals were divided in stroma and parenchyma. Stroma consisted of capsule and trabeculae. Collagen and reticular fibres were present at the capsule and trabeculae. Parenchyma composed of the cortex and medulla. Cortex was divided into three parts according to their cell arrangements in zona glomerulosa, zona fasciculata and zona reticularis. The trabeculae were entered into the cortex to various distances. The Medulla was divided in the inner and outer parts. The outer zone was lined by columnar shaped cells and inner area had the polyhedral cells. Patches of medulla were seen at some cortex area. Intense PAS positive reaction was seen in the capsule, trabeculae and zona glomerulosa. All zones of adrenal gland showed negative reaction for glycogen in PAS with saliva stain. Mucosubstances showed strong reaction in capsule, trabeculae, zona glomerulosa and outer medullary area.

5. Effect of Supplementation of Tulsi Leaf Powder (*Ocimum sanctum*) and Vitamin E on Growth Performance, Nutrient Utilization and Carcass Characteristics in Broiler Chicks

A study was conducted to explore the utilization of Tulsi leaf powder *(Ocimun sanctum)* and Vitamin E either alone or their various combinations in broiler ration .A feeding trial of six weeks followed by a metabolic trial was conducted, using 360 one day old broiler chicks randomly distributed in completely randomized design. The broiler chicks were equally and randomly divided into ten dietary treatments groups (T1-T10) and each dietary group was replicated to three sub-groups (R1-R3). The T1 *i.e.* control group was fed on basal diet, while T2, T3, T4 and T5 treatment groups were supplemented with 0.25%, 0.50%, 0.75%, and 1.0% of Tulsi leaf powder in the basal broiler starter and finisher ration, respectively. The T6 group was supplemented with Vitamin E @0.025% in the basal broiler starter and finisher ration. The T7, T8, T9 and T10 treatment groups were supplemented with 0.25%, 0.50%, 0.75%, and 1.0% of Tulsi leaf powder in combination with Vitamin E @0.025% in the basal broiler starter and finisher ration, respectively. The results indicated the presence of various phytocompounds such as Alpha-farnesene, Benzene,1,2-dimethoxy-4-(1-propenyl), Cyclohexane,1,2,4, triethenyl, Phenol, 2-methoxy-4-(1-propenyl)-, (Z)- (eugenol) and trans-Isoeugenol. Significant effect of Tulsi leaf powder or Vitamin E alone and their various combinations was observed on overall feed intake, body weight gain, average daily gain, feed conversion ratio, performance index and protein efficiency ratio, crude protein metabolizability, nitrogen balance. Significant effect was observed on dressing weight per cent and abdominal fat per cent. Significant effect was observed on PCV, TEC, Lymphocyte, Heterophils and H/L ratio. Heamato-biochemical parameters such as glucose, triglyceride, cholesterol, AST and ALT were found to be significant. The findings of comparative economics indicated that addition of Tulsi leaf powder and Vitamin E alone or in combinations improved the return as per cent of feed cost as compare to control but maximum improvement in return as per cent of feed cost was obtained in T8 treatment group containing 0.50% of Tulsi leaf powder supplemented with Vitamin E. At the end, it was concluded that supplementation of Tulsi leaf powder at 0.50% level with Vitamin E @0.025% is quite effective and could be viable proposition for lucrative broiler farming for meat production.

6. Effect of supplementation of Arjuna bark powder (*Terminaliaarjuna*) as herbal feed additive on performance of broiler chicks

The study in text was conducted in broiler chickens with an objective to explore the inclusion of black pepper (*Piper nigrum*) and coriander (*Coriandrumsativum*) powder eitheralone or in various combination as an alternative to antibiotic growth promoter on growth performance, nutrient utilization, intestinal health, haematobiochemical parameters and carcass characteristics. A 42-day feeding trial followed by metabolic trial was conducted understandard feeding and managemental conditions with broiler starter (0-21 days) and finisher (21-42 days) ration on 360, day old Vencobb broiler chicks randomly divided into 10 treatment groups (T1-T10) with three replicates of 12 chicks each. The feeding of broilers chicks was done as per standards of ICAR (2013). The T1 group was given basal feed without additive and kept as control whereas T2, T3, and T4 group were supplemented with 0.50, 1.0, and 1.50% of black pepper powder; T5, T6, and T7 were supplemented with 1.0, 2.0, and 3.0% of coriander powder; T8, T9, and T10 were fed on diet containing combination of both herbal additives at 0.25, 0.50 and 0.75% of black pepper powder and 0.50, 1.0 and 1.50% coriander powder. No environmental stress was observed during feeding trial as ambient temperature and THI were recorded on higher side than the threshold level during whole experimental period. *In vitro* antibacterial activity of the various crude extracts of black pepper and coriander were qualitatively assessed based on the zone of inhibition and had a marked antibacterial activity. In addition to this, the methanol extract of black pepper and coriander was subjected to GCMS full scan analysis for the presence of various phytochemicals. The results indicated the presence of various 30 phytocompounds in extract of black pepper and 26 phytocompounds in extract of coriander which have antioxidant, antimicrobial, anti-inflammatory, hepatoprotective and flavouring properties. Significant effect of black pepper and coriander powder alone or in combinations was observed on overall feed intake, live body weight, body weight gain, feed conversion ratio, performance index and protein efficiency ratio. Metabolizability of dry matter, organic matter, crude protein and ether extract increased significantly due to

supplementation of black pepper and coriander powder in broiler diet. Significant effect was observed on dressing weight and eviscerated weight per cent due to supplementation of black pepper and coriander powder, while giblet and offals yield were not affected by different dietary treatments. The relative weight of immune organs showed nonsignificant effect due to various treatment groups. Water holding capacity of breast muscle was increased by inclusion of phytogenic feed additives in broiler diets. Serum protein (albumin, globulin), serum glucose and triglyceride and enzyme profile were found to be statistically similar in all groups. The findings of comparative economics indicated that supplementation of coriander powder at (2.0%) level reduced the overall cost of feed per kg meat yield as compared to control. Taking account into the drug residual issue, it could be concluded that supplementation of coriander powder at the rate 2.0% is quite effective and could be used as an alternative to antibiotic growth promoter in diets due to its beneficial effects on growth performance and gut health in broiler chickens.

7. Effect of dietary supplementation of Linseed oil (*Linumusitatissimum*) on Nutrient Utilization and Semen Quality of Marwari Horses

A study was aimed to evaluate the effect of incorporating linseed oil on nutrient digestibility, haemato-biochemical parameters, antioxidant status and semen quality of horses. The feeding trial was conducted for 60 days on 8 Marwari horses divided into 2 treatment groups of four horses each. The two experimental diets consisted of groundnut straw as a sole source of roughage in both the groups and concentrate mixture with no linseed oil (Low fat concentrate) and with 8% linseed oil/kg substituted for 8% barley (High fat concentrate) in T1 and T2 groups, respectively. At the end of feeding trial; a digestibility trial of 6 days duration was conducted. The overall dry matter and organic matter intake in terms of kg/d was significantly lower in T2 group. Linseed oil offered a good palatability and digestibility of nutrients revealed significantly ($P<0.05$) higher values for DM, EE and NDF in T2 as compared to T1. Most of the haematological parameters were similar except for WBC's and lymphocytes, which were significantly lower in T2 group. The blood lipid profile, concentration of triglycerides and cholesterol was observed to be lower in T2 group. The

level of the end product of lipid peroxidation, *i.e.* malondialdehyde and marker of inflammation, *i.e.* PGE2 in T2 group were significantly lower as compared to T1 group at III fortnight interval. In macroscopic semen parameters, total motility was significantly higher in T2 group as compared to T1 group. In fresh semen, mitochondrial membrane potential was higher in T2 group horses. On evaluation of semen at pre-freeze stage, plasma membrane integrity was higher in linseed oil supplemented horses. In frozen-thawed semen, progressive sperm motility, plasma membrane integrity and mitochondrial membrane potential were higher in T2 group horses as compared to T1 group horses. Linseed oil supplementation significantly increased the concentration of total lipids and calcium in seminal plasma and the concentration of cholesterol and lactate in sperm. The results showed that linseed oil contributed to an improvement in digestibility of nutrients, lipid profile, WBC parameters, various seminal parameters, redox and inflammatory status of horses. It can be concluded from the results that supplementation of linseed oil at the rate of 8% in diet of horses improve nutrient utilization and is beneficial for overall health status and fertility of horses.

8. Effect of supplementation of Lemon Peel Powder (*Citrus limon*) as herbal feed additive on performance of broiler chicks

The goal of this study was to investigate the use of Lemon Peel Powder *(Citrus limon)* in broiler ration as a feed additive to improve the efficiency of nutrient utilization. A feeding trial of six weeks followed by a metabolic trial was conducted, using 150, one day old broiler chicks (VenCobb), randomly distributed in completely randomized design. The broiler chicks were divided into five dietary treatments groups (T1-T5) with 3 replicates (R1-R3) of 10 chicks each to make sure uniformity in various treatment groups. The feeding of broilers chicks in both starter and finisher phase was done as per BIS standards (2007). The T1 group was fed on basal diet without feed additive and kept as control. Whereas treatment groups (T2- T5) were supplemented with graded levels of Lemon Peel Powder *(Citrus limon)* in the basal broiler starter and finisher ration, respectively. The T2, T3, T4 and T5 group were supplemented with Lemon Peel Powder *(Citrus limon)* @ 0.50%, 0.75%, 1% and 1.25% in the basal broiler starter and finisher ration, respectively. Significant effect of supplementation of Lemon Peel Powder *(Citrus limon)* was observed on overall feed intake, live body weight, body weight gain, feed conversion ratio, performance index and protein efficiency ratio, T3 being highest among all. The dry matter metabolizability (%) and N balance showed non-significant effect due to Lemon Peel Powder *(Citrus limon)* supplementation. Mean values of dressing and eviscerated yield did not vary significantly among various treatment groups. Heart, liver, gizzard and giblet weight% (% of live body weight) did not vary significantly among various treatment groups. Supplementation of Lemon Peel Powder *(Citrus limon)* at graded levels reduce the overall cost of feed per kg gain as compare to control but maximum reduction in overall cost of feed per kg gain was obtained in T3 group *i.e.*, 6.37% reduction. Ultimately, from the perusal of the results it was concluded that the supplementation of Lemon Peel Powder *(Citrus limon)* at 0.75 percent level is very beneficial and could be a viable proposition for lucrative broiler farming for meat production, based on the performance of broilers and feed utilization efficiency in the present research.

9. Effect of Thyme (*Thymus vulgaris*) Leaf Powder as feed additive on the Performance of Broiler Chicks

The study was conducted to determine the effect of Thyme (*Thymus vulgaris*) Leaf Powder as feed additive on performance, carcass characteristics and haemato-biochemical parameters of broiler chicks. A feeding trial of six weeks followed by a metabolic trial was conducted, using 150, one-day old broiler chicks (Vencobb), that distributed in completely randomized design. The broiler chicks were divided into five dietary treatments groups (T1-T5) with 3 replicates (R1-R3) of 10 chicks each to make sure uniformity in various treatment groups. The feeding of broilers chicks in both starter and finisher phase was done as per BIS standards (1992). The T1 group was fed on basal diet without supplementation of feed additive, kept as control and other treatment groups (T2-T5) were supplemented with 0.5%, 1.0%, 1.5% and 2.0% levels of Thyme *(Thymus vulgaris)* Leaf Powder along with the basal broiler starter and finisher ration, respectively. The results found significant effect of supplementation of Thyme *(Thymus vulgaris)* Leaf Powder at 1.5% on overall feed intake, live body weight, body weight gain, feed conversion ratio, performance index and protein efficiency ratio. Supplementation of Thyme *(Thymus vulgaris)* Leaf Powder showed nonsignificant effect on the dry matter metabolizability (%), N balance and haemato-biochemical parameters. The dressing yield, eviscerated yield, heart, liver, gizzard and giblet weight%

(% of live body weight) did not vary significantly among various treatment groups due to supplementation of Thyme *(Thymus vulgaris)* Leaf Powder. Thyme *(Thymus vulgaris)* Leaf Powder supplementation at graded levels also reduce the overall cost of feed per kg gain as compare to control group. The findings of present study concluded that supplementation of Thyme *(Thymus vulgaris)* Leaf Powder at 1.5% enhance overall performance and could be used as viable proposition for beneficial rearing of broilers for meat production.

10. Genetic trends in Production and Reproduction traits of Surti buffaloes using Animal Model

The study was carried on 234 Surti buffaloes, sired by 56 bulls, maintained at Network Project on Buffalo Improvement (NPBI) Surti Unit of Livestock Research Station (LRS), Vallabhnagar (Udaipur), Rajasthan for the duration of 26 years (1995-2020). The purpose of this study was to investigate the genetic, phenotypic and environmental trends inSurti herd. The overall averages of the various first lactation production and reproduction traits like FLMY, FL305MY, FLL, FDP, AFC, FCI and FSP were reported to be 1271.94 ± 29.85 Kg, 1248.22 ± 26.52 Kg, 282.33 ± 5.27 days, 197.06 ± 6.01 days, 1602.99 ± 20.93 days, 489.15 ± 9.52 days and 189.83 ± 8.5 days, respectively. The effect of sire was significant (P≤0.05) for FLMY, FL305MY and AFC. The season had no significant effect for all the traits whereas effect of period was significant (P≤0.05) for FLMY, FL305MY and AFC and non-significant for other traits. The estimates of heritability for production traits like FLMY, FL305MY, FLL and FDP were estimated such as 0.121 ± 0.018, 0.198 ± 0.019, 0.026 ± 0.115 and 0.165 ± 0.141, respectively. The heritability estimates for reproduction traits such as AFC, FCI and FSP were estimated as 0.313 ± 0.027, 0.021 ± 0.118 and 0.010 ± 0.117, respectively. The genetic correlation of FLMY was found to be positive with FL305MY, FLL, FCI and FSP and negative with FDP, AFC while the phenotypic correlation of FLMY was found positive with all traits except FDP. Similar genetic and phenotypic correlations of FL305MY with other traits were also found. FLL had positive genetic correlation and positive phenotypic correlation with all traits except FDP. Genetic correlation of FDP with FLMY, FL305MY, FLL and AFC were found negative and positive with FCI and FSP. Phenotypic correlation of FDP with FLMY, FL305MY, FLL and AFC were found negative and positive with FCI and FSP. Negative genetic correlation of AFC found with all traits except FLL and FCI, while negative phenotypic correlation of AFC with FDP. Genetic and phenotypic correlation of FCI with FSP was found positive. The estimates of phenotypic trends for FLMY, FL305MY, FLL, FDP, AFC, FCI and FSP were 0.035±0.009 kg/year (0.0027% of HA), 0.033±0.019 kg/year (0.0026% of HA), 0.021 ±0.03 days/year (0.0074% of HA), -0.014±0.07 days/year (0.007% of HA), -0.037 ±0.01 days/year (0.0023% of HA), -0.027±0.04 days/year (0.0055% of HA) and -0.061±0.046 days/year (0.032% of HA), respectively.The positive genetic trends were reported using BLUP sire model and BLUP animal model for FLMY, FL305MY and FLL, while negative genetic trends for FDP, AFC, FCI and FSP.

11. Prediction of first lactation 305-days milk yield using artificial neural networking in Surti Buffalo

The study was carried out to investigate the performance of fortnightly test day milk yields, estimation of genetic parameters (heritability, genotypic and phenotypic correlation) and factor affecting (season and period of calving) fortnightly test day milk yields of 192 Surti buffaloes sired by 46 bulls spread over a period of 20 years (2001-2020) maintained under Network Project on Buffalo Improvement (NPBI) Surti Unit at Livestock Research Station (LRS), Vallabhnagar (Udaipur), Rajasthan.Overall least squares means for 21 fortnightly test day milk yields ranged from 1.56±0.06 kg (TD21) to 7.00±0.12 kg (TD4). The season of calving had significant (P≤0.05) effect on fortnightly test day milk yield TD20. The period of calving had highly significant (P≤0.01) effect on fortnightly test day milk yield TD20 and significant (P≤0.05) effect was found on fortnightly test day milk yields namely TD1, TD2, TD3 and TD21. The heritability estimates for FL305DMY was 0.23±0.11. The heritability estimates of fortnightly test days ranged from 0.01±0.20 (TD6) to 0.46±0.70 (TD20). The genetic correlation amongst various fortnightly test day milk yields ranged from -0.59±0.25 (TD15 with TD19) to 0.99±0.60 (TD2 with TD3). The genetic correlation of FL305DMY with fortnightly test day milk yields varied from -0.25±0.63 (FL305DMY with TD16) to 0.99 ± 0.66 (FL305DMY with TD8). The highest phenotypic correlation of FL305DMY was with TD1 (0.72±0.06) while lowest with TD16 (0.19±0.05) in Surti buffaloes.

The optimum equation was developed to predict FL305DMY by multiple linear regressions considering highest R^2-value and lowest RMSE value . This equation gave an accuracy of prediction of 81.10% and RMSE value 378.12. The scaled conjugate gradient (SCG) and gradient descent (GD) algorithm were used for neural network model to predict FL305DMY. ANN can predict FL305DMY an early as 11th fortnightly test day of lactation. Further, the results revealed that Scaled conjugate gradient (SCG) algorithms performed slightly better than Gradient descent (GD).

12. Principal Component Analysis versus multiple regression analysis to predict lifetime production of Kankrej cattle

An investigation was conducted on 274 animals of Kankrej cattle maintained at Livestock Research Station, Kodamdesar, Bikaner, calving between 2012 to 2022 to

estimate lifetime performance of Kankrej cattle and to predict the lifetime performance of Kankrej cattle using principle component and multiple regression analysis. The production and reproduction traits evaluated were LL, DP, LTMY, 305DMY, CI (first and overall) and lifetime milk yield upto 5 and 7 lactations. To estimate the effect of non-genetic factors on production and reproduction traits, computer package programme, IBM SPSS (2005) version 26.0 was used for least-squares analysis. The least-squares means estimated for FLL,FDP,FLTMY,FCI, were 236.07±8.79days, 133.76±6.7days, 1416.04±66.45kg, 427.72±6.79days, respectively. The least-squares means estimated for overall LL, DP, LTMY and CI were 222.291±2.24 days, 124.429±1.767days, 1499.066±2.296kg for and 406.94±2.296days, respectively. The least-squares means for lifetime traits in Kankrej cattle were 6940.839± 299.539 kg for LTMY5 and 10530.929± 765.164 kg for LTMY7.Period of calving had a highly significant ($P \leq 0.01$) effect on overall LL, overall LTMY, LTMY5 and a significant($p \leq 0.05$) effect on FLTMY. LTMY7 and overall calving interval. The season of calving had a highly significant effect on all overall lactation traits except DP and a significant effect on FLTMY. Favourable correlation was found between early traits (FLL, F305DMY, FDP) and lifetime traits (LTMY5, LTMY7).The analysis revealed that the optimal models for MRA were: LTMY5 = 1492.20 + 1.82 F305DMY + 6.80 SLL + 1.21 S305DMY(R2 =68.3%)and LTMY7 = 372.16 + 3.46 F305DMY + 3.91 FDP + 20.82 SLL (R2=68.5%). PCA revealed that the first 2 principal components (FLL,F305DMY) explained more than 78% of the total variation for LTMY5 and more than 81% variation for LTMY7. F305DMY was found most important early trait in prediction of lifetime production of Kankrej cattle on the basis of PCA and MRA. Significant finding of this study may be helpful in developing selection methodology for Kankrej cattle after validation in a large population.

13. Molecular characterization, polymorphism and association studies of Diacylglycerol Acytransferase (DGAT1) gene in Camelus-dromedarius

An investigation was undertaken to study genetic characterization of DGAT1 gene in dromedary camel, determination of the genetic polymorphism for DGAT1 gene and association of putative SNP with the milk production and composition traits in Camel. The animals for the present investigation were selected from National Research Centre on Camel (NRCC). The blood samples of 28 Bikaneri and 26 Kachchhi camels (including both male and female) were taken for the polymorphism study. Whereas, Fresh blood samples of 5-5 Bikaneri and Kachchhi camel were also collected randomly for the genomicRNA isolation. These purified RNA were used for cDNA preparation for the characterization of DGAT1 cDNA. For the association study of DGAT1 polymorphism with milk production traits and milk composition traits, data of 45 she camel were collected. For genetic characterisation of DGAT1 cDNA isolation of genomic RNA, preparation of rDNA cloning followed by PCR amplification of the rDNA clones by DGAT1-B, C primer pairs were performed. The genome sequencing results of these PCR DGAT1 cDNAamplicons were annotated and aligned using NCBI BLAST® programme. This annotation revealed novel sequence of complete exon-9 to exon-16 and partial exon 8, 17. The exon-17 in DGAT1 gene was confirmed in camel first time. For SNP study, 773 bp long fragment of DGAT1 gene was amplified by PCR using specific DGAT1-789 primer pairs and analysed. This revealed partial exon-6, complete exon- 7, 8, 9, complete intron-6, 7, 8, 9 and partial exon-10 in 773 bp DNA fragment. Single nucleotide variation was identified at position 463 C>T of exon-8 in both Bikaneri and Kachchhi breeds. Association studies of genotypes of DGAT1 gene (CC and CT) with milk production and composition traits and found non-significant. The effect of breed was highly significant ($P \leq 0.01$) on all milk composition traits and peak milk yield and significant ($P \leq 0.05$) on average daily milk yield. The effect of year of calving was highly significant ($P \leq 0.01$) on protein and lactose.

14. Phenotypic and molecular characterization of Sanchori cattle

A study was conducted for phenotypic and molecular characterization in 1051Sanchori cattle in different age groups in both sexes. The molecular characterization was done using 25 FAO recommended microsatellite markers on 48 unrelated Sanchori cattle. The Sanchori cattle were strong and active with compact body. Predominant coat colour was grey but white, brown and black were also observed. The orientation of horn was observed predominantly outward upward inward ending with pointed tips and forehead was observed long and straight. The average value of chest girth, body length oblique, body length straight, height at withers, face length, face width, ear length, leg length, neck length, neck circumstance, horn length, horn circumstances, distance between horns, tail length and tail length up to switch were 191.15 ± 1.79, 163.79 ± 1.34, 119.28 ± 0.87, 146.79 ± 1.02, 50.91 ± 0.47, 26 ± 0.33, 33.88 ± 0.34, 83.51 ± 0.50, 59.32 ± 0.82, 92.23 ± 1.37, 44.81 ± 1.17, 28.65 ± 0.52, 23.04 ± 0.25, 137.08 ± 1.44 and 112.12 ± 1.13cm, respectively in adult male and 163.08 ± 0.43, 145.03 ± 0.35, 104.14 ± 0.25, 129.86 ± 0.28, 46.34 ± 0.12, 22.43 ± 0.09, 31.61 ± 0.12, 74.69 ± 0.19, 50.98 ± 0.21, 77.22 ± 0.34, 41.54 ± 0.34, 23.93 ± 0.13, 21.35 ± 0.08, 128.33 ± 0.47 and 106.44 ± 0.46 cm, respectively in adult female. The mean body weight of Sanchori cattle in different age groups i.e. at birth, up to 3 month of age, 3-6 months of age, 6-12 months of age, 1-2 years of age weight, 2-3 years

of age and adults were found to be 23.14 ± 0.5, 58.04 ± 4.3,116.41 ± 4.57, 170.12 ± 5.05, 228.74 ± 5.93, 265.27 ± 8.45 and 531.11 ± 10.12 kg, respectively in male and 21.83 ± 0.32, 57.72 ± 3.92, 118 ± 3.52, 167.05 ± 4.13, 221.29 ± 5.87, 262.56 ± 7.29 and 378.16 ± 2.08 kg, respectively in female. Average daily milk yield, peak milk yield, lactation length, lactation milk yield, fat and SNF % were found to be 6.03 ± 0.51 kg, 11.36 ± 0.35 kg, 262.85 ± 3.54 days, 1507.14 ± 49 kg. 68, 4.03 ± 0.09 % and 9.2 ± 0.04 % in first lactating cattle and 5.73 ± 0.11 kg, 11.72 ± 0.09 kg, 283.72 ± 1.08 days, 1725.26 ± 12.93 kg, 4.07 ± 0.02 % and 9.07 ± 0.01 % in cattle pooled over all lactations. Age at first oestrus, oestrous cycle duration, oestrus duration, age at first mating, age at first calving, service period and calving interval were observed to be 37.40 ± 0.2 months, 21.09 ± 0.01 days, 24.45 ± 0.06 hrs, 42.58 ± 0.24 months, 52.02 ± 0.24 months, 118.35 ± 0.88 days and 14.13 ± 0.03 months, respectively. Age at first ejaculation and age at first mating were observed to be 20.63 ± 0.21 and 28.81 ± 0.33 months, respectively in males. The Sanchori bullock on an average work for 7.22 ± 0.13 hours and can pull 7-8 Q load. All the heterologous markers were found polymorphic. A total of 233 alleles were observed across the 25 loci. The mean observed number of alleles (N_a) was 9.32±0.76. The average Shannon's information index (I) was 1.600±0.087. The observed heterozygosity and expected heterozygosity were 0.679±0.038 and 0.713±0.026, respectively. The observed unbiased expected heterozygosity was 0.721±0.026. The PIC value was 0.678±0.027. The F-statistics value was 0.050±0.036. The results of the study, generated first preliminary data on genetic diversity of Sanchori cattle population that will be helpful in conservation and designing breeding strategy for genetic improvement.

15. Study on development and quality assessment of herbs Fortified functional chicken soup powder utilizing Broiler, Spent hen and Kadaknath meat

An investigation was carried out to study on development and quality assessment of herbs fortified functional chicken soup powder utilizing broiler, spent hen and kadaknath meat. First experiment was conducted to optimize the processing technology for preparation of chicken meat powder prepared from broiler, spent hen and kadaknath meat. Optimum time and temperature of temperature control chamber for drying meat were 65 °C for 8 hours for oven drying and –65 °C for 24 hours for freeze drying technique, respectively. In the present findings the parameters like pH, bulk density, Meat powder yield, Water solubility and Water absorption capacity of Freeze dried meat powder showed higher values with compare to oven dried meat powder. The sensory attributes of freeze dried meat powder showed higher scores as compared to oven dried meat powder. Second experiment was conducted to optimize the

formulation of different herbal and conventional ingredients in development of functional chicken soup powder prepared from broiler, spent hen and kadaknath meat. The experiment was divided in three sub experiments by addition of cereal flour like Oat flour (*Avenasativa*), Corn flour (*Zea mays*) and Bajra flour (*Pennisetumglaucum*) at three different levels including 10%, 20% and 30% in six different treatments of meat powders prepared from spent hen, broiler and kadaknath meat using freeze drying and oven drying technique respectively. The levels of dried meat and flours constitute 100 % of the composition of soup powder with other ingredients like table salt, sugar, black pepper, citric acid, skim milk powder and guar gum which were added to the above compositions at fixed proportions, in all treatments. The results revealed that 20% oat flour concentration was significantly higher amongst all the treatments. In next sub experiment the selected formulation of 20% oat flour concentration was further incorporated with three different leaves Mint leaves (*Menthaarvensis*), Coriander leaves (*Coriandrumsativum*) and Fenugreek leaves (*Trigonellafoenum-graecum*)) at three different levels (1%, 2% and 3%) in powder form. Based on results, for preparation of functional chicken soup powder prepared by spent hen, broiler and kadaknath meat powder (both freeze and oven dried) with 20% oat flour and 2% mint leaves powder showing significantly higher results amongst all the treatments. In the third sub experiment, the selected treatment with 20% oat flour and 2% mint leaves powder concentration was further incorporated with three different powder of herbs (Ashwagandha (*Withaniasomnifera*), Amla (*Emblicaofficinalis*) and Giloy (*Tinosporacordifolialinn.*)) at three different levels (0.50%, 1% and 1.50%) had been studied in the next step of the experiment. The results of the study revealed that 1% ashwagandha, 0.50% amla, 1% giloy with 20% oat flour and 2% mint leaves powder concentration was showing higher scores amongst all the treatments. The results of the study revealed that the selected treatments had its highest functional property in fresh condition but it can be stored for 90 to 105 days at ambient temperature under acrobic packaging in LDPE pouches however treatments like broiler oven dried meat soup powder has shown highest storage stability upto 120 days at ambient temperature under aerobic packaging. The results of the study noted that Kadaknath oven dried functional soup powder was highest in price amongst other functional chicken soup powders. The cost of production of oven dried meat powder was slightly higher than freeze dried meat powder.

16. Production and quality evaluation of herbs enriched cookies developed from Kadaknath meat powder replacing oat flour

The present study was carried out for p Production and quality evaluation of herbs enriched cookies developed from Kadaknath meat powder replacing oatflour. First phase of experiment was conducted to optimize the basic formulation and processing condition for the preparation of Kadaknath meat powder cookies by replacing oat flour. The optimum temperature and time for baking in hot air oven was kept at 172 -175 0 C for 8-12 minutes. The prepared cookies were sensory-evaluated, and the best one was chosen for subsequent analyses. Based on results cookies with 35% oat flour incorporated with 15% Kadaknath meat powder was found to be significantly higher among all the treatments. The second phase of experiment was designed to study the efficacy of coriander and mint leaves powder on the quality attributes of cookies. The different treatments of Kadaknath meat powder cookies, along with coriander and mint leaves powder was prepared. After that prepared treatments alongwith control cookies subjected for determination of physico- chemical, sensorye valuation and proximate analysis. On the basis of results, cookies with 1.5%coriander leaves powder and cookies with 1.5% mint leaves powder were found to be significantly higher among all the treatments. The physical analysis (Instrumental texture profile, Colour parameters, Thickness, Diameter and spread ratio) of selected treatments (T 2 , T 2 C 2 and T 2 M 2) were found to Benon significant. The results of the study revealed that the selected treatments had its highest functional property in fresh condition but it can be stored for 75to 90 days at ambient temperature under aerobic packaging in LDPE containers. Thus it can be concluded that both coriander and mint leavespowder possessing good antioxidant property can enhance the selflife and overall acceptability of oat flour cookies incorporated with kadaknath meat powder.

17. Development and Quality Evaluation of Zeera and Ajwain Fortified Cookies Prepared From Kadaknath Meat Powder by Replacing Bajra Flour

The present investigation was carried out to study the development and quality evaluation of zeera and ajwain fortified cookies prepared from kadaknath meat powder by replacing bajra flour. First phase of experiment was conducted to optimize the basic formulation and processing condition for the preparation of Kadaknath meat powder cookies by replacingbajra (*Pennisetumglaucum*) flour. Optimum time and temperature of temperature control chamber for drying meat was kept at 65 0 C for 8 hours for oven drying and (Hot air oven at 172 -175 0 C for 8-12 minutes) for baking. The cookies were prepared with various combination of bajra flour (40%, 35%,30%) and meat powder (10%, 15%,20%) and denoted as T 0 , T 1 , T 2 and T 3 respectively. The bajra flour and Kadaknath meatpowder constitute 100% of the composition of cookies with other conventional ingredients like table salt, sugar, black pepper, milk powder and butter which were added in the treatments at fixed proportions. The sensory attributes of Kadaknath meat powder cookies having 35% bajra flour and 15% Kadaknath meat powder (T 2) showed higher scores as compared to other treatments and further used as control for next experiments.

Second phase of experiment was conducted to study the efficacy of zeera (*Cuminum cyminum L.*) and ajwain (*Trachyspermumammi*) seed on the quality attributes of cookies. In this experiment incorporation of seeds like ajwain and zeera was done at three different levels (0.5%,1%,1.5%), (1%,1.5%,2%) of each respectively. The results revealed that cookies with 1% ajwain seeds and cookies with 1.5% zeera seeds were found to be showing significantly higher parameters amongst all the treatments. The treatments along with control stored at ambient temperature under acrobic packaging in LDPE containers for storage study. The third phase of experiment was done to evaluate the storage stability of functional Kadaknath meat powder cookies. The results of the study revealed that the selected treatments had its highest functional property in fresh condition but it can be stored for 75 to 90 days at ambient temperature under aerobic packaging in LDPE containers. Thus it can be concluded that both zeera and ajwain seeds possessing good antioxidant properties can enhance the self life and overall acceptability of bajra flour cookies incorporated with Kadaknath meat powder.

18. Effect of Supplementation of Manjistha (*Rubiacordifolia*) Powder on Performance of Broiler Chicks

The aim of this study was to determine the optimum level of incorporation of Manjistha (*Rubiacordifolia*) powder in

the ration of broilers and to evaluate the effect of supplementation of Manjistha powder as herbal feed additive on performance and carcass characteristics of broilers, a feeding trial of 35 days, using 216 -day old broiler chicks (vencobb strain) randomly distributed in completely randomized block design. The experimental starter and finisher rations contained 23.15 per cent and 20.50 per cent C.P, respectively. The six treatments were designated as T_1i.e. control group served as basal diet, T_2, T_3, T_4, T_5andT_6 treatment groups supplemented with 0.25 per cent, 0.50 per cent, 0.75 per cent, 1 per cent and 1.25 per cent of Manjistha Powder in experimental broiler starter and finisher ration, respectively. All the treatment groups were further divided in three replicates namely R_1, R_2 and R_3 having 12 birds in each replicate. The body weight, body weight gain, feed consumption, feed conversion ratio, performance index, protein efficiency ratio, percent mortality, Blood parameters and carcass traits were recorded for all six treatment groups. Highly significant effect of dietary treatments i.e., incorporation of Manjistha powder at different levels on body weight, body weight gain, average daily body weight gain, feed conversion ratio, performance index and protein efficiency ratio, whereas feed consumption, dressing weight per cent, eviscerated weight per cent, haemoglobin per cent and PCV per cent were observed to be non-significant. Supplementation of Manjistha powder at graded level reduce the overall cost of feed per kg gainupto 0.50 per cent and then after it was increaseover to control but maximum reduction in overall cost of feed per kg gain was obtained in T_3. The findings of present study in respect with all parameters included in the study indicated that incorporation of Manjistha powder could be effectively use in the ration of broiler chicks to enhance overall performance. It could be concluded that inclusion of 0.50per centManjistha powder as herbal feed additive is the best viable proposition for beneficial rearing of broilers for meat production.

19. Study on performance and welfare of cattle in gaushala in arid region of Rajasthan

This study was carried out to assess productive and reproductive performance of Gaushala, to assess dairy cattle welfare in Gaushala in Rajasthan. A total of Twenty four Gaushalas in four district were selected and grouped into three categories based on total number of animals as small (100-500 animals), medium (501-1000 animals) and large (>1000 animals). Using a tested interview schedule data were collected and analyzed on production and reproduction performance of cattle, whereas cattle welfare was assessed using Dairy Cattle Welfare Scale (DCWS). The welfare of dairy animals was assessed based on welfare indicators using Calamari and Bertoni (2009) scale as modified by Kumar (2014). The collected data was analyzed and presented using frequency,

percentage, mean, standard error and ANOVA. Average herd-size of small, medium and large Gaushalas was 281, 573 and 1149, respectively. Average daily milk yield (kg) was 3.84, 4.5 and 4.6 in small, medium and large Gaushala, respectively. Average lactation length (months) was 8.3, 9.5 and 9.6 in small, medium and large Gaushala respectively Average lactation yields (kg) in small, medium and large Gaushala were 813.6, 819.06 and 904.6, respectively with an overall average of 865.4. It was significantly ($P<0.05$) higher for large Gaushala. Age at first calving (months) was 50.27, 47.50 and 44.81 in small, medium and large Gaushala respectively with an overall average of 46.51. It was significantly ($P<0.05$) lowest for large Gaushala. Average service period (months) was 4.88, 4.26 and 3.89 in small, medium and large Gaushala respectively with an overall average of 4.17. It was significantly ($P<0.05$) lower for large Gaushala. Average calving interval (months) was 14.56, 14.05 and 13.49 in small, medium and large Gaushala respectively with an overall average of 14.18. Overall mean welfare score at small, medium and large Gaushala was 31.89, 42.01 and 56.5, respectively. Total mean welfare score of large Gaushala was significantly ($P<0.05$) higher than medium and small Gaushala. Out of the total Gaushala, 8.33% were in good welfare category, 41.66% were in average welfare category and 50% in poor welfare category. It can be concluded that the productive and reproductiveperformance were better in dairy animals of large compared to small and mediumcategory of Gaushala and welfare status was average to poor in this region.

20. Effect of lemon and orange peel essential oils on performance of broilers reared under treated bedding material with dry neem leaves during summer season

The aim of the study was to evaluate the effect of supplementation of Lemon and Orange peel essential oil in alone and in combination ration as feed supplement along with effect of saw dust and saw dust with dry neem leaves as bedding materials on performance of broilers. 240, day old broiler chicks (Vencobb) were randomly distributed in CRBD for afeeding trial of five weeks. The eight treatment groups were designated as T 1 and T 5 i.e.

control group reared on basal diet, T 2 and T 6 supplemented with @ 200mg/kg Lemon peelessential oil in the experimental broiler starter and finisher ration, respectively. T 3 and T 7were supplemented with @ 200mg/kg Orange peel essential oil in the experimental broilerstarterand finisher ration, respectively. T 4 and T 8 were supplemented with @ 200mg/kg eachLemon and Orange peel essential oil both in combination, respectively. All the treatmentgroups were further divided in two replicates namely R 1 and R 2 with 15 birds in each. T 1 , T 2 , T 3, T 4 and T 5 , T 6 , T 7 , T 8 were reared on saw dust and saw dust with dry neemleaves, respectively. The body weight, body weight gain, feed consumption, FCR, PI, mortality %and livability and carcass traits were recorded for all treatment groups. Significant effect was observed for effect of dietary supplementation on body weight, average body weight gain, FCR and PI, where as non significant effect on feed consumption and carcass characteristics. Significant effect was observed for effect of different bedding materials on PI where as non-significant effect on body weight, average body weight gain, feed consumption, FCR and carcass characteristics. Non significant effect was observed at effect of interaction of dietary supplementation and different bedding materials on body weight, average body weight gain, feed consumption, FCR, PI, and carcass characteristics. Therefore, the present study revealed that supplementation of Lemon and Orange peel essential oil in combination enhances the overall performance of broilers in terms of production parameters. In the case of incorporation of oils alone, the more potent effect was observed in the groups supplemented with Lemon peel essential oil. No any effect bedding material was observed except performance index. No any interaction effect between supplements and bedding material was observed.

21. Epidemiological studies on gastrointestinal parasites of sheep population.

A total of 610 faecal samples of sheep population were collected randomly from internal drainage dry zone of Rajasthan during summer, monsoon and winter seasons from January 2021 to November 2021. Out of which, 195, 190 and 225 samples were collected during winter, summer and monsoon seasons, respectively. The overall prevalence of gastrointestinal helminths in sheep population was found to be 51.5% with 16.2% mixed infection. The strongyletypes infection (43.1%) showed highest prevalence followed by *Trichuris*sp. (13.8%), *Strongyloides*sp. (9.8%), and *Moniezia*sp. (1.1%). A significant ($p<0.05$) higher prevalence was recorded during the monsoon season (57.3%) followed by summer (52.1%) and winter (44.1%) seasons. A highly significant ($p<0.01$) difference was reported among four districts with highest prevalence in Sikar district (61.5%) followed by Churu (53.8%), Nagaur (47%) and Jhunjhunu (43.2%) districts Age wise analysis showed highest prevalence of

52.6% in adults (above 1 year) followed by young ones (6-12 months) 52.3% and lambs (below 6 months) 44.3%. The effect of sex was significant ($p<0.05$) with higher prevalence in females (55.2%) as compared to males (44.7%). The highest intensity of gastrointestinal helminth was found during monsoon season (933.33±75.10 epg) followed by winter (741.67±58.33 epg) and summer (554.17±35.09 epg) seasons. On the basis of coproculture, *Haemonchus*sp. was the major contributor to strongyle nematode population (46.39%), followed by *Oesophagostomum*sp. (21.29%), *Strongyloides*sp. (13.31%), *Trichostrongylus*sp. (9.13%), *Bunostomum*sp. (5.70%) and *Cooperia*sp. (4.18). The larvae of *Haemonchus*sp. and *Oesophagostomum*sp. were detected throughout the period of study while rest of the species was encountered sporadically.The overall prevalence of coccidiosis in sheep was found to be 47.2%. Among seasons, the prevalence was significantly higher ($p<0.01$) during monsoon (62.2%) followed by winter (39%) and summer (37.9%) seasons.

22. Epidemiological studies on gastrointestinal parasitic infections of goat in Rajasthan

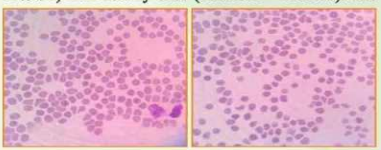
In order to determine the prevalence and risk factors associated with gastrointestinal parasites of goats from the hyper arid partially irrigated and internal drainage dry zones of Rajasthan, a total of 659 faecal samples were collected randomly from Bikaner, Jaisalmer, Churu, Sikar, Jhunjhunu and Nagaur districts. Coprological examination revealed an overall prevalence of 49.47%. Among helminths,strongyle type was found to be predominant (42.03%) followed by *Trichuris*sp. (21.85%), *Strongyloides* sp. (12.14%) and *Monieziasp* (0.61%). The highest overall mean faecal egg counts were observed for strongyles infection (793.33±56.10 epg) followed by *Trichuris* sp. (446.7±45.16 epg) and *Stronyloides* sp. (490±45.06 epg). The faecal egg counts were highly variable, ranging from 200 to 1500 epg.

Among zones, maximum prevalence was observed in *hyper arid partially irrigated zone*(53.51%) followed by *internal drainage dry zone(46.65%)*.A significantly ($p\leq0.01$) higher prevalence was seen during rainy season (58.87%) followed by summer (45.83%) and winter (41.54%) seasons. Among districts, significant difference ($p\leq0.05$) was observed with highest prevalence in Bikaner (60.75%). The effect of age was highly significant ($p<0.01$) with higher prevalence in adults (53.03%), above 6 months of age as compared to young ones (37.16%) below 6 months. Sex wise analysis revealed a

significantly higher ($p \leq 0.01$) prevalence in females (56.54%) as compared to males (34.13%). The coproculture study revealed higher prevalence of *Haemonchus* sp. (40.79%), followed by *Oesophagostomum*sp. (22.74%), *Trichostrongylus*sp. (12.63%), *Strongyloides*sp. (10.83%), *Bunostomum* sp. (7.94%) and *Cooperia*sp. (5.05%).The overall prevalence of coccidian oocysts in goat was 45.98%. Zone wise study revealed higher prevalence in *hyper arid partially irrigated zone* (50.18%) followed by *internal drainage dry zone(43.02%)*. Among seasons, significantly ($p<0.01$) higher prevalence was seen during rainy season (53.63%) followed by summer (43.98%) and winter (38.46%) seasons.Among districts, highest prevalence was observed in Bikaner district (53.23%) and lowest in Nagaur (35.71%). Age wise analysis revealed a higher prevalence in adults (59.30%) above 6 months of age. Sex wise analysis revealed significantly ($p \leq 0.01$) higher prevalence in females (46.12%) as compared to males (45.67%).

23. Study on haemoprotozoan infections in dairy animals of bikaner region

A total of 200 blood samples of 117 cattle and 83 buffaloes were collected from Bikaner region of Rajasthan. Among cattle, samples were collected from cross bred (68), indigenous (37) and non-descript (12). The samples were screened by Geimsa's staining technique for haemoprotozoans and later on subjected to study of alterations in haematological parameters. The overall prevalence obtained by microscopic examination was 18.5%. Animal species wise prevalence was higher in cattle 24(20.5%) than buffaloes 13(15.7%). Blood protozoans detected in buffaloes were Theileriaspp. (10.8%) Babesiaspp. (2.4%), Anaplasmaspp. (1.2%) and mixed infection (1.2%).In buffaloes, significantly higher ($p \leq 0.05$) prevalence was found in 0 to 6 months (23.1%) followed 6 months to 2 years (16.7%) and above 2 years (10.7%) of age. In buffalo highest prevalence was recorded during monsoon (24%) followed by summer (13.1%) and winter (6.2%). In cattle highest prevalence was recorded in month of July (33.4%) followed by August (33.3%), and lowest in February(14.2%). Buffaloes showed maximum infection inAugust (44.4%) followed by June (25%), July (16.6%), and lowest in March(7.7%). Significantly higher ($p \leq 0.01$) values of TLC were found in diseased animals (13376.08 ± 5179.95) than healthy ones (11238.80 ± 3633.83). The neutrophill count declined significantly ($p<0.01$) in infected animals (28%) as compared to non infected (30%). A significant ($p \leq 0.05$) and non-significant rise was recorded in lymphocyte (60%) and eosinophill counts (6%) of infected animals. Monocyte count declined significantly ($p \leq 0.05$) in infected animals(3%).



24. Studies on Bacteriological Profile of Bio-Medical Waste and Assessment of Efficacy of Autoclave, Microwave and Incinerator

The biomedical wastes contain several species of bacteria that might represent a health risk for humans and the environment. Therefore, the biomedical wastes should be treated before the disposal to the environment. In the current investigation, 90 biomedical waste samples were collected from different parts of Bikaner and tested for total viable count, isolation, identification, and antibiotic sensitivity pattern of isolated bacteria. Samples were also assessed to determine the effectiveness of the autoclave, microwave, and incinerator for the treatment of biological waste. The mean total viable count was 2.86 x cfu/gm in all the 90 samples of biomedical waste collected. Out of 90 biomedical waste samples, 46 samples, were found positive for *E. coli* (51.11%), 32 samples were positive for *Staphylococcus aureus* (35.55%), 29 samples were positive for *Klebsiella* spp. (32.22%), 20 samples were positive for *Pseudomonas aeruginosa* (22.22%), 14 samples were positive *Bacillus cereus* (15.55%) and 12 samples were positive for *Streptococcus* spp.(13.33%). In present study, antibiotic sensitivity tests were conducted against the bacteria isolated from biomedical waste samples and revealed that isolates were sensitive to gentamicin, levofloxacin, ciprofloxacin, vancomycin, cotrimoxazole, streptomycin and chloramphenicol while the isolates were resistant to ampicillin, amoxyclav, erythromycin, linezolid, oxacillin, penicillin–G, tetracycline. According to present study reports, steam autoclave sterilization of biological waste samples was inefficient at 121°C for 15 minutes, while it was effective at 121°C for 30 and 45 minutes. At a temperature of 97°C and frequency of 2450 MHz for 30 minutes, the microwave fully eliminated all types of germs and offered efficient sterilization. Furhter, all biomedical waste can be destroyed effectively by incinerator at 550°C for 30 minutes. The results of present study indicated that all three techniques can effectively treat biomedical waste samples.

25. Environmental correlates *vis-à-vis* physiological lilts in *Sirohi* goat from Udaipur, Rajasthan enfolding hormones, water deficit markers, metabolic regulators, oxidative stress indicators and organ function variables

An exploration was launched to appraise environmental correlates *vis-à-vis* physiological lilts in *Sirohi*goat from Udaipur, Rajasthan enfolding hormones, water deficit markers, metabolic regulators, oxidative stress indicators and organ function variables. Blood and urine samples were collected during intervening (October-November), dry-hot (April-May-June), humid-hot (July-August-September) and cold (December-January) periods (EPs). It was noticed that except energy metabolism, all maximum per cent variations were observed during humid-hot. Lilts in metabolic controllers occurred at a higher scale during cold EP. Findings obtained in the present exploration marked the humid-hot as callous environmental period followed by dry- hot and cold EPs. It can be concluded that female goat were affected more as compared to male goat. Among different age groups studied, it was observed that 15-19 months old animals were affected most and 3-7 months least. Quintessence can be drawn from the outcome of the present study that extreme environmental periods, especially humid-hot and dry-hot generated stress and oxidative stress in the *Sirohi*goatwith alterations in the physiological reactions to an extent which can cause anguish to the goat resulting into health problems.

26. Optimization of Polymerase chain reaction amplification of viral p32 gene from LSD virus

The Lumpy Skin Disease (LSD) has recently become rampant and caused havoc in several states of the country with huge economic loss to poor and marginal farmers. The causative agent of this disease comes under family Poxviridae, genus Capripox viruses with other related viruses namely, Sheep Pox (SPV) and Goat Pox viruses (GPV). The disease is transmitted through biting flies, mosquitoes and ticks. The disease occurs with pyrexia of 41 °C, swollen superficial lymph nodes and distinct lesions on skin. The clinical diagnosis of LSDV relies on ELISA, IFAT, AGID, electron microscopy, virus isolation, PCR. OIE has recommended PCR protocol which can be followed in laboratory, but with feeble specificity. Therefore, the present study was envisaged to investigate an alternate PCR based diagnostic strategy with improved sensitivity and specificity. The gene p32 (969 bp) has been selected in the studies, which codes for antigenic structural protein. Two primers namely SB01 and SB02 has been designed. The SB01 was found to be capable of screening of Capripox viruses. The primer set SB02 was designed with the objective to differentiate LSDV with GPV and SPV. The method showed high sensitivity and specificity of 100 %, with positive predictive value and negative predictive value of 100 %. The limit of detection (LOD) was observed to be 17.78 pg. The outcome of the investigation suggested that, one of the primer designed (SB01) can be used for initial screening of Capripox virus samples and the other primer SB02 can be used for specific detection of LSDV and its differentiation with related viruses.

27. Optimization of Polymerase chain reaction amplification of viral RPO30gene from LSD virus

The prompt and specific diagnosis and treatment of viral disease in dairy and poultry animals has always been a great challenge before a clinician. The Lumpy Skin Disease virus has recently caused a great disaster in several states of country with economic loss of around Rs. 600 Cr. Currently, the diagnostic test as suggested by OIE is followed which offers feeble specificity to differentiate LSDV with its related members of Sheep Pox (SPV) and Goat Pox (GPV). The present study was envisaged to investigate an alternate PCR based diagnostic strategy with improved sensitivity and specificity. The RNA Polymerase subunit gene (RPO30; 602 bp) has been selected for the investigation. In this regard, two primers namely, SR01 and SR02 has been designed. The SR01 was found to be capable of screening of Capripox viruses. The nucleotide alignment of RPO gene from other Capripox viruses reveals significant differences at several positions. Therefore, such non-conserved portion was utilized for primer designing with the objective to differentiate among closely related members of Capripox viruses. The developed method offers acceptable sensitivity, specificity with good positive predictive and negative predictive value for LSDV diagnosis. The PCR experiment with serially diluted LSDV DNA template showed decent limit of detection (LOD) of 50.7 pg.

28. CRISPR cas9 mediated gene editing of pathogenic genes of *Psedomonasaeroginosa*"

Pseudomonas aeruginosa has been recognized to cause acute as well as chronic infections in livestock and companion animals, including chronic respiratory disease in birds, otitis and urinary tract infections in dogs and cats, mastitis in cows, endometritis in horses and hemorrhagicpneumoniae in mink and foxes. WHO has considered *P.aeruginosa* as an antibiotic-resistant "priority pathogens" and yet no licensed vaccine has been reported to confer protection against this bacteria. However, several minor attempts have been made to develop and test the vaccines for this formidable organism. In this study, two genes LasI and RhlI genes were taken as model to harness CRISPR/Cas technology for preparation of assembly for efficient gene alteration in *P.aeruginosa*. LasI and RhlI genes are involved in Quorum sensing (QS) system, which serves as a global regulatory system for the expression of most of virulent genes of *P. aeruginosa*. To achieve the desired results two schemes were designed. In scheme 1, construction of

vectors was done. In this regard, two plasmids were used pACRISPR and pCasPA for ligation of sgRNA, repair arms and Cas9 protein synthesis respectively. For preparation of golden gateassembly (GGA), in-silico designed sgRNAs were first phosphorylated and then ligated to the BsaI digested pACRISPR plasmid backbone. Afterwards, PCR- amplified repair arm was incorporated to XbaI and XhoI digested GGA plasmid to create gibson assembly (GA). In scheme 2, formation of ibonucleotide protein (RNP) was done. In this regard, gRNA was synthesised through in-vitro transcription of PCR reaction product. The gRNA was the purified and incubated with Cas9 protein to form RNP. In this study, we were able successfully prepare both golden gate assembly and gibson assembly. Both GGA plasmid and GA plasmid were successfully electroporated in electrocompetent *P. aeruginosa* isolate and the clone positive for transformation of GAplasmid was successfully isolated. This isolate finds utility in proceeding for transformation of Cas9 coding plasmid for generation genetically modified bacterialorganism.

29. Characterization of Animal and Human Methicillin Resistant *Staphylococcus aureus* (MRSA) isolates

Methicillin-resistant *Staphylococcus aureus* (MRSA) is one of the main causes of persistent human and animal infections and its infections continue to be a major concern globally. The present study was undertaken to phenotypically and genotypically characterize the methicillin resistant *Staphylococcus aureus* (MRSA) isolates from animals and human. In the present study, a total of 203 (45 human pus, 38 mastitic milk including 19 each of cattle & buffalo,60 animal pus including 15 each of dog, cattle, camel & horse and 60 unprocessed meat including 30 each of poultry and goat) samples were collected. The overall prevalence of *S. aureus* and MRSA from various human and animal sources was 38.42% (78/203).The prevalence of MRSA was 35.55%, 44.73%, 41.66% and 33.33% in human pus sample, mastitic milk sample, animal pus sample and meat samples, respectively. On NA, golden yellow 45 (57.69%), pale yellow 28 (35.89%) and whitish 05 (6.41%)colonies were observed. All the MRSA isolates grew on MeReSa agar with greenish-blue discoloration. On BPA, the colonies of all MRSA isolates were black and shiny, with a fine white rim, surrounded by a clear zone. On MSA, 77/78 (98.71%) isolates were able to ferment mannitol. VITEK 2 compact identified 77/78 (98.72%) isolates as *Staphylococcus aureus*. Seventy-five(96.15%) isolates were coagulase positive. Human plasma showed the best coagulation reaction followed by plasma from camel, buffalo, horse, sheep, goat, cattle and poultry. All the isolates produced biofilm on CRA. On sheep blood agar,71.79%,25.64% and 2.56%isolates exhibited complete, partial and no haemolysis, respectively.Sixty three isolates (80.77%) were positive for DNase test while 15 (19.23%) were negative. Only one antibiotic namely imipenem was found 100% effective against all the isolates. All (100%) isolates were resistant towards seven antibiotics namely ampicillin, cefixime, cefoxitin, colistin, methicillin, oxacillin and penicillin-G.

30. Evaluation of Laparoscopic and Conventional Methods Ovariohysterectomy in Dogs.

The present study was conducted on 24 female dog dogs weighing from 25-32 kg and 20 -27 month aged respectively, presented for ovariohysterectomy at Veterinary Clinical Complex, CVAS, Bikaner. Presented female dogs were randomly divided in two groups, in group A dogs were operated by convention ovariohysterectomy while in group B were operated by laparoscopic ovariohysterectomy. The results were evaluated by physiological, haemato-biochemical, pain score and surgical methods in both groups. Heart rate, repertory rate and rectal temperature significantly change postoperatively in comparison to pre operative. In group-A haemoglobin level significantly decreased initially after 24 hrs to 10th day non-significantly decreased while group-B remain non-significant entire period of time. PCV values group-A and group-B significant decrease in was recorded. TEC values remain non-significant in both group. Non-significant increased TLC level was observed until 6 hrs postoperatively in group A after that significant increase in TLC values was noticed at 12 to 24 hrs day and then decreased up to 10 day however, group-B TLC values remain non significant. Significant increase in neutorophils and significant decrease in lymphocytes were recorded while monocytes and eosinophils remain non-significat entire period of time. In group A and group B significant increase values were observed in glucose, cortisol, AST, creatinine, CK, alkaline phosphates, pain score and oxygen saturation in both the group however ALT values remain non-significant. Group A require more surgical time and postoperative care then laparscopic method. Incision length in group-B was less as compare to group- A. The result of present study showed that laparoscopic ovariohysterectomy minimally invasive, low pain low stress then conventional ovariohysterectomy.

31. Study on Sedative and Pre-anaesthetic Effects of Dexmedetomidine Alone and its Combination with Butorphanol and Ketamine Anaesthesia in Camels (Camelus-dromedarius)

In present study, the sedative effect of dexmedetomidine alone in groups Dex_1 (2.5 µgm kg^{-1}) and Dex_2 (4 µgm kg^{-1})


and pre anaesthetic effect of dexmedetomidine at doses *viz.* 2.5 µgm kg^{-1} and 4 µgm kg^{-1} with butorphanol (0.05 mg kg^{-1}) and ketamine (2 mg kg^{-1}), respectively in Dex_1BK and Dex_2BK, groups were evaluated. The experimental trials were conducted in group of 6 camels in a randomized crossover design with a wash out period of 14 days. The onset of sedation recorded as 6.10 0.44 min in Dex_2 group was non-significantly lower than 6.85 0.45 min in Dex_1 group. The duration of sedation and recovery time respectively 40.05 1.47 and 64.32± 1.72 min recorded in Dex_2 group was significantly higher ($P<0.01$) than the 25.85 0.97 and 43.81 ±1.19 min. in Dex_1 group. The induction of anaesthesia in Dex_1BK group recorded as 1.03 0.020 min was non-significantly higher than 0.99 0.02 min in Dex_2BK group. The duration of anaesthesia, recovery time and complete recovery recorded in Dex_2BK group was significantly higher in Dex_1BK group. Recovery from anaesthesia was Smooth and excitement free in both Dex_1BK and Dex_2BK groups. The systolic and diastolic blood pressure showed increased values at different time intervals in group Dex_1 and Dex_2. Heart rate and Pulse rate decreased significantly ($P<0.05$) in Dex_2 group. Similar trend was also observed in Dex_1BK and Dex_2BK groups but respiration rate decreased significantly ($P<0.05$) in Dex_2BK group. However, heart rate and Pulse rate decreased significantly ($P<0.05$) in both Dex_1BK and Dex_2BK groups. The haemato- biochemical parameters showed non-significant variations during the period of study within the group and between two groups at different time intervals. In conclusion, Dexmedetomidine is a clinically useful and safe to be employed as sedative, and pre-anaesthetic drug in combination with Butorphanol-ketamine anaesthesia in camels.

32. Application of Double String of Pearls (SOP) Plates for Fracture Fixation of Long Bones in Canines

In present study entitled double SOP plates were used in orthogonal/90° offset manner for fracture fixation of long bones. The study was conducted on 14 client owned clinical cases of long bone fracture in dogs The plates were applied in cranial and lateral side in humerus while in cranio-lateral and caudo-lateral side in femur. In tibia the plate was applied in cranial and medial side of the bone. The higher fracture incidence was observed in the animal weighing in between 20 to 30 kg. In all the 14 cases


selected for the study maximum number of fractures were found in humerus followed by tibia and femur. The maximum number of cases found to be fractured at the mid shaft followed by distal third and proximal third. The oblique fracture was found to be highest followed by transverse and multiple. The automobile accident was found to be the commonest cause of fracture. The Double SOP plates were fixed with only bi- cortical screws in two cases while both bicortical as well as monocortical screws in 12 cases. Wound healing complication like suture dehiscence in 5 cases and seroma formation of mild to moderate degree in all the cases were observed in present study. Every animal showed excellent weight bearing on day 45 post operatively with mild to moderate lameness. Post-operative radiographs showed fracture healing with normal/ minimal callus formation at the end of study. Haemato-biochemical parameters did not reveal any significant variations except significant increase in Bone Specific Alkaline Phosphate from day 30 to day 45 postoperatively ($P \leq 0.05$). Breakage of both the plate occurred in two cases and breakage of caudo-lateral plate was observed in one case postoperatively. Screw loosening with plate dislodgement of both the plates and screw breakage in lateral plate was observed in one case and screw loosening of anterior plate in proximal segment and of lateral plate in distal segment of fracture was observed in one case.

33. Clinical use of Locking Compression Plate System (LCP) and Autologous Platelet Rich Plasma (PRP) for management of long bone fractures in dogs.

The study was conducted on 18 clinical cases of dogs with 19 simple closed long bone fractures (Femur, Tibia, Radius-Ulna, and Humerus). These dogs were randomly divided in Group-I and Group-II. In Group-I the long bone fractures were stabilized by internal fixation technique using locking compression plate system. In Group-II autologous PRP was also administered locally at fracture site, after stabilization with LCP just before closing the first suture line. Postoperatively, clinical and radiographic evaluation of treated fractures was conducted during the study. In Group-I, there was significant reduction in mean lameness score during 3rdweek, and significant improvement in weight bearing was observed between initial and later period of present study. In Group-II,

weight bearing improved progressively, but the decrease in lameness was found non-significant at weekly intervals. Near14th day post-operatively mean radiographic healing score was observed significantly more in Group-II as compared to Group-I. The mean radiographic healing score was significantly improved between initial first month and 2nd month period within Group-I; but within Group-II mean radiographic healing score was significantly improved through 2-8weeks interval when compared to 0-2 week post-operatively. Complications in the form of implant failures and infections were collectively encountered in 42.1% of the cases. LCP was found suitable for different type of simple closed fractures of different long bones of limbs of canines. Platelet concentration in autologous plasma from the method used in study was sufficient which generated early bony reaction at the stabilized fracture site.

34. A Comparative Study of Single, Double and Triple Port Laparoscopic Assisted Ovariectomy In Dogs

The present study of laparoscopic assisted ovariectomy was conducted on 18 healthy female dogs after randomly and equally assigned into three groups i.e. group A, B and C. Animals of group A, B and C underwent single port, double port and triple port laparoscopic assisted ovariectomy, respectively under similar anaesthetic protocol. Physiological parameters (heart rate, respiration rate and rectal temperature), haemato-biochemical parameters (CBC, LFT and KFT), total surgical duration, intra and post operative complications were recorded in all animals. Results showed that physiological parameters varied significantly at different time period within groups, while the difference between pre and postoperative values of haemato-biochemical parameters was not significant within group as well as among the groups. Total surgical time for group A, B and C was 57.17±1.97, 31.83±2.02 and 31.17±1.62 min, respectively. Total surgical time for group A was significantly longer than other groups, while total surgical duration was almost similar in group B and C. All the three techniques had minor intra and postoperative complications and no complications required conversion to open celiotomy in any animal. From the result it could be concluded that all the three techniques for laparoscopic assisted ovariectomy was effective and feasible with no major complications. Double port laparoscopic assisted ovariectomy was better

among the three techniques as it required less number of incisions than triple port technique and surgical duration was shorter than single port technique and similar to triple port technique.

35. A Comparative Study for Retrieval of Cystic Calculi Through Laparoscopic Assisted Cystotomy and Conventional Cystotomy in Dogs

The present study was conducted on 16 male dogs of different age, weight and breed presented to the Department of Veterinary Surgery and Radiology, CVAS, Bikaner, for treatment of obstructive urolithiasis. Radiography and ultrasonography revealed distended urinary bladder having dispersed calculi and sludge leading to confirmatory diagnosis. The animals of the present study were randomly divided into two groups, i.e. Group I and Group II, each consisting of 8 dogs. They were subjected to cystotomy by laparoscope assisted method in Group I and cystotomy by conventional method in Group II. In Group I, under similar anaesthetic protocol. Parameters such as surgical, physiological and haematobiochemical were recorded in both the group. The mean surgical operating time was 114.12 ± 3.68 minutes and 75.12 ± 2.48 minutes in Group I and II, respectively showing a significant difference between the two groups. Intraoperative complications were more in laparoscopic assisted cystotomy as compare to conventional cystotomy. The value of postoperative pain at 2nd, 8th and 24th postoperative hours in group I animals were 2.25±0.23, 1.50±0.17 and 1.25±0.15, respectively, while those in group II animals were 4.12±0.27, 2.87±0.27 and 2.50±0.17, respectively. There was a significant difference between pain scores, postoperatively between the both groups because of the smaller incision and less tissue trauma in group I experienced less pain. The size of the incision was found to be 2.05 ± 0.16 cm in group I and 5.87 ± 0.34 cm in group II. There was a significant difference between the two groups. Postoperative complications were less in laparoscopic assisted cystotomy as compare to conventional cystotomy. Physiological parameters such as rectal temperature, respiratory rate, heart rate. A non-significant difference in rectal temperature, respiratory rate and heart rate was observed between groups during surgical procedure. There was a significant decrease within groups in all three parameters that can be attributed to the anaesthesia used. Although there was a decrease, all values remained within

the physiological limit. The values returned to baseline values after 48 hrs. There was no significant difference in mean values of haemoglobin, total erythrocyte count, packed cell volume between the groups. There was a decrease in haemoglobin, total erythrocyte count, and packed cell volume, postoperatively in both groups. This decrease was non-significant in group I but significant in group II because conventional cystotomies result in more blood loss as compared to laparoscopic assisted cystotomy. No significant difference in SGOT was found between the groups. In animals of group I non-significant increase in SGOT value was noted while in animals of group II, SGOT values significantly increased due to the muscle trauma. There was no significant difference within or between the groups for values of SGPT, BUN, serum creatinine at any given time interval Laparoscopic assisted cystotomy took longer surgical time compared to conventional cystotomy; however, low pain score, smaller skin incision length and lesser post-operative complications was found in the laparoscopic assisted cystotomy for calculi removal compared to conventional cystotomy.

36. Smartphone ophthalmoscopy for fundus examination in dogs

The present study of smartphone ophthalmoscopy was done in 50 apparently healthy dogs. All the animals underwent standard ophthalmological diagnostic tests prior to fundus examination. Only ophthalmoscopically normal eyes were selected for the study. Pupils were dilated with 1% tropicamide 30 minutes prior to examination. Fundus examination was done in dark room either in sterna recumbency or lateral recumbency. The smartphone based fundus camera was designed using locally available material such as PVC pipe, sand paper, electrical insulation tape, 20D condensing lens and a smartphone. The images were recorded in continuous video mode with flash light on; later on desired images from videos were obtained as screenshots. The dogs were more comfortable in sternal recumbency compared to lateral recumbency. There was a lot of variation in tapetum colour. Green yellow (n=17) was the most common colour followed by blue green yellow (n=13), blue (n=7), yellow (n=5) and blue green (n=5). In 03 dogs subalbinotic fundus was observed. The most common colour of non tapetum was Dark brown (n=23), Brown (n=15), Black (n=8) and red (n=2). There was a lot of variation in the optic disc shape, location, and colour. The

most common shape was Triangular (n=20), round (n=18) and polygonal (n=12). The most common colour was pink (n=29) followed by pinkish white (n=12) and white (n=9). The most common location was at the junction of tapetum and non tapetum (n=26) than in tapetum (n=12) and non tapetum (n=10). Most commonly three retinal veins (n=29) were present followed by four (n=18) and five (n=3). The arterioles were fine and lighter than the retinal veins and the number varied from 15 to 20. Good quality fundus images were obtained by smartphone ophthalmoscopy. This technique was cost effective, useful in telemedicine and portable. The interpretation of fundus pathologic lesion and differentiation from the normal is major component to fundus examination.

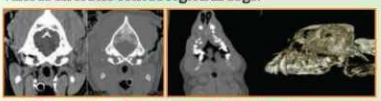
37. Biometric assessment of eye using b-mode ultrasonography and computed tomography in healthy Labrador dogs

The aim of the study is to describe the CT and USG appearance of adult Labrador dog eye and measuring the ocular parameters. 12 adult dog's eyes were scanned by 16 slice CT scan machine. Eye length and eye width was recorded in axial plane. Transcorneal ultrasonographic scanning of 12 adult healthy dogs of both sex were performed using linear array transducer on B-mode. The ultrasonographic appearance of the eye was described and ocular dimensions were recorded. The echo-biometric studies on four parameters i.e., anterior chamber depth (ACD), lens thickness (LT), vitreous chamber depth (VCD) and axial globe length (AGL) were recorded. The ultrasonography showed that the eyes of dogs appeared as slightly ovoid structures with anechoic contents such as aqueous humor, vitreous humor and lens. The cornea, anterior and posterior lens capsule, iris, sclera-retinal rim structures appeared as hyperechoic. Computed tomographic study in two parameters; eye width and eye length were recorded. Non-significant differences were found in all parameters when compared between right and

left eyes of male and female dogs. However, the anterior chamber depth in female dog was significantly higher than male dogs $P < 0.05$. The present study provides echo-biometric measurements of the intra-ocular structure using USG and CT ineyes of adult healthy Labrador dogs.

38. Diagnostic Imaging of various affections of Head in dogs using Computed Radiography and Computed Tomography

The present study was conducted in 20 dogs to evaluate the clinical application of CT imaging modality in evaluating various disorders of head region. Head radiographic examination was performed in selected cases and evaluated for the radiographic abnormalities. The dogs were clinically examined and the signalment data, clinical signs were recorded and documented. Digital radiography of head region was done depending upon the anatomical region involved using appropriate radiographic technique and precise radiographic positioning for head region. The CT examination was performed using a 16 slice CT Scan Machine for evaluation and diagnosis of various head pathologies in selected dogs under general anaesthesia. Standard CT imaging protocols for head region were used for scanning both osseous and soft tissue structures of the head region. The haemato-biochemical examination was also performed. The disorders were recorded more in male dogs. Highest occurrence was recorded in Labrador breed (06/20). The dogs with > 5 years age group were more affected and the medium sized dogs with 10-30 kg body weight showed highest occurrence of disorders of head region. The disorders were categorized on the basis of predominant radiographic and computed tomographic findings viz. Otitis externa and media (6), Metabolic bone disease (3), Epilepsy (2), Hydrocephalus (2), Otitis externa (2), Sino-nasal tumour (2), Brain contusion (1), Mandible fracture (1), Miscellaneous (1). Definitive diagnosis was established in 17 out of 20 dogs whereas, 3 dogs have equivocal CT findings. It is concluded that CT imaging is superior to conventional radiography in the diagnosis of various disorders of head region in dogs.



39. Diagnostic Imaging and Surgico-therapeutic Management of Disorders of Elbow and Stifle Joints in Dogs-A clinical study

The study was conducted on clinical cases of 30 dogs to evaluate radiographic and CT imaging modalities for diagnosis of surgical disorders of elbow and stifle joints and various treatment protocols were evaluated for management of these disorders. Routine clinical examination and pre-treatment clinical assessment was performed to evaluate lameness, joint mobility, pain on

palpation, and weight bearing on a grading scale. Radiography and CT modalities were used to diagnose various elbow and stifle joints disorders. The radiographic and CT findings were recorded and documented for each disorder. Haemato-biochemical examination was also performed in all the dogs for pre-operative evaluation. Various surgical and non-surgical treatment protocols were used for surgico-therapeutic management of elbow and stifle joint disorders in dogs. In present study, elbow and stifle joint disorders were recorded higher in male (16/30; 53.33%) than in female dogs (14/30; 46.67%). Non-descript breed dogs had the higher (12/30; 40%) number of disorders. The highest cases were recorded in dogs <1 years age group (15/30; 50%) and in dogs (16/30; 53.34%) with 10-30 kg body weight. In present study, various surgical disorders of elbow and stifle joints were diagnosed and categorized based on predominant clinical and radiological findings. In elbow joint disease, fractures were highly reported in dogs (6/14; 42.86%) followed by degenerative joint disease and elbow dysplasia (3/14; 21.43% each) and elbow dislocation with concurrent fracture of elbow joint (2/14; 14.28%). Among the various stifle joint disorders, patella luxation (9/16; 56.25%) were recorded highest followed by cranial cruciate ligament rupture and fracture distal femur fracture (3/16; 18.75% each) and degenerative joint disease of stifle joint (1/16; 6.25%). Supra condylar, condylar and intercondylar fractures of humerus and femur, olecranon fracture were surgically managed by employing various internal fixation techniques viz. Pinning, plating and ESF techniques etc. described for fracture immobilization. Cases of patella luxation were surgically treated by employing various techniques viz. Imbrication, trochlear block resection, transposition of tibial tuberosity etc. Post operative clinical and in selected cases radiographic assessment was done to evaluate the outcome of the cases. In present study, total 19/29 cases had the excellent clinical outcome. One dog died during the post operative follow up period due to concomitant systemic infection.

40. Quality evaluation of Tulsi and Giloy extract incorporated chicken meatballs

A study was carried to optimize the level of incorporation of Tulsi and Giloy extract in chicken meat balls and evaluate their effects on physicochemical, microbiological,

sensory qualities, shelf-life and cost of the products. The chicken meat balls were prepared with incorporation of different levels of Tulsi extract 0.25% (T1), 0.50% (T2) and 0.75% (T3) as well as Giloy extract 0.25% (G1), 0.50% (G2) and 0.75% (G3) and control without treatment. The products were studied at 0, 5, 10, 15 days under refrigeration temperature (4±1°C). The mean values for emulsion stability and cooking yield of different treatment groups were significantly (P<0.05) different from control. The increasing trend in pH and TBA values were recorded with the advancement of storage period in all treatment and control groups. The increase in concentration of Tulsi and Giloy extract in chicken balls concomitantly raised (P<0.05) DPPH scavenging activity. A significant (P<0.05) increase in TPC of control and treatment groups were found throughout the storage period. All the treatment groups showed lower microbial load compared to control group. The yeast and mould counts were observed on 15th day but the level was under acceptable limit. None of the sample was found positive for coliform count. The score of all sensory parameters decreased with the advancement of storage period. The inclined trend for cost of products was C<T1<G1<T2< G2<T3<G3. Therefore, it may be concluded that 0.75% Tulsi and Giloy extract can be added to prepare microbiologically safer chicken meatballs.

41. A Study on Survivability of Sirohi Goat Kids under Farm and Field Condition

A study was conducted to find out survivability of Sirohi goat kids and non-genetic factors affecting the survivability of kids at 0-3 month, 3-6 months and 6-12 months of age under farm and field condition. Under this study data were collected from 504 records of Sirohi kids died out of 21,790 total available Sirohi kids up to age of 0-12 months, maintained at LRS, Bojunda, Chittorgarh as farm unit and field unit of AICRP, Vallabhnagar during year 2015-2021. The overall least-squares means of survivability at 0-3 month, 3-6 months and 6-12 months of age in Sirohi kids were estimated as 95.20±0.493, 90.60±2.987 and 95.46±2.021 %, respectively. The effect of location on survivability of kids was highly significant ($p \leq 0.01$) at 0-3 months, 3-6 months of age whereas non-significant ($p \geq 0.05$) at 6-12 months of age. The effect of year of birth on survivability of kids was highly significant ($p \leq 0.01$) at 0-3 months of age whereas significant ($p \leq 0.05$) at 3-6 months and 6-12 months of age. The effect of season of birth was highly significant ($p \leq 0.01$) on survivability of kids at 0-3 months of age whereas. The effect of sex of kid on survivability was highly significant ($p \leq 0.01$) at 0-3 months of age. The effect of parity of dam on survivability was non-significant ($p \geq 0.05$) at 0-3 months of age, significant at 3-6 months of age, whereas highly significant ($p \leq 0.01$) at 6-12 months of age. The Effect of birth weight of kid on survivability was significant at 3-6 months of age. The study has revealed that to mitigate effects of non-genetic factors on survivability proper guideline for optimizing of rearing practices is required for enhance the survivability and economic viability of Sirohi breed.

42. Virulence and Antimicrobial Resistance Genes Profiling of E. coli Strainsisolated from Diarrhoeic Lambs

The present study aimed to determine the virulence genes and antimicrobial resistance genes profile of *E. coli* isolated from diarrhoeic lambs. A total of 61 faecal samples were collected from 0 to 4 months old diarrhoeic lambs from the institutional flock and farmer's flocks in and around areas of Udaipur. Based on cultural, morphological, biochemical and molecular characteristics, a total of 46 *E. coli* isolates were identified. The overall prevalence of *E. coli* in diarrhoeic lambs was found 75.41%. Whereas, the prevalence of *E. coli* in diarrhoeic lambs in the institutional flock was 65% and in farmer's flocks was 80.49%. In the present study, the prevalence of *E. coli* in diarrhoeic lambs decreased with the increasing age up to 31-60 days after that a sudden change was seen as increased prevalence at 61-90 days. After 90 days the prevalence was found to decrease as previously. The virulence genes including *stx1, stx2, eaeA, bfpA, lt, st* and *etrA*determined by PCR method. Seven isolates (15.22%) harboured *stx1* and/or *stx2* and were classified as STEC. In the present study, the *stx1* (13.04%) gene was more prevalent than the *stx2* (6.52%) gene. Four isolates (8.70%) were assigned to EPEC because they possessed the *eaeA* gene. All the EPEC isolates were aEPEC because the *bfpA* gene was not detected in these isolates. 16.67% of STEC isolates possessed the *eaeA* gene and was characterized as EHEC. None of the isolates belonged to ETEC as the enterotoxin encoding *lt* and *st* genes were not detected in these isolates, whereas, higher prevalence of EAEC (76.09%) was found. All isolates were subjected to antimicrobial susceptibility testing against 15 different antimicrobials. In all *E. coli* isolates resistance to antimicrobial agents in decreasing order was Azithromycin (100%), Cephalothin (100%), Penicillin-G (100%), Polymixin-B (91.30%), Cefixime (43.48%), Gentamicin (41.30%), Ampicillin (28.26%), Ceftriaxone (21.74%), Tetracycline (21.74%), Trimethoprim (17.39%), Co-trimazole (13.04%), Ciprofloxacin (6.52%), Sulfafurazole (6.52%), Ofloxacin (4.35%) and Chloramphenicol (0%). The majority of the *E. coli* isolates were found resistant to penicillin-G (100%), cephalothin (100%) and Azithromycin (100%).Two antibiotic resistance genes *viz. tetA* and *blaTEM* were detected with a prevalence rate of 10.87% and 28.26% respectively.

43. Assessment of Oxidative Stress Biomarkers and Liver Semiotics during Peripartum Period in *Gir* Cattle

An investigation was conducted on ten apparently healthy advance pregnant *Gir* cattle maintained under uniform managemental practices at LRS, CVAS, Navania. The oxidative stress biomarkers, liver semiotics and hemato-

logical attributes were analyzed during three peripartal phases (ante-partum, 21 days), partum (day 0) and (post-partum, 21 days) as well as weekly interval study points of peripartum. Blood samples were collected on day 21, day 14 & day 7 with respect to expected date of calving (ante-partum) and day 7, day 14 & day 21 of calving (post-partum) and on day 0 that represents day of calving (partum).The oxidative stress biomarkers and liver semiotic variables were estimated by using standard analytical procedures whereas serum glucose, total proteins and albumin were estimated by using test kit methods. The hematological attributes were estimated by using fully automatic haemato-Analyzer.The data were analysed by WASP - Software.The results showed significantly higher level activities of oxidative stress biomarkers enzymatic (SOD, Cat, GR) except XO and non-enzymatic (MDA) along with significantly lower levels of antioxidant biomarkers (glutathione, vitamin A, vitamin C and vitamin E) around parturition especially at day of calving and or 1 week of ante-partum to 1 week of post-partum indicated higher level of oxidative stress in *Gir* cattle at these time periods. The significantly higher enzymatic activities (AST, ALT, GGT and LDH) of liver semiotic variables at partum and post-partum in comparison to ante-partum were observed, although remained within reference range (except slightly higher GGT activity), that is suggestive of intense metabolic processes or hepatic insufficiency during these time periods. However, activity of ALP remained significantly higher among ante-partum and at partum rather than post-partum phases. The significantly lower levels of glucose concentration at post-partum (1-3 week) and triglyceride levels at partum and post-partum were suggestive of lactational stress. Significantly decreased concentration of total cholesterol during ante-partum and at partum reflects its demand for physiological events such as steroidogenesis as its concentrations improved in postpartum period. Hematological attributes were more pronounced during pre-partum and at the time of parturition when compared to post-partum period. Higher values of Hb, RBC count and PCV at calving may indicate the requirement of higher red cell volume to carry more oxygen to meet the energy requirement of tissues during parturition. On the basis of findings of the study it may be suggested that the performance of milch breeds such as *Gir* cattle can be improved to a certain point by supplementing with diets having optimal levels of micronutrients, hepato-protectives along with antioxidants particularly during peripartum period.

44. Effect of Different Feeding Management Systems on Growth Performance and behaviour pattern of Sirohi Goat Kids.

A study was carried out at LRS, Bojunda, Chittorgarh district of Rajasthan. on21 Sirohi goat kids of about 6 months' of age with uniform body weight. These goat kids were randomly divided into three groups of equal number (7 each). In group extensive system (T1) kids were allowed to graze for 8 hours in a day and housed in shed during night without any supplementary feed. Kids in semi-intensive system (T2) group were allowed to graze on "grasses" with concentrate supplementation. In intensive system (T3) group animals were confined to the shed for entire period of study and reared on complete stall feeding with supplementation of commercial concentrate ration. The trial was carried out over three- month period (90 days). The overall average total body weight gain for kids under T1group was 2964 gm and T2group was 3638.62 gm and T3 group was recorded to be 4780.76 gm. Growth rate of T3group and T2 group was significantly ($P<0.01$) higher than T1 group goat kids. Significantly ($P<0.01$) higher daily feed intake was detected in T3as compared to other feeding management systems. The average daily water intake (lit/day) and average behavioural parameter like drinking time of goat kids were significantly higher under T1 and T2 group than intensive T3 group. Average behavioural parameters like browsing and grazing time of goat kids were significantly ($P<0.01$) higher in T1 group than T2 group. The sleeping time of goat kids were significantly ($P<0.01$) higher in intensive system than extensive systems.

45. Clinico-Pathological studies on experimentally induced arsenic toxicity in mice and its amelioration with *Aeglemarmelos*

An investigation was conducted to study the sodium arsenite induced toxicity in mice and its amelioration with fruit of *AegleMarmelos*. Sodium arsenite was given @ 3mg/kg body weight of mice and*Aeglemarmelos* @ 200mg/kg body weight of mice daily for 28 days. Evaluation was done based on clinical symptoms, effect on body weight and organ weight, haematological alteration, biochemical profiles and pathomorphological changes in different organs. The clinical signs observed in sodium arsenite treated mice include decreased activity, anorexia, and alopecia. The weight of lungs and brain was significantly higher whereas weight of testes was significantly lower in sodium arsenite treated group which was restored with *A. Marmelos* extract.The sodium arsenite treated mice showed a significant increase in Hb, PCV, TEC. Significant increase in ALT, AST and Urea level was observed in mice receiving the dose of sodium arsenite which indicated a deleterious effect of sodium arsenite on liver and kidney cells. The histopathological changes observed were necrosis of hepatocytes, necrosis of tubules in kidney, infiltration of leukocytes and haemorrhage in liver and kidney, necrosis and depletion of white pulp and mild depletion of red pulp in spleen, oedema, haemorrhage, and infiltration of leucocytes in lungs, necrosis, and damage of villi in intestine, and necrosis and haemorrhage in testes. It is concluded that administration of *Aeglemarmelos* has reduced the toxic effects of sodium arsenite on different organs to a satisfactory level.

46. Clinical and Haemato-biochemical Characterization of Skin Diseases of Cattle in Southern Part of Rajasthan

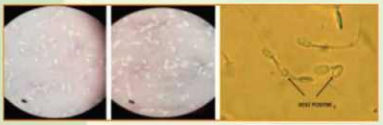
A study was carried out to find out the prevalence of skin diseases of cattle in Udaipur district of Rajasthan. The overall prevalence of skin diseases was 17.85 per cent (55/308) in cattle. The prevalence of various skin diseases viz. mange, lumpy skin disease, dermatophytosis and papillomatosis was 7.14, 5.84, 2.92 and 1.95 per cent, respectively.Percent distribution of various skin diseases revealed that mange was the most frequently observed skin disease in cattle (40 per cent) (22/55), followed by lumpy skin disease (32.72 per cent) (18/55) and dermatophytosis (16.36 per cent) (9/55) and papillomatosis (10.91 per cent) (6/55).Age group-wise prevalence of overall skin diseases was highest in cattle below 6 months of age (19.67 per cent), followed by above 3 years of age (18.43 per cent) and lowest in cattle between 6 months to 3 years of age (16.19 per cent). Highest prevalence of mange and dermatophytosis was observed in cattle below 6 months age group whereasprevalence of lumpy skin disease and papillomatosis was observed highest in cattle above 3 years of age. Prevalence of all skin diseases was higher in crossbred cattle than indigenous cattle.Sex-wise prevalence of all skin diseases was higher in female animals as compared to males.The highest prevalence of dermatological disorders was recorded during winter season except papillomatosis. Clinical parameters viz. body temperature and respiration rate were significantly ($P<0.01$) increased in cattle affected with lumpy skin disease. The heart rate was also significantly ($P<0.05$) increased in lumpy skin disease affected cattle.Haematological investigations revealed that haemoglobin (Hb), packed cell volume (PCV) and total erythrocyte count (TEC) were significantly ($P<0.01$) reduced in mange, lumpy skin disease and dermatophytosis. Cattle affected with mange showed significant ($P<0.01$) leukocytosis, eosinophilia and lymphocytopenia. In lumpy skin diseases, there was significant ($P<0.05$) decrease in platelet count accompanied by significant ($P<0.01$) leukopenia. Cattle affected with dermatophytes revealed significant ($P<0.01$) leukocytosis, lymphocytosis and neutropenia. In papillomatosis, there was significant ($P<0.01$) decrease in haemoglobin (Hb), total leucocyte count (TLC) and neutrophil count. Among biochemical parameters, serum total protein, serum albumin and serum globulin were significantly ($P<0.01$) reduced in cattle affected mange, dermatophytosis and papillomatosis. The level of serum total protein, serum globulin, alanine transaminase (ALT), aspartate transaminase (AST), alkaline phosphatase (ALKP), blood urea nitrogen (BUN), total bilirubinand serum glucose were significantly ($P<0.01$) increased in lumpy skin disease affected cattle whereas, serum albumin value was significantly ($P<0.01$) decreased. It was concluded that mange was the most commonly observed skin disease in the region, followed by lumpy skin disease, dermatophytosis and papillomatosis during study period. Lumpy skin disease was first time reported in this region. There were alterations in various clinico-haemato-biochemical parameters in cattle affected with different skin diseases.

47. Studies on status of occurrence of endo andecto-parasites in dogs of Udaipur,

A study was conducted from April 2022 to November 2022 on dog faecal samples aswell as on ectoparasites collected from TVCC, CVAS, Navania, as well as polyclinics and private clinics of nearby areas of Udaipur district, (Rajasthan). The significant ($p<0.05$) prevalence of GI helminths was noted in dog (76%). Among various GI helminths reported in present study, Strongyle spp. (43.97%), were the most prevalent gastrointestinal helminths followed by Toxocaracanis, Dipylidiumcaninum and mixed infection. In dog, seasonal analysis revealed significant ($p<0.05$) highest prevalence in rainy season (92.30%) and lowest in winter (43.33%). Sex wise observation that the females (86.66%) was more infected with GI nematode infection than the male (57%). The age wise prevalence of GI nematode infection reported significant ($p<0.05$) highest prevalence in age group <1 year (87.50%) followed by >1 year age group (57%). The various clinical manifestation observed in dogs were diarrhoea, anemia, emaciation, vomiting. The significant ($p<0.05$) prevalence of ectoparasite was noted in dog as 70% in the study region. Among various ectoparasite reported in present study, Rhipicephalussanguineus (32.95%), were the most prevalent ectoparasite followed by Ctenocephalidescanis (15.90%), Hippoboscacapensis (15.34%), Demodexcanis (11.93%), Sarcoptesscabei (9.09%), maggots (6.81%), mixed (7.95%). In dog, seasonal analysis revealed significant ($p<0.05$) highest prevalence in rainy season (90.00%) and lowest in winter (34.44%). The age wise prevalence of ectoparasiteinfection reported significant ($p<0.05$) highest prevalence in age group >1 year (82.66%) followed by <1 year (53%). The various clinical manifestation observed in dogs were alopecia, dermatitis, itching, red skin, pruritus. Alopecia in dogs was 81.75%.

48. Effect of different concentrations of trehalose on cryopreservability of Surti buffalo (*Bubalusbubalis*) bull semen

A research work was conducted to investigate the effects of supplementation of trehalose as an additive in TCFY extender on pre-freeze and post-thaw semen quality and



oxidative stress in Surti buffalo bull semen. Six Surti buffalo bulls aged between 5 to 7 years were reared under uniform management conditions. A total of 24 ejaculates from 6 bulls were collected and evaluated for various macroscopic parameters (colour, consistency, volume, pH), microscopic parameters (sperm concentration, mass motility, individual sperm progressive motility, sperm viability, sperm abnormalities, and sperm plasma membrane integrity) and oxidative stress status (lipid peroxidation and catalase activity). Extended semen was divided into four equal parts and trehalose was added at the concentrations of 50 mM (T-1), 100 mM (T-2), and 150 mM (T-3) with one control group having no additive. Semen appeared creamy white to milky white in colour and consistency varied from thick to thin during the evaluation of fresh semen. Total semen volume and fresh semen pH in Surti buffalo bull were found to be 2.26±0.18 ml (range 1.0-5.0 ml) and 6.80±0.01 (range 6.5-7.0), respectively. Pre-freeze semen parameters viz. individual progressive motility, sperm viability, and plasma membrane integrity were found to be significantly higher in Treatment-3; on the other hand, sperm abnormality and lipid peroxidation were significantly lower in semen samples treated with trehalose (T-1, T-2, and T-3) as compared to control. Similarly, the post-thaw individual sperm progressive motility and plasma membrane integrity were significantly higher whereas, sperm viability and catalase activity were non-significantly higher in T-1, 3, and T-3, respectively; however, sperm abnormality in T-1 and T-3 was non-significantly lower and lipid peroxidation level was significantly lower in T-1, T-2 and T-3 as compared to control. T-2 (100 mMtrehalose) had significantly highest individual progressive motility, sperm viability, plasma membrane integrity, and catalase activity whereas reduced sperm abnormality and Lipid peroxidation level as compared to the other three groups at pre-freeze and post-thaw stages of cryopreservation. It was concluded that a 100 mM concentration of trehalose showed a significant improvement in pre-freeze and post-thaw semen quality and oxidative stress status as compared to the control and trehalose concentrations of 50 mM and 150 mM.

49. Effect on Performance, hormonal profile and Histopathology of Broiler chickens Raised under various light regimens

A study was carried out up to 6 weeks age of broilers at LFC, Farm, CVAS, Navania, to study the body weights, weight gain, behavioural traits, blood-biochemical parameters, hormonal profile, histopathology and economics of broiler chicken. A total of one hundred and forty four (144) day old chicks of either sex were randomly allocated to three treatment groups comprising of four replicates with twelve birds in each replicate. Chicks in the first experimental group T1 (control) were exposed to light produced from 60 watt incandescent lamp, while the T2 and T3 treatment groups were subjected to light emitting from Compact florescent lamp (CFL) andLight emitting diode (LED) lamps having the intensity of 26 and 9 watts respectively. The pre-starter ration offered up to 8 days, starter up to 21 days and finisher ration up to 42 days as per BIS (2007). The body weights, gains, feed consumption, feed conversion ratio were significant ($P \leq 0.05$) among all the three treatment groups. The highest body weight at 42nd day of age were recorded for T3 group, subjected to 9W LED illuminance (2224.71g) followed by T2 CFL group emitting 26W light intensity(2193.36 g)and lowest in T1 control group exposed to 60w ICD illuminance (2170 g) respectively. Significant ($P \leq 0.05$) influence of light regimens (source and intensity) on weekly body weight was recorded. Likewise at 6th week highest weekly weight gain was observed for T3 group (557.59g). The overall mean weekly feed consumption of birds was highest for T1 control group (1045.71g) followed by T2 (1032.89 g) and lowest in T3(1029.85 g). A statistically significant difference ($P \leq 0.05$) between the total mean weekly feed intakes of birds from all treatment groups was obtained. The weekly feed conversion ratio was significantly ($P \leq 0.05$) affected by light regimens (source and intensity). Highest weekly feed conversion ratio was observed for T1 and lowest for T3 group.Behavior was significantly ($P<0.05$) influenced under three different light regimens. However preening and foraging behavior was unaffected by light regimens. A significant difference observed ($P<0.05$) inheterophil to lymphocyte (H/L) ratio.

50. Expression of Innate Immune Response Genes in Milk Somatic Cells during Sub Clinical Mastitis of Cattle

A total of 769 quarter milk samples of 200 apparently healthy cattle from different farms in and around the Udaipur district were screened for subclinical mastitis. Following IDF criteria, the prevalence of subclinical mastitis was 34.50 % animal wise and 14.95 % quarter wise. Milk microbiome revealed that out of 120 bacteria isolated, 59.17% *Staphylococci*, 32.50% *Streptococci* and 8.33% *E. coli* which were characterized phenotypically and confirmed by PCR assay using 16S rDNA specific primer, tuf gene primer and uspA gene for the *Staphylococcus* spp., *Streptococcus* spp. and *E. coli* respectively. The antimicrobial sensitivity of isolates varied in different farms which depend on the use of antimicrobials and strains prevalent at that farm. The majority of strains of *Staphylococci*, *Streptococci* and *E. coli were* found sensitive to Amikacin, Chloramphenicol, and Gentamicin.In the present study, relative up regulated expression found in TLR-2, IL-1β, IL-10, Hp and down

regulation was found in TLR-4, TNF-α, IFN-γ and IL-6 in the milk of cattle with subclinical mastitis as compared to healthy ones. IL-2 and IL-4 were not detected in healthy as well as infected animals. An increase in the concentration of fat, SCS values and a decrease in the concentration of lactose, protein and SNF values were observed in milk of cattle having subclinical mastitis as compared to healthy oncs.Fat is non-significantly positively correlated with the TLR-2 and TLR-4 genes however negatively correlated with TNF-α, IL-β, IFN-γ, IL-6, IL-10 and Hp. Protein, lactose and SNF are non-significantly positively correlated with the TNF-α, IL-β, IFN-γ, IL-6, IL-10 and Hp however negatively correlated with TLR-2 and TLR-4. The SCS is positively correlated with the TLR-2 and TLR-4 (highly correlated) and IL-6 gene however negatively correlated with TNF-α, IL-β, IFN-γ, IL-10 and Hp.

51. Effect of Phytobiotic Feed Additives Garlic (*Allium sativum*), Ashwagandha (*Withaniasomnifera*) and Shatavari (*Asparagus racemosus*) as alternatives to Antibiotic Growth Promoters in Broiler Chicks

A feeding trial of 42 days was conducted using 300, day-old broiler divided into ten treatment groups with three replicates under each treatment. Ten different treatment diets were prepared to feed broilers under different dietary groups.Garlic powder, Ashwagandha root powder and Shatavari root powder at graded levels alone and in combination was supplemented in broiler pre starter, starter and finisher ration. The T1 *i.e.*, control group was fed on basal diet, while T2 was supplemented with Oxy tetra cycline (OTC) powder @ 0.1g/kg feed. T3 and T4 were served as Basal diet supplemented with Garlic powder @ 0.75% and @ 1.50%. T5 and T6 were served as Basal diet supplemented with Ashwagandha root powder @ 0.75% and @ 1.50%. T7 and T8 were served as Basal diet supplemented with Shatavari root powder @ 0.75% and @ 1.50%. T9 was served as Basal diet supplemented with Garlic powder @ 0.25%, Ashwagandha root powder @ 0.25% and Shatavari root powder @ 0.25%. T10 was served as Basal diet supplemented with Garlic powder @ 0.50%, Ashwagandha root powder @ 0.50% and Shatavari root powder @ 0.50%. 226 Highly significant (P<0.01) effect Garlic powder, Ashwagandha root powder and Shatavari root powder of alone and in combination was observed on overall feed intake, live body weight, body weight gain, average daily gain, feed conversion ratio, performance index, protein efficiency ratio, balance of nitrogen, calcium, phosphorus and metabolizability of CP, CF and TA. The overall mortality in broilers during experimental period was 4.66%, which was within normal limits.

The supplementation of Garlic powder, Ashwagandha root powder and Shatavari root powder alone and in combination had highly significant (P<0.01) effect on dressing per cent, liver, heart, gizzard, giblet weight, on Hb, PCV, TEC, TLC, Lymphocyte, Monocyte, heterophils, Eosinophil, Basophil, H/L ratio, albumin, globulin, total protein, A/G ratio, glucose, triglyceride, Cholesterol, AST, ALT, creatinine, intestinal pH, total microbial count, ether extract (%) of broiler meat, total ash (%) of broiler meat, appearance of broiler meat, flavour of broiler meat, stickiness of mouth of broiler meat and juiciness of broiler meat.

Whereas, non-significant effect of supplementation of Garlic powder, Ashwagandha root powder and Shatavari root powder alone and in combination was observed on metabolizability of DM and OM(%) of broiler meat, odour of broiler meat, tenderness of of broiler meat. The net return per bird profit was found higher in T9 group i.e. followed by T10, T7, T2, T5, T3, T8, T1, T6 and T4 treatment groups, respectively.

It is concluded that Garlic powder, Ashwagandha root powder and Shatavari root powder alone and in combination improves the growth performance, carcass characteristics and health status of broilers as compared to control group. supplementation of Garlic powder @0.25%, Ashwagandha root powder @0.25% and Shatavari root powder @0.25% in basal diet is quite effective and could be a viable proposal for profitable broiler farming for meat production.

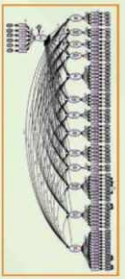
52. Studies on Some Aspects of Oxidative Stress, Energy Balance and Health Status during Transition Period In buffaloes

The transition period from 3 weeks prepartum to 3 weeks postpartum, is the most stressful phase for buffaloes. A total of 65 transition buffaloes were included in present study. Out of which 53.85 per cent (35/65) transition buffaloes were found affected with periparturient disorders. Out of these 35 affected buffaloes, 20.00 per cent had multiple periparturient disorders whereas remaining 80.00 per cent had single periparturient disorder. Among the different periparturient disorders, sub-clinical hypocalcaemia (SCH) was found as the most prevalent periparturient disorder accounting for 12.31 per cent cases followed by sub-clinical mastitis (SCM) (9.23 per cent); dystocia (7.69 per cent); milk fever (MF) (6.15 per cent); mastitis, post-parturient metritis (PPM) and torsion (4.61 per cent each); post-parturient indigestion (PPI), lameness and uterine prolapse (3.08 per cent each); and post-parturient haemoglobinuria (PPH), retention of placenta (ROP) and traumatic reticulo-peritonitis (TRP) (1.54 per cent each).The mean value of rectal temperature was significantly (P<0.05) higher during transition period as compared to control animals while the mean value of respiration rate and heart rate were significantly (P<0.05) higher during prepartum period in buffaloes. Haemoglobin, packed cell volume, total erythrocyte count and lymphocytes were significantly (P<0.05) decreased while total leucocytes counts and neutrophils count (%) were significantly (P<0.05) increased during transition period in buffaloes. Levels of serum glucose, total protein,

albumin, cholesterol and triglyceride were significantly (P<0.05) decreased while total bilirubin, blood urea nitrogen, cortisol, ALT, AST, ALP, BHBA and NEFA were significantly (P<0.05) increased in transition buffaloes. Non-significant differences were observed in levels of monocytes, eosinophils, basophils, platelet count and serum creatinine. Serum calcium, phosphorus, magnesium, zinc and iron were significantly (P<0.05) decreased. Most of buffaloes having BCS 2-2.5, 3.0-3.5, 4.0-4.5 and 5.0 during prepartum period reduced to a lower BCS during postpartum period. Ultrasonographic back fat thickness (USG BFT) was significantly decreased during transition period in buffaloes. The overall strong correlation coefficients between BCS and BFT were 83 and 79 per cent for prepartum and postpartum, respectively in transition buffaloes. Determinates of levels of biomarkers of oxidativer stress revealed that levels of malondialdehyde and glutathione reductase were significantly (P<0.05) increased during transition period in buffaloes whereas, levels of superoxide dismutase, reduced glutathione and catalase were significantly (P<0.05) decreased. Prophylactic administration of calcium, phosphorus, vitamin D_3 and vitamin B_{12} (Calcimust gel) and vitamin B_1 and vitamin E (Himshakti) had improved the altered values of most of the clinic-haemeto-biochemical parameters, minerals status and biomarkers of oxidative stress during transition period in buffaloes. It was concluded that transition period was the stressful phase for dairy buffaloes with marked changes in clinic-haemeto-biochemical parameters, minerals status. Administration of prophylactic regimen of calcium, phosphorus, vitamin D_3 and vitamin B_{12} vitamin B_1 and vitamin E had positive effect in transition buffaloes.

53. Entrepreneurial Intention of Veterinary Students in India

In entrepreneurship research, the theory of planned behaviour, entrepreneurial event theory and social cognitive theory are well researched. The findings of current study proposed an integrative model based on these theories and additional antecedents "motivation, education, environment and passion" were incorporated. The proposed integrative model was examined by collecting data from veterinary students in six different zonal councils of India. Through GLiM method, this study confirmed the influence of demographic factors on the entrepreneurial intention of veterinary students in the Indian context. This study used a two-step approach to delineate the influence of antecedents of intention on entrepreneurial intention, in which confirmatory factor analysis followed by structural equation modelling was performed using SPSS and AMOS version 26. The findings confirmed that entrepreneurial attitude, social norms, perceived desire of self-employment, entrepreneurial self-efficacy, entrepreneurial education, entrepreneurial passion and personality characteristics are antecedents of entrepreneurial intentions. This study confirmed the mediating effect of attitude between antecedents of intention and entrepreneurial intention. Moreover, the results also confirmed the existence of gender differences in veterinary students for entrepreneurial intentions. Previous entrepreneurial experience was also found to be a moderator. Therefore, the proposed integrative model is an addition to the entrepreneurship literature, which provides a holistic view of the relationships between antecedents of entrepreneurial intentions. The findings of this study have both theoretical and practical implications. The theoretical contribution is the integrated comprehensive model, which was developed for this thesis and empirically investigated in the context of India. The model was developed from three theories used in the entrepreneurship context and incorporated various antecedents of entrepreneurial intentions. Therefore, this study is an empirical attempt to provide an understanding of different antecedents of entrepreneurial intentions. The findings suggested valuable insight for educationists and policy-makers concerning various antecedents and the determinants of entrepreneurial intentions as perceived by veterinary students of India.



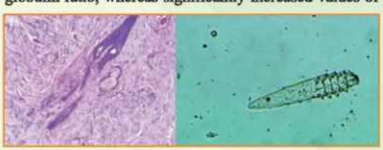
54. A Study on Bioactive Components and Antibiotic Residues in Milk and Haemato-Biochemical Profile of Bikaneri and Jaisalmeri Camel during various seasons in Rajasthan

Sixty (60) apparently healthy milking camels of two breeds (30 each) viz. Bikaneri and Jaisalmeri from Sikar and Jodhpur district of Rajasthan, respectively were selected to evaluate the effect of season and breed on milk and blood attributes. Milk and blood samples from the same Bikaneri and Jaisalmeri camel in summer, rainy and winter seasons were collected to estimate the milk parameters and haemato-biochemical profile.Heat-stress was observed during summer and rainy season, and could be classified as mild to moderate. All milk components showed a significant effect of the overall season, being higher in winter due to more availability of green. Percent scavenging activity (DPPH) and total antioxidant capacity (FRAP) were significantly higher in winter and freezing point and electrical conductivity increased in summer while pH in rainy season. A total of 704 protein groups and 6459 peptide groups were identified in the milk of Bikaneri and Jaisalmeri camel. There were 21 (3%) and 17 (2.4%) unique protein groups with common 666 (94.6%) proteins in the milk of Bikaneri and Jaisalmeri, respectively. 18 Differently/ significantly expressed proteins were obtained in the milk of Bikaneri and Jaisalmeri camel breed. Insulin-like growth factor-binding protein (accession no. A0A5N4DEJ1) was

uniquely found in Jaisalmeri camel which was the peculiar finding of our study. This shows higher anti-diabetic properties may be found in Jaisalmeri camel. 25 Fatty acids were quantified and showed seasonal variation. Less short-chain SFA, MCFA (9-10%) and more (90%) long-chain FAs were found. Camel milk had high contents of alpha-linolenic acid/ALA (OMEGA-3). An effect of the rainy season on the presence of oxytetracycline residue in raw camel milk was clearly observed in the present study. Total plate count was higher in summer season followed by rainy and winter season in both Bikaneri and Jaisalmeri camel. The data analysis revealed that the season had a significant effect on some of the hematological indices and the blood metabolites i.e. liver and renal functions and minerals concentrations. Values of hemato-biochemical profile of camel found within reference normal ranges in our study as reported by various scientists, suggesting that the camel may be immune or resistant to heat and other stress-imposed cellular damage. Breed variation between Bikaneri and Jaisalmeri was less observed may be due to the probable existence of relatively less genetic variation in dromedary camel breeds.

55. Pathomorphological and Haemato Biochemical Studies of Various Skin Disorders in Dogs (*Canis familiaris*) in Jaipur

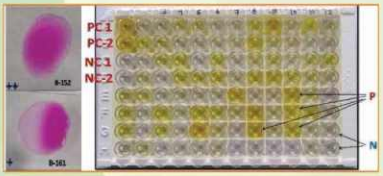
Looking to the severity and frequency of dermatological disorders in dogs in Jaipur and their adverse effect on canine health, present study was undertaken to provide timely diagnosis of the most common skin disorders of dogs and to help clinician to give an idea about line of treatment. A total of 248 skin samples of dogs were analyzed .Occurrence of various types of dermatitis were perivascular dermatitis (15 cases), interface dermatitis (18 cases), vasculitis (12 cases), nodular dermatitis (9 cases), diffuse dermatitis (12 cases), intra epidermal vesicular and pustular dermatitis (17 cases), sub epidermal vesicular and pustular dermatitis (11 cases), perifolliculitis, folliculitis and furunculosis (11 cases), fibrosing dermatitis (21 cases), panniculitis (8 cases), ulcerative dermatitis (7 cases) and seborrheic dermatitis (5 cases).Haematological parameters revealed significant increase in total leucocytic count mainly neutrophilia in most of the types of dermatitis. Hb. and PCV value showed non-significantly decreased values, whereas TEC showed significant decrease in different types of dermatitis. Serological analysis revealed significantly decrease values of serum albumin, total protein and albumin-globulin ratio, whereas significantly increased values of serum globulin in majority of dermatitis cases. Microbiological analysis revealed four bacterial pathogens namely: *Staphylococcus* spp., *Streptococcus* spp., *Pseudomonas* spp. and *Escherichia coli*.Incidence of sarcoptiosis and demodicosis were reported 12.90 and 10.88 per cent respectively. Haematological parameters in both sarcoptiosis and demodicosis showed significantly decreased values of Hb and TEC, whereas significantly increased total leucocytic count. Biochemical parameters depicted significantly decreased values of serum albumin, total protein and albumin-globulin ratio, whereas significantly increased values of serum globulin. Occurrence of various types of neoplastic conditions of skin was also reported in few cases. The values of various haemato-biochemical parameters for various neoplastic conditions of skin showed no appreciable effect on these parameters .This study will help the clinicians in treatment of different dermatological disorders.



56. Studies on *Brucella spp.* infection among Dairy Animals through Serological and Molecular Methodologies

In this study estimation of sero-prevalence was conducted on a total of 414 samples comprising 208 cattle and 206 buffaloes by RBPT and i-ELISA, out of which, a total of 27 & 30 were found positive with an overall prevalence rate of 6.52% and 7.25%, respectively. Serological analysis presented comparatively higher infection rate in cattle population as per i-ELISA (9.13%) and buffalo population as per RBPT (6.31%). However, cattle population was observed to have comparatively higher infection rate in both serological approaches. Highest infection rate was reported in Sanganer area. Sex wise analysis presented higher infection rate in male populations of cattle (7.25%) and buffaloes (7.14%). While age wise analysis revealed highest infection rate in the age group of 5 to 9 years.

Molecular confirmation of genus specific bovine brucellosis was attempted on DNA extracted from 41 blood samples (cattle 26, buffalo 15). Out of 41 samples examined, 29.27% (12/41) were found positive for bovine brucellosis. As regards to species specific analysis, the present study reported that all the samples amplified the 494bp amplicon specific for *B. abortus*.4 PCR positive *Brucella abortus* representative samples were sequenced .The present study sequences obtained accession numbers as OP611206, OP597805, OP611205 and OP597806 for the samples C12, C22, C55 and C139, respectively. The findings revealed a comparatively higher prevalence rate in cattle population 38.26% (10/26) as compared to buffalo population having 13.33% (2/15). Comparative analysis in the present study depicted that serological detection presented an overall prevalence of 65.85% (27/41) by RBPT while 73.17% (30/41) by i-ELISA whereas 29.27% (12/41) prevalence rate was reported by molecular detection using conventional PCR. Molecular detection presented statistically significant ($p \leq 0.05$) and



highly significant ($p \leq 0.01$) variation in the prevalence rate of bovine brucellosis by RBPT and i-ELISA respectively.

57. Assessment of Bioactive Potential of Sheep Blood Plasma Protein Hydrolysates and its Utilization in Functional Mutton Sausage

The present study was conducted to optimize the processing protocol for enzymatic hydrolysis of sheep plasma proteins and evaluation of recovered hydrolysates for antioxidant, antimicrobial, metal chelating, anti-obesity activity, and techno-functional property. The selected plasma protein hydrolysates were incorporated in development of mutton sausage and evaluation of shelf life of developed sausages at refrigerator temperature. The in-vitro one-step enzymatic hydrolysis was used for trypsin and chymotrypsin (2%; E/S) to hydrolyze sheep plasma protein (3.5% w/v in phosphate buffer) for 6 h at 37°C temperature. The two-step in-vitro enzymatic hydrolysis (GI digestion) i.e. gastric phase using pepsin enzyme (2%) for 60 min and intestinal phase using trypsin and chymotrypsin (1% each) for 6 h at 37°C temperature was used to hydrolyzed sheep plasma protein. The degree of hydrolysis (DH) increased significantly up to 6 h on hydrolysis with trypsin and GI digested sample, whereaschymotrypsin, DH increased up to 2 h, thereafter a non-significant increase was observed. The antioxidant activity increased significantly with the increase in hydrolysis time as well as the degree of hydrolysis. The GI digested hydrolysate exhibited higher antioxidant activity as compared to trypsin and chymotrypsin. Moderate antibacterial activity was observed in all hydrolysates samples from 2 to 6 h of hydrolysis against *B. cereus*, however, strong antibacterial activity was observed in hydrolysates samples against *E. coli*, *S. aureus*, and *S. enterica*. Antifungal activity against *A. fumigatus* was observed at 6 h plasma hydrolysates. Pancreatic lipase inhibition and cholesteryl esterase inhibition activity of all digested samples were increased with the advanced degree of hydrolysis. The oil holding capacity was observed highest at 1 h hydrolysate among all enzyme treatments, thereafter decreasing with the progress of hydrolysis time. The foaming capacity and foaming stability were increased with hydrolysis time and pH value. The emulsifying activity index decreased significantly, however, for chymotrypsin, increased significantly. The emulsion stability index of all enzyme hydrolysate decreased significantly. The FTIR spectroscopy

confirmed the amide groups in protein hydrolysate and increase hydrophobicity with hydrolysis time. The SEM images demonstrated the spongy and porous structure of plasma hydrolysate. Based on the highest bioactive potential GI digested at 6 h was selected for development of mutton sausage. The selected plasma hydrolysates were incorporated in mutton sausages at 5%, 7.5 %, and 10%, in T 1 , T 2 , and T 3 , respectively on the basis of preliminary trials. With the incorporation of plasma protein hydrolysates into mutton sausage, the physicochemical properties, antioxidant activities, lipid oxidative stability, and microbiological quality parameters were improved and maintained better during refrigerated storage periods up to 21 days.

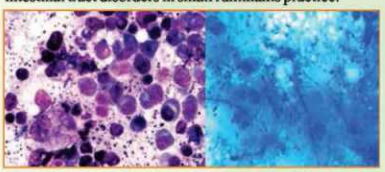
58. Study on behaviour and milk attributes of lactating camel on replacing conventional roughage with arid tree leaves

Fifteen lactating camels (average BW 554 kg) in mid lactation stage were used to study the impact of tree leaves. Animals were blocked by weight and milk production into three groups, where they were offered roughage to concentrate ratio of 70:30. Roughage components included crop residues as Groundnut straw (GS), Guar phalgati (GP) and Khejri leaves /Pala leaves in different ratio. Group T_0 fed with GS and GP ratio of 50:50, Group T_1 fed with GS, GP and Khejri leaves ratio of 40:40:20 and Group T_2 were offered GS, GP and Pala leaves ratio of 40:40:20. Dry matter, OM (gm/d) was lower ($P<0.5$) in camels fed 20% tree leaves as compared to other groups which might be attributed to the effect of tannins on voluntary feed intake. However, the intake of CP (gm/d) was higher ($P<0.05$) in camels when fed 20% khejri leaves (KL) in comparison to those fed 20% pala leaves (PL) and conventional roughage alone due to variation in dietary CT contents. The water intake was significantly ($P<0.01$)different between T_0, T_1 and T_2 It was found that the time spent on eating, rumination, idling differed significantly in between T0 T1 and T_2 Eating rate of lactating animals were differed significantly in between T0 and T1 as well as T0 and T2.. The milk yield significantly increases in tree leaves fed groups. The electrical conductivity and freezing point of milk decreased in the tree-forage fed groups. milk protein content increased and fat: SNF ratio decreased in T1 and T_2compared to T0. Bioactive components (fatty acids and vitamins) also significantly higher in tree leaves fed

groups. An improvement in antioxidant properties of camel milk was observed in the test groups due to consumption of tanniferous tree leaves.

59. A Cytohistopathological Study on Gastro-intestinal Tract Disorders of Goats (*Capra hircus*) in Jaipur District

The current study work was conducted from June 2019 to May, 2022, to find the occurrence, gross morphology, evaluate cytological features and histopathological findings and correlate them for gastro-intestinal tract disorders in GoatsDuring this study period, a total of 1518 samples of gastrointestinal tract were examined from goats irrespective of age groups, breeds and sex. Out of these, 1115 samples representative of gross lesions were collected and processed for subsequent cytopathological and histopathological examinations. Thus, an over all occurrence of cytohistopathological conditions of gastro-intestinal tract disorders of goat was observed as 73.45 per cent (1115 out of 1518).In the present study, predominantly intestinal disordersconsisted, highest number of cases (45.20%), followed by pathological disorders of oral cavity (16.68%), esophageal disorders (16.59%), abomasal disorders (10.04%), ruminal disorders (7.98%),mesenteric lymph node disorders (2.33%), omsal disorders (1.70%) and the least occurrence for Reticulum disorders (0.35%) were recorded. In most of cases, the gross and cytohistopathological changes were associated with specific etiology and some hyperplastic and neoplastic growths were the main leading pathological conditions.This study may open the way up for using cytopathology much more as a reliable and useful diagnostic procedure for evaluation of gastro-intestinal tract disorders in small ruminants practice.



60. Analysis of drought-led risk to animal husbandry in Rajasthan

The present study was carried out purposively in the five severe drought prone districts of Rajasthan i.e. Barmer, Jodhpur, Jaisalmer, Jalore and Sirohi. Two tehsils from each district and from each tehsil, two villages were selected randomly. Based on PRA survey, 15 livestock owners were selected randomly from each village who possess at least one milch cattle and/or goat at the time of investigation. Thus, 5 districts, 10 tehsils, 20 villages and 300 livestock owners were selected. The findings of study revealed that drought-led risk was high to subunits of the human-animal ecosystem viz. the water level in reservoirs, feed/fodder availability at pasture land, water availability for crop and fodder production, production and reproduction performance of livestock, and employment opportunities at local. The productive and reproductive performance of cattle were reported as under; average daily milk yield (lt.) 7.17±2.58, peak yield (lt.) 9.84±2.17, lactation length (months) 9.39±1.59, dry period (months) 3.11±0.82, age at first calving (years) 3.56±0.65, inter-calving interval (months) 14.94±1.89 and conception rate (times) 1.84±0.65 whereas age at first kidding 14.92±1.62 months, prolificacy 1.47±0.67 kids/ kidding, marketing age 7.86±2.35 months and body weight at sale 19.75±3.39 kgs. for goat. Major coping and adaptive strategies to mitigate drought vulnerability were diversification of herd structure, dry fodder requirement is fulfilled by hay making, water requirement is fulfilled by water harvesting tank/ govt. supply, migration of family member(s) to urban area for jobs as an alternate source of income, the forced sell of livestock and their products for livelihood, reducing herd size at time of scarcity and rain deficit is fulfilled by tube well for self or others while none of livestock owner adopted green fodder requirement is fulfilled by silage making and quality of wheat straw is improved by urea treatment. Lack of awareness about government schemes/ credit facilities were "very serious" constraints faced by livestock owners. It is suggested that special attention of the government was required in term of awareness, training on scientific animal husbandry, programmes on mitigation of drought impact to address various challenges and support to drought vulnerable human-animal ecosystem in region.

61. Effect of Supplementation of *Lactobacillus plantarum* and *Saccharomyces cerevisiae* and their Combination on Performance of Broiler

The effect of *Lactobacillus plantarum* (10^6CFU/g, pellet) and *Saccharomyces cerevisiae* (10^6 CFU/g, pellet) supplementation alone and their combination on performance of broiler rabbits on two different diets i.e. basal diet (ADF- 20.56 per cent) and prebiotic enrich diet (ADF-24.29) was studied by assessing growth performance, digestibility of nutrients, balance of nitrogen, blood profile, blood antioxidants, cecum fermentation parameters, carcass traits and composition. One hundred twenty (28 day old) unsexed, apparently healthy, weaned broiler rabbits were individually weighed and randomly divided into eight treatment groups of fifteen rabbits in each (8 male + 7 female) having almost similar average

body weight. Two sets of experiment were planned in set one T_1-control, T_2-*Lactobacillus plantarum*, T_3-*Saccharomyces cerevisiae*, T_4- *Lactobacillus plantarum* + *Saccharomyces cerevisiae*. In set-two the probiotic treatments were similar but in different diets and these were T_5 . control, T_6-*Lactobacillus plantarum*, T_7-*Saccharomyces cerevisiae* T_8 *Lactobacillus plantarum* + *Saccharomyces cerevisiae*. Six representative male rabbits having body weight near to group average in each treatment were selected for metabolic trial . After metabolic trial blood samples from eight rabbits from each group was collected. At the end of the feeding trial six male rabbits from each group were slaughtered to study the carcass traits and meat quality.

In experiment-1, feed intake from 29 to 84 days was significantly ($P\leq0.01$) higher in probiotic supplemented groups. Significantly ($P\leq0.01$) higher digestibility of acid detergent fibre and cellulose was observed in T_4 having *Lactobacillus plantarum* and *Saccharomyces cerevisiae* as probiotic.. The epithelial thickness of duodenum was significantly ($P\leq0.01$) high in probiotic supplemented groups (T_2, $T_3$and T_4) but significant ($P\leq0.05$) effect on stearic, oleic, linolenic and arachidonic fatty acid. The nutritional indices of fatty acids were reported to be improved in probiotic supplemented groups as compared to control group. The study revealed significantly ($P<0.01$) highest apparent digestibility of dry matter, organic matter, neutral detergent fibre, acid detergent fibre and cellulose in T_8 group .Significant ($P\leq0.05$) effect of probiotic supplementation on SOD was observed in probiotic supplemented groups. The highest SOD activity in blood was reported in T_4 group. No effect of probiotic supplementation on cecum fermentation activity was found in this study.Significantly ($P\leq0.01$) higher population of *Lactobacillus plantrum* and *Saccharomyces cerevisiae*, epithelial thickness were reported in probiotic supplemented groups .The nutritional indices of fatty acids were reported to be significantly ($P\leq0.01$) improved in probiotic supplemented groups as compared to control group. On the basis of present study it can be concluded that probiotic supplementation improved growth performance of broiler rabbits with basal diet. The nutrient utilization (DM, OM, NDF, ADF and Cellulose) was improved in rabbits fed prebiotic enriched diet. In both experiment the blood parameters did not show the effect of probiotic supplementation except cholesterol lowering effect in basal diet fed with probiotics. Blood antioxidant activity was partially improved in both experiments. Probiotic supplementation showed no improvement in carcass traits and carcass composition except fatty acid profile in both the experiments.

62. Histopathological, Immunohistochemical and Molecular Studies on Canine Mammary Tumours in Jaipur

Looking to the severity and frequency of theCanine mammary tumours CMTs and emergent need to validate prognostic indicators and improve upon therapeutic approach, this study was carried out in dogs of Jaipur . Total of 114 CMT cases were recorded and mean age of dogs with CMTs were 9.5 ± 3.8 years. All CMTs were in females (100%) of which 6 were neutered and 108 were intact. Highest CMTs were from inguinal (33.3%) followed by caudal abdominal (29.8%) and cranial abdominal (21.9%) glands. Histologically, highest incidence was of malignant CMTs (59.6 %) followed by benign (34.2%) and hyperplastic /dysplastic lesions (6.1%). Two-third of all CMTs were malignant, of which tubular carcinoma (10.3%), squamous cell carcinoma (10.3%) followed by ductal carcinoma (8.8%) solid carcinoma (8.8%), tubulo-papillary carcinoma (7.3%) and complex carcinoma (7.3%) were the most prominent subtypes observed. Among malignant subtypes, ER+/PR+ expressing were (51.5%) highest in numbers, while among those with difficult prognostic potential like ER+/PR- (11.8%), ER-/PR+ (10%) and ER-/PR- (22%) also were increased substantially, indicating higher risk. All malignant CMTs were also molecular subtyped and outcome was graded as luminal A (ER+/PR+/HeR2-) (54.5%), luminal B (ER+/PR+/HeR2+) (18.3%), HeR2 expressing (ER-/PR-/HeR2+) (12.7%) and triple negative (ER-/PR-/HeR2-) (14.5%).groups. In lumina-A subtypes, 13.3% were E-cadherin negatives, while E-cadherin negative cases in Luminal-B, HeR2 expressing, triple-negative subtypes were, 20%, 57.1% and 62.5% respectively associating E-cadherin negative cases to higher invasiveness and poor prognosis. Ki67, a proliferation marker was also studied and 20.5% of benign, 95.6% of malignant tumours were Ki67 positive. Among PR- subtypes, 50% of benign and 95.6% of malignant CMTs were Ki67 positive.

63. Evaluation of Phacoemulsification versus Manual Small Incision Cataract Surgery for White Cataract in Dogs

A clinical study was conducted on 20 dogs with white cataract using two surgical techniques i.e. phacoemulsification and manual small incision cataract surgery (MSICS) for removal of cataractous lens with intraocularlens implantation in select cases. Detailedophthalmic examination including ultrasonography and routine haemato-biochemical analysis were performed in all the dogs operated for white cataract. Preoperatively 1% atropine sulphate ophthalmic solution and moxifloxacin ophthalmic solution were used to attain mydriasis and to prevent ocular infection, respectively. Functional vision was recorded in 75.00% of the eyes subjected to phacoemulsification and 77.78% in MSICS patients, after surgery. Implantation of +41 D hydrophilic acrylic foldable IOL with loop haptics was done and found to be effective method for restoring the ambulatory vision. Phaco technique has the advantage of small incision size, provides excellent results but the higher cost makes it unaffordable. MSICS offers all the merits of phacoemulsification with

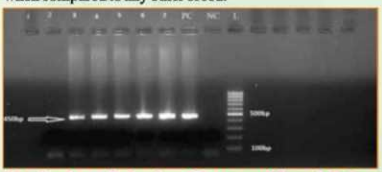
the added advantages of having wider applicability, better safety, with a shorter learning curve and lower cost. showing Catarctshowing intra-operative procedure (MSICS)healing of wound at Day 14 Postoperative.

64. Comparative Study of Tris-Egg Yolk-Glucose and Coconut Water Based Extenders for Cooled Storage (4°c) of Canine Semen

Four ejaculates per dog were collected by digital manipulation making a total of 24 ejaculates from six dogs. The semen sample of dogs collected and extended at the ratio of 1:4 in TRIS-Egg yolk-glucose and Coconut water-based extenders by split sample technique. The diluted semen was kept in the refrigerator for preservation at 4° C and the diluted semen was evaluated at 0, 24, 48, and 72 hours for microscopic *viz.* Individual motility, live sperm percentage, sperm abnormalities and sperm functional test *viz.* hypo-osmotic swelling test (HOST). The results indicated that numerically comparsion the individual sperm motility percentage is better in TRIS-Egg yolk-glucose than Coconut water-based extender. The live sperm percentage was non significantly ($p<0.05$) difference between TRIS-Egg yolk-glucose dilutor and Coconut water-based extender at 0, 24 and 48 hours but significant difference at 72 hours. TRIS-Egg yolk-glucose dilutor, the abnormal percentages were significantly ($p<0.05$) lower at 24, 48 and 72 hours of preservation. Within the group, TRIS-Egg yolk-glucose there was non-significant difference in intact plasma membrane percentage at 0, 24 hours and significant difference in intact plasma membrane percentage at 48, 72 hours were computed. In Coconut water-based extender group there was a significant difference in intact plasma membrane percentage at different time slots (0, 24, 48 and 72 hours).

65. Diagnosis of Babesiosis in dogs using conventional and molecular Methods

In the current study, canine babesiosis was diagnosed by using simple light microscopy and PCR. Blood samples of 100 babesia suspected dogs were collected and examined by blood smear examination and PCR. Out of 100 dogs, 7% were found positive by blood smear examination through light microscopy and 24% were positive in PCR. All the PCR-positive samples were amplified with *B. canis* species-specific primer. Subsequent sequence analysis of one randomly selected sample show similarity with *Babesia canis vogeli* sub-species. The results of this study confirm the presence of *B. canis* in infected dogs in the region. Haematology analysis of 24 PCR-positive dogs revealed a significant decrease ($p<0.05$) in haemoglobin concentration, PCV and TEC than the control healthy group. The platelet count was highly significantly decreased ($p<0.01$). The biochemical analysis revealed a significant increase ($p<0.05$) in ALT and serum creatinine while total protein was non significantly ($p\geq0.05$) decreased. The age-wise incidence of babesiosis revealed the highest incidence (29.16%) in the 1-5 years old age group of dogs. The sex-wise incidence study revealed 25.92% incidence in male dogs and 21.73% incidence in female dogs. Breed wise highest incidence was noticed in Labrador retrievers (34.78%) when compared to any other breed.



66. Study on Behavioral Pattern of Camel Calves in Arid Region of Rajasthan

The study on behavioural and growth pattern of camel calves was conducted to investigate suckling, feeding and social behaviour of camel calves . Fifteen camel calves (age 4.5-5.5 months; BW 137.4 kg) were from camel herd of ICAR-NRCC Bikaner were divided randomly into 3 groups of 5 each (T1, T2, T3) to conduct feeding and behavioural studies for the period of three months. Control group (T1) was fed 2 liter/calf/daily camel milk along with complete pelleted feed containing conventional roughage (Guar crop residue and Groundnut crop residue; 50:50) with concentrate to roughage ratio of 60:40. In the T2 group roughage component in the pelleted was replaced with 20% Khejri leaves whereas in the T3 group conventional roughage was replaced with 20% Pala leaves in the pelleted complete feed. Camel calves were housed in groups of 5 each; space area of nearly 40 square feet/calf was provided as per the floor space requirement standards of the camel. The feeding behavior (eating behavior, rumination behavior, eating bout, and drinking bout) and resting behavior (sitting and standing), abnormal behaviour and social behaviour (grooming and playing) was observed by CCTV camera at weekly intervals. Feed intake was recorded daily. Live weight calves; body morphometry (height at withers, body length, heart girth, paunch girth); height of mother's udder during milk

suckling by calves and distance between mother's hind limb foot during milk suckling by calves were measured at fortnightly intervals. Treatment had significant effect on the milk let down time ($P \leq 0.05$) and milk intake time ($P \leq 0.01$); milk let down time decreased with increase in age of calves which could be due to promptness (stimulation) of the suckling response by the calf which induced mother to release milk. No significant effect of dietary treatment was observed on time spent by calves on grooming, playing and abnormal activities. Dietary treatment did not affect fed intake and live weight of calves, ADG was observed to be significant ($P \leq 0.01$) higher in T2. Body morphometry (height at withers, body length, heart girth, paunch girth), height of mother's udder during milk suckling by calves and distance between mother's hind limb foot during milk suckling by calves' dietary treatment did not have any significant effect however incremental growth was observed in parameters studied. Observations to evaluate temperature humidity index reflected that environment was conducive for their growth. Results indicate that growth of above 500g/d could be achieved with feed containing khejri leaf based pelleted diet even with restricted milk supplement. Observations on the behavioral aspects of feeding could also help to identify sick/weak animals.

67. Studies on Standardization of Ultrasonographic Features of Prostate Gland in Dogs

A study was carried out on 60 clinically healthy male dogs (2-5 years old) of German shepherd (n=30) and Labrador (n=30) breeds. Transabdominal ultrasonographic examination was done at 6 MHz frequency in lateral recumbency without sedation. The capsule appeared relatively hyperechogenic and was easily identified. In GSD(German Shepherd Dog) age group-I (2 to 3 years), group-II (3 to 4 years) and group-III (4 to 5 years) prostate measured 22.73±1.01 mm and 22.58±0.95 mm; 30.22±1.85 mm and 29.04±1.66 mm; and 32.02±0.65 mm and 32.34±0.90 mm in length and width, respectively. In Labrador age group-I (2 to 3 years), group-II (3 to 4 years) and group-III (4 to 5 years) prostate measured 20.88±0.62 mm and 22.32±0.67 mm; 26.54±0.56 mm and 27.97±0.63 mm; and 37.05±0.90 mm and 37.90±1.12 mm in length and width, respectively. The length and width of the prostate gland were found 22.73±1.01 mm and 22.58±0.95 mm, 30.22±1.85 mm and 29.04±1.66 mm; 32.02±0.65 mm and 32.34±0.90 mm in 21.49±0.78 kg, 32.37±2.41 kg and 39.83±1.37 kg of body weight, respectively in GSD. The length and width of the prostate

gland were found 20.88±0.62 mm and 22.32±0.67 mm, 26.54±0.56 mm and 27.97±0.63 mm; 37.05±0.90 mm and 37.90±1.12 mm in 20.31±0.89 kg, 27.87±0.76 kg and 36.54±1.16 kg of body weight, respectively in Labrador. Both prostatic parameters i.e. length and width in all three groups of GSD and Labrador showed a positive correlation with age and body weight. Ultrasonographic prostatic measurements are more accurate and reliable than radiologic ones because the margins of the prostate are better outlined and because there is no magnification effect, as opposed to radiology.

68. Comparative evaluation of positive profile end threaded intramedullary pinning and elastic nailing technique for femoral fracture in dogs.

The present clinical study was conducted on 13 dogs with 14 fractures of the femur. These animals were divided into two groups, comprising six animals with seven fractures in group-I and seven animals in group-II. The signalment and history revealed more number of males (61.53%), younger age (below 12 months, 84.62%) of animals having average body weight of 13.61 kg. Non descriptive breeds had higher incidence. Automobile accident was major cause of fracture and highest fractures were found at femoral mid shaft. Modified Robert Jones bandaging was done on the affected limb till the day of surgery. All the fractures were openly reduced and stabilized by in group I, with PPET intramedullary pin while in group II, with ESIN. Post operatively external support to the operated limb was given with a modified Robert Jones bandaging for 2-3 weeks. Incision wound healed by primary intention in all the cases except two cases (suture dehiscence). The average period of earliest weight bearing on affected limb in group I and group II was found 4.5±0.67 days and 4.0±0.57 days, respectively. Minimum lameness at 60th postoperative day was recorded in group-I and group II animals with a mean value of 0.83±0.30 and 0.83±0.54, respectively.In the final outcome the excellent limb function was found highest in group I (57.14%) and group II (50.00%). Grades of radiographic healing at the time of

complete weight bearing was observed in animals of Group I and group II with mean grades of 1.43 ± 0.20 and 1.83 ± 0.48, respectively. Radiographically, in the final outcome, complete bone union was achieved earlier in group II as compared to group I but higher percent in group (57.14%) and group II (42.86%). At the time of complete weight bearing, best radiographic healing was observed in group I animals as compared to group II.

69. Diagnostic and Therapeutic approach to diabetes mellitus in canines

A total of two hundred canines of different age group, sex and breed with the history of polydipsia, polyphagia, polyuria, obesity, weakness or fatigue, rapidly developing bilateral cataracts, rapid weight loss or in combination thereof were screened.Blood samples of canines suspected for diabetes mellitus were screened for blood glucose. Canines showing random blood glucose level >140 mg/dl, were tested again for fasting blood glucose next day after 12 hours of fast. Those canines showing fasting blood glucose level >140 mg/dl, were included for the present study. Ten healthy canines (dogs) were also included for healthy control group in the study. On the basis of screening test results, nine canines were diagnosed as diabetic. The overall incidence of diabetes mellitus in canines was recorded 4.5 per cent. Breed wise incidence was highest in labrador breed followed By Pug, Spitz, Pomeranian, German Shepherd and Rottweiler, respectively. Age-wise incidence of DM was highest in >6 years of age. Sex wise incidence of DM in canines was higher in females as compared to males, respectively. Polydipsia, polyuria and weight loss were the most frequently found clinical signs in majority of diabetic canines. The clinico-physiological parameters were within their physiological limits, conjunctival mucous membrane was found slightly pale. The haematological profile revealed neutrophilia, mild lymphocytopenia and an increase in the value of mean corpuscular volume in diabetic canines. Serum glucose, ALT, ALP, AST, triglyceride, total cholesterol, BUN and creatinine were significantly increased in diabetic canines. Highly significant increased level of BUN and creatinine might be due to mild renal failure. Majority of cases had severe hyperglycemia (>250 mg/dl) and few had moderate hyperglycemia (<250 mg/dl). Urine parameters- ketone bodies, glucose, specific gravity and protein, increased significantly but urine pH was decreased significantly ($P<0.01$) in diabetic canines. Diabetic canines were managed well with intermediate-acting insulin (Caninsulin) @ 0.25 IU/kg body weight subcutaneously after meals twice a day, which resulted in a significant decrease in blood glucose levels over the period of time. Supportive therapy, balanced diets rich in high fiber, complex carbohydrates, high quality protein content and a low restricted fat along with regular, scheduled feeding always at same amount twice daily and regular exercise should also advised on daily basis.

70. Studies on prevalence of Paratuberculosis using conventional and molecular tools

The present study was carried out to detect the prevalence of paratuberculosis in cattle using Single intradermal test, serological test viz. ELISA and further molecular confirmation using PCR test. A total of 200 blood samples were collected for the present study from nearby area of our institute in Jaipur region, comprising samples from milking cattle, irrespective of age and breed. For bovine paratuberculosis, the overall prevalence obtained was 3.0% in cattle. Individual test wise, 6.5% (13/200) and 16% (32/200) animals were found positive to SID and ELISA, respectively. Higher prevalence was observed in age group above 5 years as 7.14% and 16.07% by SID and ELISA, respectively. Also, the prevalence was found higher in crossbred cattle as 8.43% and 19.28% by SID and ELISA, respectively. The results were compared using chi-square test. The comparison of results for SID and ELISA test was found non-significant ($p> 0.05$) with respect to age and breed. In the present study, PCR was carried out on all 200 samples for the detection of *Mycobacterium avium* subsp. *paratuberculosis* (MAP). The PCR assay was carried out using standard method targeting the MAP specific insertion element IS900. PCR amplification was performed on DNA extracted from blood samples for the diagnosis of insertion sequence IS900of MAP. Out of 200blood samples, only 10.5% (21) samples were found positive in PCR. In the present study, 4 samples show positive result for all the 3 tests (SID, ELISA and PCR). All the 3 tests were compared by chi-square test using SPSS 16 Software and this shows a significantly difference among the 3 tests. It showed estimates for PCR was lowest and estimates for ELISA was highest. Expected value was more in agreement with PCR test as compared to other. Therefore, it can be inferred that PCR test is more reliable than ELISA and SID test. There is an utmost need to put the animal legislations to proper use for control and eradication of diseases like JD, along with proper financial assistance to livestock farmers to cope with the loss of animal.

71. Effect of Supplementation of Neem (Azadirachta indica) leaves Powder and Multienzyme on Performance of Broiler Chickens

The present study was conducted on broiler chickens to observe the effect of neem (*Azadirachta indica*) leaves powder and multienzyme supplementation on the growth performance, carcass characteristics, digestibility of nutrients, nitrogen balance, hematological parameters and

economics of production of broiler chickens. The feeding trial was conducted under standard feeding and managemental conditions with broiler starter (1-21days) and finisher (22-35 days) ration on one hundred and sixty, day-old Ven cobb broiler chicks which were randomly divided into 4 treatment groups (T1 to T4) with four replicates of 10 chicks each. Birds were offered basal feed as per the BIS (2007). The treatment groups consisted of control group (T1) fed only with non-supplemented basal diet, group T2 was supplemented with 1% neem (*Azadirachta indica*) leaves powder, group T3 with 0.05% multienzyme and group T4 with 1% neem (*Azadirachta indica*) leaves powder + 0.05% multienzyme in basal feed. At the end of feeding trial, one bird per replicate under each treatment was randomly selected for digestion/metabolism trial for 5 days to assess the digestibility of different dietary principles and nitrogen balance. One broiler from each replicate was sacrificed at the end of trial to estimate the different carcass characteristics and meat quality parameters.

The supplementation of neem leaves powder (*Azadirachta indica*) and multienzyme alone and in combination showed highly significant ($P<0.01$) effect on final body weight, weekly body weight gain, performance index, dry matter digestibility, crude protein digestibility, ether extract digestibility, nitrogen balance and drip loss of meat. Significant ($P<0.05$) effect was found on feed conversion ratio protein efficiency ratio and economics of production. Whereas, dietary inclusion of neem leaves powder and multienzyme alone in combination had non significant effect ($P>0.05$) on feed consumption, dressed weight, eviscerated weight, weight of heart, liver, gizzard, giblet, spleen, drumstick weight, intestinal length, water holding capacity and pH of meat and hematological parameters of broiler chickens.

Therefore, on the basis of results obtained, the present study revealed that the combination of neem leaves @ 1% with multienzyme enhanced the overall performance of broilers.

Keywords: Neem, Broiler, Multienzyme, Carcass, Growth, Performance.

72. Clinico-Therapeutic Studies on Ascites of Hepatic Origin in Dogs

The present study entitled "Clinico-Therapeutic Studies on Ascites of Hepatic Origin in Dogs" was undertaken at the Department of Veterinary Medicine, Post Graduate Institute of Veterinary Education and Research, Jaipur and included screening of a total of 521 dogs having various gastro-intestinal disturbances. As a result, 15 dogs were diagnosed with ascites and out of them 12 dogs revealed hepatic origin based on ascitic fluid analysis (SAAG) and clinico-haemato-biochemical parameters. The overall prevalence of ascites was recorded as 2.87% with a high percentage in male (3.32% n=9,) as compared to female (2.40% n=6) for the age group of 3year-6 year. The breed wise prevalence of acites was as Labrador 7 (4.60%), German shepherd 3 (2.50%), Beagle 2 (2.00%), Pug 1(1.47%) and non descript 2 (2.46%), respectively. All the dogs having ascites of hepatic origin showed significantly lowered temperature, significantly higher pulse along with non significantly higher respiration rates as compare to healthy control. The values of Hb, PCV and TEC revealed significant decrease, the values of TLC and Neutrophils showed significant increase whereas the values of Lymphocytes, Monocytes, Eosinophils and Basophils showed non-significant changes for the dogs having ascites of hepatic origin as compare to healthy control. Further, the values of AST, ALT and ALP revealed significant increase, the values of Total protein, Albumin, Globulin, A:G Ratio and Glucose showed significant decrease however the values of Bilirubin, BUN and Creatinine revealed non significant changes for the dogs having ascites of hepatic origin as compared to healthy control. The ascitic fluid was clear, colourless and transparent in 9 dogs and clear yellow in 3 dogs. The mean±SE values of Albumin and SAAG in ascitic fluid of dogs having ascites of hepatic origin was recorded as 0.47±0.08 gm/dl and 1.23±0.06 gm/dl. All the 12 dogs diagnosed with ascites of hepatic origin were randomly divided into 2 groups as Group I and Group II, comprised of 6 animals in each. The dogs of Group I were treated by using - Inj. 5% Dextrose, Inj. Furosemide, Inj. Ceftriaxone, Inj. Tribivet, Syrup Liv-52 whereas the dogs of Group II were treated by using regimens of Group I along with addition of - Tablet Lysibin and Syrup Rkleen. In Group I, the ascites decreases (average) by 12th day of treatment and haematological parameters revealed non significant increases for the values of Hb, PCV, TEC, Lymphocytes and Monocytes recorded on 7th and 14th day as compared to the 0 day values whereas TLC and Neutrophils values showed non significant decrease however the eosinophil count revealed a non significantly increase on day 7 and a significant increase on day 14. Further, the serum biochemistry of Group I revealed non significant decreases for AST, ALP, Bilirubin, BUN and Creatinine, recorded on 7th and 14th day as compared to 0 day values whereas the values of ALT revealed a non significant decrease on day 7 and a significant decrease on day 14. The values of Total protein, Albumin and blood glucose showed non significant increases on day 7 but a significant increase on day 14 as compared to the values recorded on 0 day whereas the values of Globulin and A:G ratio showed non significant increase. In Group II, the ascites decreases (average) by 7th day of treatment and non significant increases for values of Hb, PCV and TEC were recorded on day 7th that increase significantly on day 14 as compared to the 0 day values whereas the values of TLC showed a non significant decrease recorded on day 7th and 14th day however the Neutrophils count revealed significant decreases on day 7 and day 14. Further, the values of lymphocytes count revealed a significant increase on day 7 and day 14 whereas the values of

Monocytes and Eosinophils count revealed non significant increases on day 7 and 14 as compared to the 0 day values. For the Serum biochemistry, the AST and ALT values revealed non significant decreases on day 7 and a significant decrease on day 14 as compared to the 0 day values whereas the ALP values revealed a significant decrease on day 7 and day 14. The values of Total protein, Albumin and A: G ratio revealed non significant increases on day 7 and a significant increase on day 14 as compared to the values recorded on 0 day whereas the Globulin value revealed non significant increases on day 7 and day 14. The values of Bilirubin, BUN and Creatinine revealed non significant decreases on day 7 and day 14 whereas the value of blood glucose showed a non significant increase on day 7 and day 14 as compared to the 0 day values. Based on reduction/cessation of various clinical signs including fluid thrills, abdominal distension, dyspnoea, exercise intolerance, icterus, vomition, limb edema, and lethargies along with improved haemato-biochemical parameters to near normalcy, the therapeutic regimen of Group II was found as more efficacious than regimen of Group I.

73. Effect of Dietary Supplementation of Amla Fruit Powder (*Emblica officinalis*) and Multienzyme on Performance of Broiler Chickens

The present study was conducted on broiler chickens to observe the effect of dietary supplementation of amla fruit powder (*Emblica officinalis*) and multienzyme on the growth performance, carcass characteristics, digestibility of nutrients, nitrogen balance, haemato-biochemical parameters and economics of broiler chickens production. The feeding trial was conducted under standard feeding and managemental conditions with broiler starter (1-21days) and finisher (22-35 days) ration on one hundredand sixty, day-old Ven cobb broiler chicks which were randomly divided into 4 treatment groups (T_1 to T_4) with four replicates of 10 chicks each. Birds were offered basal feed as per theBIS (2007). The treatment groups consisted of control group (T_1) fed only with non-supplemented basal diet, group, T_2 was supplemented with 0.75% amla fruit (*Emblica officinalis*) powder, group T_3 with 0.05% multienzyme and group T_4 with 0.75% amla fruit (*Emblica officinalis*) powder + 0.05% multienzyme in basal feed. At the end of feeding trial, one bird per replicate under each treatment was randomly selected for digestion/metabolism trial for 5 days to assess the digestibility of different dietary principles and nitrogen balance. Blood sample was collected from one bird per replicate for assessment of blood and serum parameters at the end of experimental trial. One broiler from each replicate was sacrificed at the end of trial to estimate the different carcass characteristics and meat quality parameters. The supplementation of amla fruit powder (*Emblica officinalis*) and multienzyme alone and in combination showed highly significant ($P<0.01$) effect on body weight, body weight gain, feed conversion ratio, performance index, dry matter digestibility, ether extract digestibility, nitrogen balance and drip loss of meat. Significant effect ($P<0.05$) was found on protein efficiency ratio and crude protein digestibility. Whereas, dietary inclusion of amla fruit powder (*Emblica officinalis*) and multienzyme alone and in combination showed non-significant ($P>0.05$) effect on feed consumption, dressed weight, eviscerated weight, weight of heart, liver, gizzard, giblet, intestine length, water holding capacity and pH of meat, blood (Haemoglobin, RBC, WBC, PCV) and serum (glucose, cholesterol, creatinine, total protein, urea, SGPT, SGOT, Ca and P) parameters of broiler birds.

The supplementation of amla fruit powder (*Emblica officinalis*) and multienzyme showed highest profit in T_3 and T_2 group supplemented with multienzyme @ 0.05% and amla fruit powder (*Emblica officinalis*) @ 0.75%, respectively; in comparison to other dietary groups while less profit was obtained in control group.

Therefore, on the basis of results obtained, the present study revealed that the inclusion of amla fruit powder (*Emblica officinalis*) @ 0.75% and multienzyme @ 0.05% enhanced the overall performance of broilers.

74. Efficiency of Three Extenders for Dog Semen Preservation at Refrigeration Temperature

A total of 24 ejaculates were collected from six dog breeds of German Shepherd (04), Labrador (01) and Golden retriever (01), 4 from each dog by digital manipulation at weekly intervals. The fresh semen was examined for macroscopic (volume, colour, consistency and pH) and microscopic parameters (mass motility, individual motility, sperm concentration, sperm abnormalities, live sperm count and sperm function tests (HOST)) immediately after collection. The sperm samples were extended at a rate of 1:4 in skim milk with egg yolk (SMEY), skim milk without egg yolk (SM), and egg yolk-TRIS-fructose (EYTF) extenders by split sample technique and evaluated for individual sperm motility, live sperm count, abnormal sperm count, and sperm function test (HOST) at 0, 24, 48, and 72 hours of preservation under refrigeration temperature (4°C). Individual sperm motility was best observed in EYTF extender upto 72 hours of preservation while lowest in SM extender. Overall, average motility percentage was reduced in all three semen extenders with the time and it was statistically significant (P<0.05) except EYTF upto 24 hours. There was a significant (P<0.05) difference in live spermatozoa percentage from 0 to 72 hours of preservation in all three groups. Percentage of live sperm did not differ significantly between the all three groups at 0 hour, except SM in comparison to SMEY and EYTF at 24, 48, and 72 hours. The percentage of abnormal spermatozoa significantly increased from 0 to 72 hours of preservation in SMEY, SM and EYTF. Up to 24 hours there was no significant difference in morphological abnormalities between extenders but at 48 and 72 hours of preservation,

the percentage of abnormal spermatozoa differed significantly (P<0.05) in SM extender. HOS response was recorded highest (%) in SMEY at 0 hour while lowest in SM at 72 hours. At 48 and 72 hours of preservation, the percentage of HOS response differed significantly (P<0.05) in SM extender from EYTF and SMEY. Overall EYTF extender proved to be better for canine semen preservation than SM extender upto 72 hours and can be replaced with SMEY but SM extender can be considered as a economical canine semen extender upto 24 hours semen preservation.

Keywords: Dog semen, Semen extender, Skim milk with egg yolk, Skim milk without egg yolk, Egg yolk TRIS fructose, HOST

75. Effect of Temperature Humidity Index (THI) on Semen Quality of Cross Bred Bull

The objectives of this study were to assess the effect of Temperature humidity index on semen parameters and estimate the repeatability of semen charecteristics traits in crossbred bull. A total of 6093 semen ejaculates was analysed for the study of effect of breed, THI, age of bull, period of collection on semen parameters of crossbred bulls maintained in INAPH at FSB Bassi during the period of 2017-22. Breed, THI, and period of collection showed significant ($P<0.05$) effect on all semen parameters in pooled dataset whereas ejaculation order showed significant on semen concentration only. Age of bull also showed significant on volume and number of FSDs per ejaculate. Jersey Sahiwal cross showed higher estimation for all semen parameters except volume. Highest volume estimate was observed in HF Sahiwal cross. It was inferred from the study that THI zone (72-78) improved the ejaculate for volume, concentration, SCPD and no. of frozen semen doses per ejaculates except the motility. Highest semen concentration, SCPD and no. of frozen semen doses was observed in Jersey*Sahiwal breed while maximum semen volume was estimated in HF cross Sahiwal bull. Increasing trend of semen volume was observed over the age of bulls (25-120 months) but declined in old age group bulls (>120 months). Semen motility, semen concentration per dose and semen concentration were not affected with increasing age of bulls.Declining trend was observed over the period for FSDs. The difference in semen production traits between years (2017-2022) may be due to climatic changes. Maximum semen concentration was observed in 1st order and it gradually declined for 2nd and 3rd ejaculation order respectively. Repeatability of semen traits of crossbred bulls were found to be very low (<0.004) semen concentration per dose to moderate (>0.13) in semen concentration. Repeatability estimation of volume, motility, semen concentration, semen concentration per dose and no. of frozen semen dose per ejaculates were 0.09, 0.09, 0.09, 0.006, 0.06 respectively.

Keywords | Semen, THI, breed, Semen quality.

76. Development and Quality Assessment of Paneer Incorporated with White Pepper (*Piper nigrum*) and Cinnamon (*Cinnamomum verum*)

The present study was carried out to investigate the possibility of incorporation of spices (cinnamon and white pepper) as natural antioxidant in the formulation of paneer prepared from Gir cow milk and to study the physicochemical, microbiological and sensory properties of fresh and refrigerated (4±1°C) stored product. In the preliminary trials, 6% brine with a holding time of 15 minute was found to be optimum. To standardize spices in paneer 0.6% cinnamon, 1% white pepper and 1.3% for 1:1 combination thereof were found to be ideal in paneer. To evaluate in vitro antioxidant activity of spice extracts, different biochemical assays were conducted. Where cinnamon extract has expressed highest antioxidant potential followed by extract of 1:1 combination thereof and white pepper extract respectively. Certain quality parameters were investigated where protein was increased and fat was decreased in both spice incorporated paneer, the T_1 has the lowest cholesterol content in contrast with treatments. Further, T_1 showed increased values for all textural parameters. The influence of various spices incorporation in paneer on color profile examination was found highly significant. T_1 showed lower water activity, whereas control has received significantly higher value among all the other variants. Significantly improved effect was recorded for the physicochemical, microbiological and sensory properties of paneer at refrigerated storage (4±1 °C). Throughtout the storage period physicochemical parameters values of all treatments were fairly lower than control. Among all the treatments, T_1 illustrated a significantly lower total plate count and psychrophilic count over other treatments. No coliform as well as yeast and mold count were detected throughout the study period in all treated as well as a control group. The T_1 depicted better flavor, texture and overall acceptability scores followed by T_2 and T_3. The overall cost for the production

of 1 kg of paneer incorporated with herbal extracts was 351.12 for T_1,353.30 for T_2, 358.39 for T_3 and 350.15 for the control. At the end of 15 days at refrigerated storage (4±1 °C) the all the product variants were found safe for human consumption.

77. Study on Sheep Husbandry Practices in Shekhawati Region of Rajasthan

A survey study was conducted to acquire first-hand information on sheep husbandry practices in the Jhunjhunu and Churu district of Rajasthan. A total of 180 respondents, 90 each selected from Jhunjhunu and Churu districts were interviewed. Desired information was collected in the questionnaire (schedule).The collected data were tabulated and subjected to various percentage methods to draw meaningful inferences. The result from both the districts represented that the majority of the sheep rearers belonged to the middle age group (56.67% and 52.22%), education level is up to primary school (13.33% and 21.11%) and illiterate (42.22% and 40%), occupation trade in animal husbandry (90% and 67.78%) and agriculture. (10% and 32.22%), medium size families i.e. (57.78%) and (50%), landholding capacity are landless (53.33% and 63.33%) and less than 2 hectare (28.89% and 17.78%), rear goat (4.95% and 10.56%) along with sheep (94.09% and 89.44%), in Jhunjhunu and Churu district, respectively. Majority of sheep reared in extensive and migration system (42.22% and 64.44%) do not haveany kuccha floor (82.22% and 85.55%); no roof (77.78% and 63.33%); kaccha wall (44.44% and 37.78 %); cemented walls (34.44% and 38.89%); with no feeding manger (74.44% and 68.89%); with no bedding material (62.22% and 65.56%). The most common feeding practice is (grazing + stallfeeding) (42.22 % and 48.89%), mode of purchase for feed is direct (72.22% and 77.78%); provide additional feed (68.89% and 64.44%); quantity of feed provided is 1.5-2 kg per day (44.44% and 47.78%); local dry forage is present (55.56% and 43.33%); and source of feed is locally available (78.89%, 90%) in Jhunjhunu and Churu districts, respectively. The majority of respondents in Jhunjhunu and Churu reared Non- Descript Sheep Breed (77.78% and 57.78%). Natural service followed for Breeding in both districts, respondents are not aware with estrus sign (61.11% and 57.78%), main breeding season Sep-Oct (88.22% and 87.78%) in both districts, respectively. Rearers in both districts are not aware of the detection of heat (90% and 81.11%) and castration (86.67% and 87.78%). The average age of lambing is 15-18 months in both districts (92.22% and 89.56%). The majority of respondents had irregular deworming schedules (58.89% and 61.11%) in Jhunjhunu and Churu districts; regular vaccination had been adopted (70% and 55.56%). In both districts veterinary aid are satisfactorily available (88.89% and 52.22%) and the most common prevalence disease is a skin disease in jhunjhunu (30%) but in the case of Churu FMD is most (44.44). The findings related to sheep husbandry constraints of Jhunjhunu showed that the lack of knowledge about mineral mixture was ranked first followed by shortage of grazing land and lack of knowledge about scientific sheep housing, whereas, in Churu district, it showed that difficulty in heat detection in sheep's was ranked first followed by lack of knowledge about the prevalent common disease. The overall shortage of grazing land was felt as major constraint of sheep family of Jhunjhunu and Churu districts jointly. The present study revealed that awareness should be created among the sheep's farmers on good husbandry and management practices of sheep and on quality of wool through training, extension programs and scientific research works.

78. A Study on Hemato- Biochemical Alterations in Diarrhoeic Cattle Calves During Different Seasons in Jaipur

The objective of the present study was to evaluate haemato-biochemical changes occurred in diarrhoeic calves during different seasons (Rainy, Autumn and Winter). A total number of 90 diarrhoeic calves (30 in each season;Below 2 months of age) were taken to investigate the clinico-haemato-biochemical profile from Cow Rehabilitation Center, Hingonia, Jaipur (Rajasthan). ANOVA revealed that TLC, basophil percent, lymphocyte percent and monocyte percent showed a significant ($P<0.05$) effect of season on diarrhoeic calves. Whereas TEC, platelet count, plateletcrit, neutrophil (%), eosinophil (%), hemoglobin, MCH, MCHC, PCV and MCV showed a non-significant ($P>0.05$) difference among seasons in diarrhoeic calves.

A significant ($P<0.05$) effect of season was observed on serum ALT, AST, blood urea, creatinine, total protein, albumin, glucose, magnesium and phosphorus in diarrhoeic calves. However, serum cholesterol and calcium showed a non-significant ($P>0.05$) difference among seasons in diarrhoeic calves. The physiological parameters such as skin temperature, muzzle temperature, eye temperature, heart rate and respiration rate showed a significantly ($P<0.05$) effect of season on diarrhoeic calves, being highest in rainy followed by autumn and winter season. Rectal temperature showed a non-significant ($P>0.05$) difference among seasons in diarrhoeic cattle calves.The obtained haemato-biochemical and physiological profile can help to diagnose and indicate the severity of diarrhea and can aid for the treatment in diarrheic cattle calves i.e. fluid therapy. It can be concluded that clinico-haemato-biochemical parameters partially change in rainy, autumn and winter seasons in diarrheic calves and season did not affect much on these biological parameters, indicating diarrhea superimposing the effect of season.

79. Assessment of Anthelmintic Resistance in Gastrointestinal Nematodes of Goats in and around Jaipur Region of Rajasthan

Present study was carried out from July 2021 to December 2021 in 28 unorganized goat flocks from 5 villages of

Jaipur district (Rajasthan) reared in semi-arid agro-climatic conditions. A total of 1400 faecal samples (250 each from Booj and Chawandiya, 300 samples each from Sarjoli, Sindoli and Jhar village) were collected and processed for conventional qualitative and quantitative parasitological examination. In study area during the period, the overall incidence of strongyle worms under natural challenge of infection was 99.36% with mean intensity of 1742.00±30.96 epg. The incidence of strongyle worms were 96.80% in Booj, 99.60% in Chawandiya and 100.00% in Sarjoli, Sindoli and Jhar villages, respectively.The identification of GI nematodes of goats was carried out by studying the morphology of the third stage larvae harvested from coproculture on pre (0 day) and post (12th day) treatment with fenbendazole, levamisole and closantel in goat flocks, respectively. The pre and post-treatment coproculture revealed maximum proportion of *Haemonchus contortus* (82.4±0.8%) followed by *Trichostrongylus* spp. (14.2±0.7%) and *Oesophagostomum* spp. (3.4±0.5%).

The status of emergence of resistance in GI nematodes against commonly used anthelmintics viz., fenbendazole, levamisole and closantel was studied by *in vivo* Faccal Egg Count Reduction Test (FECRT) and *in vitro* Egg Hatch Assay (EHA). For FECRT, the anthelmintics were administered orally at recommended therapeutic doses.Results of FECRT exhibited an overall %faecal egg count reduction and lower 95% confidence limit for fenbendazole, levamisole and closantel were 69.04±2.95 and 48.1±4.4; 78.36±2.10 and 59.7±4.9 and 83.79±3.49 and 69.9±5.1, respectively. The nematodes were found resistant against all the three commonly used anthelmintics. Egg hatch assay for benzimidazole revealed mean ED_{50} for egg hatch ranging between 0.181±0.031 and 0.386±0.042µg Thiabendazole/ml, respectively, indicating resistance to benzimidazole.

The present study revealed anthelmintic resistance against three classes of anthelmintics (fenbendazole, levamisole and closantel) in goats of Jaipur district of Rajasthan and warrants formulation and implementation of epidemiological based worm management programme incorporating smart use of anthelmintics. There is need to reduce anthelmintic frequency as well as timings of anthelmintic administration keeping in mind the importance of refugia in preservation of anthelmintic efficacy for prolonged period. Further, extension programme to educate the farmers on other factors like proper dose calculation, pre-treatment fasting, rotation of anthelmintic types etc should also be strengthened.

80. Effect of sprinkler with fan on growth and behaviour of Murrah buffalo calves in semi arid region of Rajasthan

An attempt was made to study the effect of sprinkler with fan on the physiological responses, growth performance, and behavior observation of buffalo calves at buffalo farm of LFC, PGIVER, Jaipur (Rajasthan). Twelve Murrah

buffalo calves were divided into two groups. The calves of group T1 (treatment) was provided sprinkler with fan cooling system whereas calves of group To (control) not provided any cooling system. The sprinkler system was controlled by a digital controller and was used from10 a.m. to 4 p.m. The mean average daily gain, body weight, physiological responses, i.e. rectal temperature, pulse rate and respiratorion rate, eye temperature, muzzle temperaturewere recorded daily at 2 p.m and behavior i.e. eating behavior, rumination behavior, resting behavior and standing behavior observed by CCTV camera at weekly interval. The mean total dry matter intake was increased in T1. group rather than T0 group. The maximum mean daily body weight gain was recorded in group T1 followed by group T0. There were statistically significant ($P<0.05$) differences between the two groups. Calves were more comfortable with sprinkler with fan cooling in a day in hot summer. The rectal temperature, pulse rate, and respiration rate also varied significantly ($P<0.05$) between the two experiment groups. It can be concluded that daily sprinkler with fan cooling system in hot summer had more beneficial effects over control group of young Murrah buffalo calves to decrease rectal temperature, pulse rate and respiration rate, skin temperature, muzzle temperature and standing time, and to increase average feeding time, rumination time, resting time, average daily gain (ADG) and body weight gain utilization. Sprinkler with fan system is ideal cost-effective cooling system for buffalo calves rearing during hot summer as calves obtained maximum body weight and also remain in good welfare condition so it should be the first choice of cooling for calf rearing during the summer season.

81. Detection of Antibiotic Resistance and Its Associated Genes of *Staphylococcus aureus* obtained from Cattle Mastitis in Jaipur

The present investigation was aimed to isolate and identify the *S. aureus* from mastitic milk sample of cattle along with studies of phenotypic and genotypic antibiotic resistance pattern of isolates. Total 20 (20.0%) isolates were obtained from 100 mastitic milk sample of cattle. All

isolates were genotypically confirmed by *nuc* gene-based species specific PCR (359bp). In phenotypic characterization, All isolates were gram positive cocci (bunches of grapes), oxidase negative, catalase positive and non-motile. Eighteen (90.0%) isolates were mannitol fermenter while two were non fermenter. Sixteen isolates (80.0%) were lecithinase producing, 18 (90.0%) coagulase positive. In the present study, 17 isolates were detected as MDR and 11 (55.0%) isolates had 0.2 or more than 0.2 MAR index value with high-risk potential source of spread MDR. Most effective antibiotic Gentamicin, Doxycycline Hydrochloride and Tetracycline with 85.0%, 65.0% and 60.0% efficacy respectively while highest resistance was recorded against Penicillin–G (80.0%). Average MIC, 1.37mcg/ml was detected for vancomycin. In specific resistance mechanisms, 05 (25.0%) isolates were β-lactamase enzyme producing, six (30.0%) isolates were detected as MRSA by cefoxtin disk method and one (C58) isolate was detected as High- level mupirocin resistance by disk diffusion method. None of the isolate was detected as VRSA by both methods (vancomycin agar screen and MIC). In inducible clindamycin resistance, one isolate was positive for D- zone test (iMLS$_B$), two were constitutive MLS$_B$ (cMLS$_B$) and four were detected as MS phenotype. In molecular characterization, eighteen isolates (90.0%) in chromosomal DNA were carrying *blaZ* gene (517bp), while in plasmid twelve isolate (60.0%) were positive for *blaZ* gene. Only one (C69) were positive for *mecA* (533bp) gene in both chromosomal DNA and plasmid and none of the isolate was positive for *vanA* (560bp) and *vanX* (480bp) gene. Virulence associated *spaX* gene was detected in 18 (90.0%) isolates while two isolate (C50 & C74) did not produce *spa* gene amplicon. Ethanolic leaf exract of *Tridax procumbens* has significant antibacterial activity against *S. aureus*. 10mg/ml concentration of ethanolic extract was found at MIC of Standard *Staphylococcus aureus* (MTCC-96). Out of total 20 isolates, 17 found antibacterial property with variable zone of inhibition while 3 isolates have no antibacterial activity (C4, C53, C54) against both screened (10mg/ml, 16mg/ml) concentration.

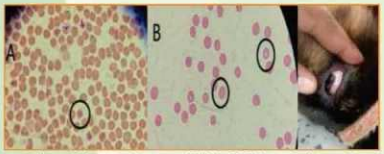
82. Studies on effect of chia seed (*salvia hispanica*) incorporation on quality characterstics of mutton nuggets

The present investigation was undertaken to develop a good quality mutton nuggets and to study the physicochemical, microbiological and sensory properties of fresh and stored product. In the preliminary trials, standardization of the animal fat and oil with three different levels of animal fat and oil i.e (3:7%, 5:5% and 7:3%) were prepared and compared for sensory properties. The treatment having 7:3 % animal fat and oil combination was found to be better over other two treatments for sensory parameters. For standardization of the lean meat and chia seed powder product with 1, 2 and 3 % chia seed powder were tried. 3 % level and control were used for further analysis. To evaluate in vitro antioxidant activity of chia seed powder different biochemical assays were conducted. Where chia seed powder expressed enouhg antioxidant potential. There was no significant effect of chia seed powder in corporation on cooking yield and emulsion stability. The quality parameters were investigated at refrigeration (4±1°C) and frozen (-18±2°C) storage which revealed that there was no effect of chia seed powder incorporation on pH value of the product. Whereas a significant effect was recorded on TBA value, tyrosine value and free fatty acid values, total plate count (TPC), psychrophilic count (PC) and yeast and mold count. During storage studies the product with 3% chia seed powder was significantly superior in physicochemical properties followed as compared to control .3% chia seed powder nuggets illustrated lower TPC, PS and yeast and mold count as compared to control. The 3% chia seed powder nuggets depicted better flavor, juiciness and overall acceptability scores than control. The overall cost for the production of 1 kg of chevon nuggets incorporated with different 3% chia seed powder nuggets powder was Rs.488.50, and Rs.494.18for the control. At the end of storage period all product variants were found safe for human consumption.

83. Clinico-hemato-Biochemical changes and therapeutic management of Babesiosis in dogs

The present study entitled "Clinico-Hemato-Biochemical Changes and Therapeutic Management of Babesiosis in Dogs" was carried out at the Veterinary Clinical Complex, Post Graduate Institute of Veterinary Education and Research (PGIVER), Jaipur, and the Veterinary polyclinic, Panchbatti, Jaipur (Rajasthan). This study was undertaken with the objectives to study incidence of babesiosis in dogs, clinical findings and hemato-biochemical alterations in dogs infected with babesiosis, to identify the babesia organism by microscopic and to evaluate therapeutic efficacy of Diminazene aceturate and clindamycin hydrochloride in the treatment of babesiosis positive cases.

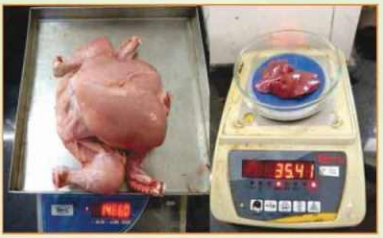
During the study, 200 dogs were suspected for canine babesiosis based on clinical symptoms, and the prevalence of canine babesiosis was reported to be 8% (16/200) overall by Giemsa's stained blood smear examination. Among the various breeds affected, Labrador retriever



constituted the maximum of 8/16 (50%) cases in total and among all dogs, Females (9/16, 56.25%) were more affected than males. Age-wise prevalence revealed that dogs of 2-5 years of age were more prone (8/16, 50%) to infection than others and low in the 1 ≤ 2 year age group (6.25%). The most common Characteristic clinical features observed among the positive cases were Pyrexia (93.75%), anorexia and Depression presented in 75% of cases, Loss of weight (68.75%), Vomiting (26.31%), and changes in the mucous membrane color (56.25%), Diarrhea (50%), Ocular discharge (56.25%), and Dehydration (62.5%). Some of the dogs also exhibited more complicated signs like Lameness (6.25%), Excessive salivation (18.75%), and Tremors or Convulsion (6.25%). The vital body parameters of babesiosis-affected dogs like Rectal temperature (°F), Heart Rate (per minute), and Respiration Rate (per minute), were significantly increased. The most common hematological findings reported in Babesia-infected dogs were anemia (81.25%), Neutrophilia (68.75%), Leucocytosis (31.25%), thrombocytopenia (81.25%) and followed by lymphopenia (25%), Lymphocytosis (12.50%), Neutropenia (6.25%), and Eosinophilia (6.25%). The mean values of ALT (84.66±15.15 U/L) and serum creatinine (2.74±0.68 mg/dL) were significantly increased and blood urea nitrogen concentration (40.12±9.59 mg/dL) in serum was increased. Group 1st consisting six dogs which were treated with Diminazine aceturate and resulted in clinical improvement and showed effectiveness in eliminating the Babesia organism. Group 2nd consisting six dogs were treated with clindamycin hydrochloride, which did not show satisfactory clinical recovery. Diminazene aceturate is effective in the treatment of babesiosis, whereas clindamycin hydrochloride was not so effective in treating the cases of babesiosis.

84. Effect of Supplementation of *Coriandrum sativum* and Multienzyme on Performance of Broiler Chickens

The present study was conducted on broiler chickens to observe the effect of supplementation of coriander and multienzyme on performance, carcass characteristics and digestibility of nutrients, nitrogen balance, and economics of broiler production. The feeding trial was conducted under standard feeding and managemental conditions with broiler starter (1-21days) and finisher (22-35 days) ration on two hundred fourty day old Vencobb broiler chicks which were randomly divided into 4 treatment



groups (T_1 to T_4) with four replicates of 15 chicks each. Birds were offered basal feed as per the BIS (2007). The treatment groups consisted of control group (T_1) fed only with basal diet, group T_2 was supplemented with 1% Coriander (*Coriandrum sativum*L.) seeds powder, group T_3 with 0.05% multienzyme, group T_4 with 1% Coriander (*Coriandrum sativum*L.) seeds powder and 0.05% multienzyme in basal feed. At the end of feeding trial, one bird per replicate under each treatment was randomly selected for digestion/metabolism trial for 5 days to assess the digestibility of different dietary principles and nitrogen balance.One broiler from each replicate was sacrificed at the end of trial to estimate the different carcass characteristics and meat quality parameters. The supplementation of coriander and multienzyme showed highly significant effect ($P<0.01$) on feed consumption, drip loss, crude protein digestibility, nitrogen balance. Significant ($P<0.05$) effect on total body weight, body weight gain, performance index, protein efficiency ratio, feed conversion ratio, ether extract and dry matter digestibility were observed.Whereas dietary inclusion of coriander and multienzyme showed non-significant effect on dressed weight, eviscerated weight, weight of heart, liver, gizzard and giblet, spleen, drumstick, intestine length, water holding capacity and pH of meat. The supplementation of coriander and multienzyme showed highest profit in T_3 group supplemented with multienzyme @ 0.05% in comparison to all other treatment groups while less profit was obtained in control group. Therefore on the basis of results obtained, the present study revealed that the inclusion of coriander and multienzyme @ 1.0% and 0.05% enhanced the overall performance of broilers. The best result was obtained for T_3 group which was supplemented with multienzyme @ 0.05%.

85. Clinical Study on Laparoscopic Assisted Ovariectomy using Three Portal Technique in Female Dogs

The present study was conducted on twelve healthy non pregnant female dogs of different breeds, age and body weight presented for elective sterilization. All the animals were randomly divided into two groups of six female dogs in each group; Group I – Laparoscopic ovariectomy, Group II- Traditional midline ovariectomy. Animals of

both the group were subjected to same anesthetic protocol and agents. In both the groups, physiological *viz.* body temperature (°F), heart rate (beats/min), respiration rate (breaths/min), blood pressure (mm/Hg) were measured at different time intervals; preoperative, intubation, withdrawal of ovarian ligament (right and left), extubation and recovery of anesthesia for comparison of stress between the animals of both the groups intraoperatively. Biochemical parameters *viz.* Cortisol (µg/dL), C-Reactive Protein (mg/L), serum glucose (mg/dL), total protein (g/dL), alkaline phosphatase (U/L) and lactate dehydrogenase (U/L) were evaluated at different timer intervals; preoperative, after recovery and twenty four hours postoperatively. Total operating time and complications if any during surgical procedure were also recorded. Behavioral parameters *viz.* response to palpation, vocalization and posture were recorded and pain score was given according to recorded parameters. Operating time was significantly higher in laparoscopic group. Alteration in physiological parameters was more in traditional method as compare to laparoscopic procedure. Body temperature showed the significant difference between and within the groups. Respiration rate, heart rate and blood pressure showed the difference between the groups. Obscuring of the surgical site after mild haemorrhage and difficulty to grasp ovarian ligaments were observed in laparoscopic procedure. Based on the results it was concluded that laparoscopic surgery requires more time and involves more surgeons as compare to traditional midline method but has clear visualization of ovarian structures, easy access and least manipulation of abdominal organs. Non-significant increased values of stress parameters were found to be present in traditional method as compare to laparoscopic procedure which suggests; traditional midline method has little bit more stress as compare to laparoscopic method and traditional midline method inflicts more pain postoperatively when compare to laparoscopic procedure.

Performance of Students in National Level Competitive Examinations

A. Students selected for ICAR's All India Entrance Examination AIEEA (PG and Ph.D.)

Students selected for ICAR's All India Entrance Examination AIEEA (PG), CVAS,Bikaner

S. No.	Name	Rank	Subject & University
1	Neelam Kalasua	AIR- 313 ST-2	Veterinary Gynae. & Obst., IVRI
2	Payal Meena	AIR- 1348 ST-47	Veterinary Parasitology IVRI
3	Shubham Yadav	AIR- 8 OBC-3	Livestock Production Management, IVRI
4	Sonal Sharma	AIR- 84	Animal Genetics & Breeding, IVRI
5	Prem Devatwal	AIR-620 SC-64	Animal Genetics & Breeding, IVRI
6	Gagan Chawla	AIR- 124	Vety Extension Education, NDRI
7	Shiv Chodhary	AIR- 48	Livestock Production Management, NDRI
8	Akhil Tiwari	AIR- 524	Animal Genetics & Breeding, College of Vet. Science & A.H. Anjora, Durg
9	Mahesh Kumar Prajapat	AIR- 327 OBC-141	Animal Genetics & Breeding, Mumbai Vet. College
10	Kiran Dudi	AIR- 477 OBC-196	Animal Nutrition, CVAS, Bikaner
11	Vishal Gurjar	AIR- 391 MBC-153	Veterinary Surgery & Radiology, CVAS, Bikaner
12	Pradhuman Kumar	AIR- 399 ST-13	Animal Nutrition, CVAS, Bikaner
13	Suman	AIR- 29 OBC-16	Animal Genetics & Breeding, CVAS, Bikaner
14	Anil Kumar	AIR- 465 SC-41	Livestock Production Management, CVAS, Bikaner
15	Sanjana Saini	AIR- 538 OBC-212	Veterinary Pathology, CVAS, Bikaner
16	Priyanka Bissu	AIR- 285 OBC-126	Livestock Production Management, CVAS, Bikaner
17	Pawan Kumar Sharma	AIR- 794	Veterinary Pharmacology & Toxicology, CVAS, Bikaner
18	Sourabh Khatri	AIR- 398 EWS-35	Veterinary Anim. Hus. & Ext. Education, CVAS, Bikaner
19	Ajay Bhati	AIR- 975 OBC-395	Vety Pharmacology & Toxicology, CVAS, Bikaner
20	Nitu Kumari	AIR- 800 OBC-328	Veterinary Gynae. & Obst., CVAS, Bikaner
21	Bhawna Bhati	AIR- 1475 SC-132	Veterinary Medicine, CVAS, Bikaner
22	Monika Joiya	AIR- 1488 SC-134	Veterinary Surgery & Radiology, CVAS, Bikaner
23	Krishna Kumari	AIR- 2167 SC-256	Veterinary Microbiology, CVAS, Bikaner
24	Heena Chouhan	AIR- 1560 SC-140	Veterinary Surgery & Radiology, CVAS, Bikaner
25	Ramesh Kumar	AIR- 340 OBC-129	Veterinary Gynae. & Obst., CVAS, Bikaner

S. No.	Name	Rank	Subject & University
26	Pradeep Kumar Manchiwal	AIR- 1114 ST-27	Veterinary Gynae. & Obst., CVAS, Bikaner
27	Mamta Kumari	AIR- 692 OBC-279	Veterinary Anatomy, CVAS, Bikaner
28	Priya Khandelwal	AIR- 510 EWS-50	Veterinary Pathology, PGIVER, Jaipur
29	Somesh Sharma	AIR- 375	Veterinary Medicine, PGIVER, Jaipur
30	Vikram Singh Chouhan	AIR- 406	Veterinary Physiology, PGIVER, Jaipur
31	Anil Bharti	AIR- 470 OBC-190	Veterinary Surgery & Radiology, PGIVER, Jaipur
32	Kuldeep Kumar	AIR- 1887 SC-196	Veterinary Pathology, CVAS, Udaipur
33	Manish Kumar	AIR- 1461 OBC-576	Veterinary Parasitology, CVAS, Udaipur
34	Om Prakash Solanki	AIR- 482 SC-27	Veterinary Gynae. & Obst., CVAS, Udaipur

Students selected for ICAR's All India Entrance Examination AIEEA (Ph.D), CVAS, Bikaner

S. No.	Name	Rank	Subject & University
1.	Ranjana Kumari	AIR-34 SC-7	Livestock Product Technology, DUVASU
2.	Jayesh Vyas	AIR- 44	Animal Genetics & Breeding, NDRI
3.	Shourabh Dadiya	AIR- 6 OBC-3	Veterinary Gynae. &Obst., IVRI
4.	Chand Kanwar	5th	Veterinary Medicine IVRI
5.	Babita Kumari	AIR- 12 OBC-3	Veterinary Physiology, NDRI
6.	Shiwali Khandelwal	AIR-22	Veterinary Microbiology, IVRI
8.	Bhagraj Godara	AIR- 25	Veterinary Biochemistry, NDRI
9.	Kalpana Jorasia	AIR-6 SC-1	Veterinary Biochemistry, NDRI
10.	Shikha Bishnoi	AIR-2	Veterinary Biochemistry, IVRI
11.	Mamta Meena	AIR-15 SC-2	Veterinary Pharmacology and Toxicology, IVRI, Bareilly.
12.	Pradeep Godwal	AIR- 14 SC-2	Veterinary Biochemistry, IVRI

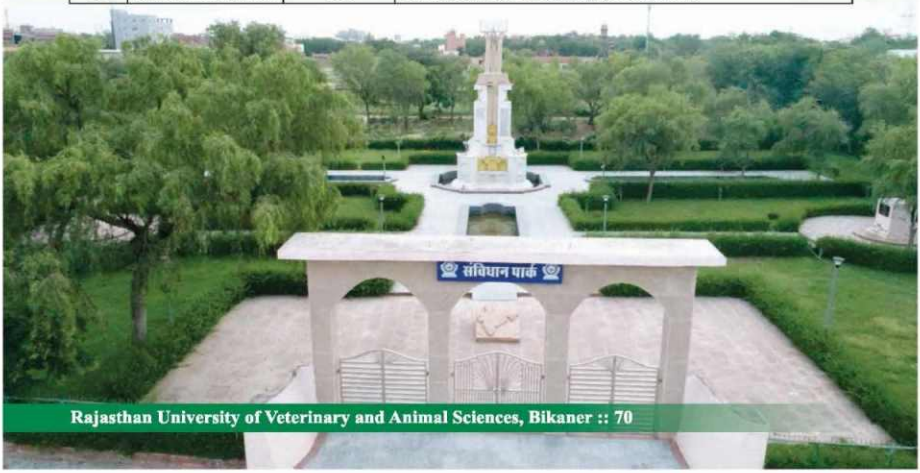
Students selected for ICAR's All India Entrance Examination AIEEA (PG), Navania

S. No.	Name	Rank	Subject & University
1.	Rakesh Karwa	OBC Rank-23	NDRI, Karnal
2.	Sandeep Joshi	OBC Rank-99	-
3.	Varsha Kukaswal	OBC Rank-113	Parasitology, IVRI
4.	Rama Kumari	AI Rank-325	-
5.	Sumitra Khichad	AI Rank-325	-
6.	Harshita Rathore	OBC Rank-205	-
7.	Vikendra Choudhary	OBC-PH Rank-04	-
8.	Rohit Kumar	SC Rank-34	Microbiology, IVRI
9.	Sharda Kilka	OBC Rank-246	-

S. No.	Name	Rank	Subject & University
10.	Mahendra Singh Garasiya	SC Rank-158	-
11.	Mamta	OBC Rank-394	-
12.	Nirmala	OBC Rank-400	-
13.	Ritu Bala	OBC Rank-650	-
14.	Kuldeep Khator	OBC Rank-51	-
15.	Sanjay Kumar Dhakad	OBC Rank-77	-
16.	Pushpa Jangid	OBC Rank-82	-
17.	Abhishek Saraswat	AII Rank-206	-
18.	Bherulal Choudhary	OBC Rank-95	-
19.	Manisha Godara	OBC Rank-106	-
20.	Priya Jangir	OBC Rank-144	-
21.	Nanuram Saini	OBC Rank-179	-
22.	Neha Meena	ST Rank-29	NDVSU, Jablpur
23.	Ashok Kumar Verma	SC Rank-195	-
24.	Rajkumar Dindor	ST Rank-66	-
25.	Akanksha Single	ST Rank-18	-
26.	Annu Kumari	SC Rank-79	-

Students selected for ICAR's All India Entrance Examination AIEEA (PG), PGIVER

S. No.	Name	Rank	Subject &University
1.	Jayant Joshi	9	Veterinary Biochemistry (IVRI, Bareilly)
2.	Khushi Ram Dhakar	64	Livestock Production Management (NDRI, Karnal)
3.	Sonu (Miss)	80	Animal Genetics and Breeding (NDRI, Karnal)
4.	Tejpal	169	Veterinary Microbiology (IVRI, Bareilly)
5.	Sushil Kumar Sharma	188	Animal Genetics and Breeding (NDRI, Karnal)



Teaching Veterinary Clinical Complex Activities

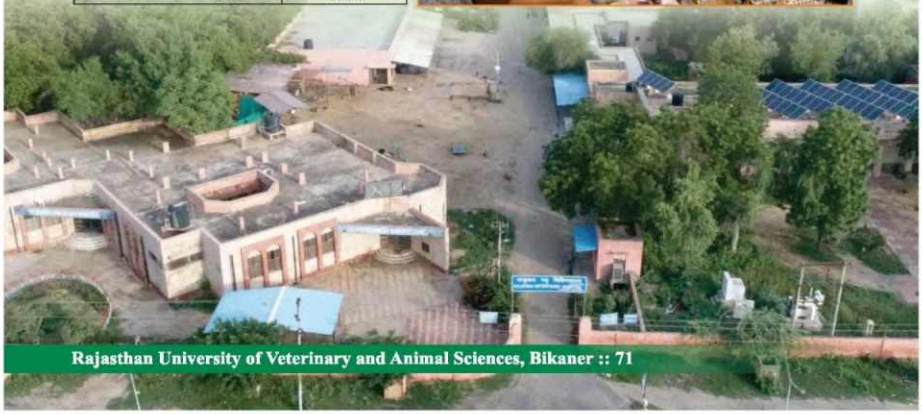
Veterinary Clinical Complex Activities CVAS, Bikaner

The Veterinary clinical complex of College of Veterinary and Animal Science, Bikaner is having indoors, outdoors, dormitory and outpatient departments of major clinical departments viz. Department of Veterinary Medicine ,Department of Veterinary Surgery & Radiology and Department of Veterinary Gynaecology and Obstetrics. The clinical complex is having richest clinical facilities like CT Scan, Ultra Sonography, laparoscopy, dentistry, laser surgery; apex centre for animal disease diagnosis, monitoring and surveillance etc. The faculty of these clinical departments is involved in providing treatment to sick animals and extending consultation to the livestock breeders/animal owners throughout the year.

Total Cases	**16517**
Diagnostic Lab Tests	**2122**
Artificial Insemination (Cattle/Buffalo/Goat)	188
CT Scan	128
X-ray	852
USG	184
ECG	2

Veterinary Diagnostic Laboratory

S.No.	Type of Sample	No. of Samples
1.	Blood	835
2.	Faecal	37
3.	Milk	202
4.	Urine	312
5.	Skin Scrapping	23
6.	Serum	195
7.	ABST	21
8.	Hemoprotozoa	488
9.	Histopathology	2
10.	Vaginal Cytology	7
	Total	**2122**













Veterinary Clinical Complex Activities: CVAS, Navania

One of the major problems faced by the animal owners in the area is poor production of the animals due to occurrence of diseases and heavy mortality. There was lack of advanced diagnostic and treatment facilities in this area. The districts lying under Southern Rajasthan have 17.21 per cent livestock and 15.26 per cent poultry population of Rajasthan state (including 24.18 per cent cattle, 17.47 per cent buffalo, 9.55 per cent sheep and 16.34 per cent goats of Rajasthan). These districts were lacking advanced diagnostic, treatment, surveillance and monitoring facilities of animal diseases. With the aim to provide quick and effective disease diagnostic, surveillance and monitoring system by the veterinary specialists, it was proposed to establish a Veterinary Clinical Complex at College of Veterinary & Animal Sciences, Navania, Vallabhnagar, Udaipur.

Total Veterinary Clinical Cases attended in 2022-23 were 2754 and the total diagnostic lab tests were 38 for samples of Blood, Faecal, Milk, Urine, Skin Scrapping and Serum.

Veterinary Clinical Complex Activities: PGIVER, Jaipur

The faculty of the institute at outdoor clinics of Veterinary Clinical Complex (VCC) have been involved in providing treatment to sick animals and extending consultation to the livestock breeders/animal owners throughout the year.

Total Veterinary Clinical Cases attended in 2022-23 were 8733 and the total diagnostic lab test were 443 for samples of Blood, Faecal, Milk, Urine, Skin Scrapping and Serum.

College of Veterinary and Animal Science, Bikaner

Number of cases attended

Month	Bird	Buffalo	Camel	Cat	Cattle	Deer	Dog	Duck	Goat	Hen	Horse	Mice	Parrot	Peacock	Pigeon	Poultry	Rabbit	Sheep	Tortoise	Total
	New	New	New	New	New	New	New	New	New	New	New	New	New	New	New	New	New	New	New	
Apr.	3	24	6	31	182	3	273	0	117	3	7	0	8	0	1	0	10	5	0	673
May	1	22	6	33	157	0	296	0	122	5	8	2	9	0	2	1	5	4	1	674
Jun.	1	24	11	35	145	1	294	0	128	3	8	1	9	0	0	0	12	2	0	674
Jul.	1	33	9	50	253	6	350	1	209	5	14	0	7	0	1	0	10	4	0	953
Aug.	3	20	8	61	420	1	335	0	156	4	10	0	4	0	5	0	10	3	1	1041
Sep.	1	35	10	47	246	0	232	0	122	3	8	0	4	0	1	0	6	3	3	721
Oct.	4	37	7	31	136	1	281	0	125	2	9	0	4	0	2	0	7	1	0	647
Nov.	3	33	4	34	102	0	265	1	122	2	6	1	1	0	0	0	6	6	0	586
Dec.	1	42	8	53	107	0	333	0	123	5	5	0	3	0	2	0	9	6	1	698
Jan.	0	31	5	36	94	0	353	1	86	0	3	0	2	1	0	0	14	3	1	630
Feb.	2	39	11	30	135	0	360	0	98	3	8	0	1	0	2	0	11	10	2	712
Mar.	2	22	8	50	160	1	378	0	84	5	6	0	4	0	2	0	20	2	2	746
Total	22	362	93	491	2137	13	3750	3	1492	40	92	4	56	1	18	1	120	49	11	8755

College of Veterinary and Animal Science, Navania (Udaipur)

Number of cases attended

Month	Cattle			Buffalo			Camel			Horse			Dog			Goat			Sheep			Other			Total			G. Total
	MED.	SUR.	GYN.	MED.	SUR.	GYN.	MED.	SUR.	GYN.	MED.	SUR.	GYN.	MED.	SUR.	GYN.	MED.	SUR.	GYN.	MED.	SUR.	GYN.	MED.	SUR.	GYN.	MED.	SUR.	GYN.	
APR.	12	29	07	20	22	04	00	00	00	10	04	21	18	07	02	04	02	05	00	00	00	01	03	00	65	67	39	171
MAY	09	21	11	26	20	14	00	00	00	13	05	12	16	03	01	07	08	04	01	00	00	01	01	00	73	58	42	173
JUN.	118	33	19	20	17	16	00	00	00	07	02	10	56	02	00	13	10	01	01	01	00	03	02	00	218	67	46	331
JUL.	29	17	09	33	10	32	00	00	00	17	02	31	23	02	01	16	01	06	00	02	00	03	00	00	121	34	79	234
AUG.	59	26	05	23	23	27	00	00	00	08	02	32	14	05	00	12	09	05	01	00	00	00	00	00	171	65	69	251
SEPT.	17	38	07	45	51	40	00	00	00	03	09	53	20	06	00	09	03	18	00	01	00	00	00	00	94	108	118	320
OCT.	10	25	11	28	23	07	00	00	00	04	04	40	26	02	01	04	08	09	00	00	02	00	00	00	72	62	70	204
NOV.	21	49	02	14	18	10	00	00	00	08	05	41	22	03	02	13	09	18	00	00	00	02	00	00	80	84	73	237
DEC.	13	24	04	28	28	08	00	00	00	05	08	47	20	06	03	15	05	15	00	02	00	01	01	00	82	74	77	233
JAN.	11	11	04	20	17	04	00	00	00	02	11	29	33	04	01	6	04	00	00	01	00	00	00	00	72	48	37	157
FEB.	31	14	14	14	20	04	00	00	00	06	03	29	61	02	05	7	03	02	00	00	00	01	00	00	118	42	50	210
MAR.	08	40	15	21	22	04	00	00	00	07	03	21	59	06	01	16	08	01	00	00	00	00	01	00	111	80	42	233
TOTAL	338	327	108	292	271	169	00	00	00	90	58	366	368	48	17	116	70	84	03	07	02	12	08	00	1223	789	742	2754

Post Graduate Institute of Veterinary Education & Research, Jaipur

Number of cases attended

Month	CATTLE			BUFFALO			CAMEL			HORSE			DOG			GOAT			SHEEP			OTHER*			TOTAL			G. TOTAL
	MED.	SUR.	GYN.	MED.	SUR.	GYN.	MED.	SUR.	GYN.	MED.	SUR.	GYN.	MED.	SUR.	GYN.	MED.	SUR.	GYN.	MED.	SUR.	GYN.	MED.	SUR.	GYN.	MED.	SUR.	GYN.	
APR.	16	09	19	01	02	03	01	02	-	06	08	02	311	130	33	54	54	41	03	-	-	20	19	02	412	224	100	736
MAY	18	14	16	17	-	11	01	03	-	09	02	08	204	103	17	54	61	22	-	15	01	14	32	01	317	230	76	623
JUN.	13	07	11	12	01	07	-	-	-	05	01	04	191	138	27	70	59	09	-	-	03	21	35	05	312	241	66	619
JUL.	24	14	17	14	01	05	-	-	-	03	17	03	331	150	24	67	51	40	03	-	-	22	44	01	464	277	90	831
AUG.	46	12	10	07	12	16	-	-	-	03	32	03	313	158	50	82	60	20	05	-	04	30	19	01	486	293	104	883
SEPT.	20	26	01	15	06	03	-	-	-	14	13	02	249	145	46	76	65	12	02	-	02	25	29	07	401	284	73	758
OCT.	07	15	01	05	01	03	-	03	-	02	04	03	145	86	10	31	43	18	01	05	01	14	36	02	205	193	38	436
NOV.	09	17	05	19	07	12	-	-	-	01	04	01	253	187	24	58	39	24	-	02	01	21	44	01	361	300	68	729
DEC.	08	14	04	18	09	02	-	-	-	-	10	-	389	142	30	65	43	22	02	02	-	30	28	02	512	248	60	820
JAN.	03	04	03	07	03	02	-	-	-	01	02	07	376	124	24	42	31	08	02	01	-	28	33	02	459	198	46	703
FEB.	08	15	01	05	02	02	-	-	-	03	05	01	419	121	30	30	51	06	01	02	01	37	30	06	503	226	47	776
MAR.	17	03	04	06	06	03	-	-	-	01	03	05	470	126	24	35	43	09	-	02	03	27	27	05	556	210	53	819
TOTAL	189	150	92	126	50	69	02	08	00	48	101	39	3651	1610	339	664	600	231	19	29	16	289	376	35	4988	2924	821	8733

OTHER*- Total of avian and others

Instructional Livestock Farm Complex Activities

Livestock Farm Complex Activities: CVAS, Bikaner

- The Instructional Livestock Farm Complex (ILFC) was established as per the guidelines of Veterinary Council of India with mandate to provide practical training, in the Livestock and Poultry farm activities, to students of College of Veterinary and Animal Science, Bikaner enrolled in undergraduate degree program. Faculties of different departments are attached to ILFC on rotational basis. Also, it provides necessary facilities for research of M.V.Sc. and Ph.D. students, when requires.
- Buffalo Unit, Rabbit Unit and Poultry Units are being maintained at ILFC, Bikaner.
- Routine farm practices viz. de-worming and vaccination of livestock and poultry at LFC have been conducted whereas sick animals are served with the appropriate treatment.
- Demonstration sessions on different livestock and poultry units at LFC have been conducted for the various batches of B.V.Sc. & A.H. students and Internees.
- Ample staff is looking after the various activities of ILFC.

Poultry Unit (LFC) Strength

S.No.	Name of breeds (Adult Birds)	Strength
1.	Kadaknath	468
2.	Kadaknath chicks	952
3.	RIR	277
4.	RIR chicks	2036
5.	Chabro	18
6.	White turkey	10
7.	White leghorn	27
8.	B. B. Bronze turkey	02
9.	Lavender guinea fowl	09
10.	White Pekin duck	11
11.	Khakhi Campbell duck	21
12.	Emu	04
13.	Japanese quail	35
14.	Rabbit Dutch	11
15.	Rabbit New Zealand white	10

Buffalo Unit: Buffalo-02

Three students have conducted their research work on poultry at LFC.

Annual Income of ILFC during 2022-23

1. Income from poultry unit-**21,98,555/-**(Rs.)
2. Income from Buffalo unit- **1,35,029/-**(Rs.)

Livestock Farm Complex Activities: CVAS, Navania

Academic activities/achievements/awards/honour etc.

1. Classes of Farm Practice (AHDP 1st Year)
2. Classes of B.V.Sc. & A.H. 3rd Year
3. Practical Classes of Post Graduate Students
4. Classes of Internship Students

Extension activities/achievements/awards/honour etc.

1. Visits of farmers

Other activities/achievements/awards/honour etc.

1. Buffalo Unit 2. Rabbit Unit

Livestock Farm Complex Activities: PGIVER, Jaipur

- Tharparkar, Gir, Kankrej and Rathi cows and Murrah buffaloes are maintained at Livestock Farm Complex as demonstration unit for UG and PG students.
- Poultry farm has considerable stock of layer and broiler birds as per MSVE 2016.
- Routine farm practices viz. de-worming and vaccination of livestock and poultry at LFC have been conducted whereas sick animals were served with the appropriate treatment.
- Demonstration sessions on different livestock units at LFC have been conducted for the various batches of trainee farmers and animal owners from the Rajasthan State Livestock Management and Training Institute, Jaipur, Department of Animal Husbandry, Govt. of Rajasthan.
- Cow and buffalo milk produced at LFC is being sold on daily basis.

Library

Library of CVAS, Bikaner

The Library remains open on all working days during working hours of the college. Efforts are made to acquire latest useful text books/reference books needed specifically for students, researchers and faculty.

The Library has built up a very good collection of books to provide the college community enough to meet their various information needs and purposes. Recent publications are procured for the use of library users. The library collection consists of textbooks, reference books, e-books, e-Journals, manuals, advances, encyclopedias, dictionaries and annual reports.

Brief about Library:

Sr. No.	Documents	Total
1	General Books	31737
2	Book-Bank Books	9637
3	Social-welfare Books	4792
4	Mrs.Kusum Rathore Trust Books	232
5	Bound Journals	6163
6	Thesis	1707
7	Reports	1466
8	E-Books	203
9	Video-cassette	15
10	Books CD	100
11	VET/BEAST CD-ROM DATABASE	48
12	CAB CD-ROM DATABASE	36
		56136

Library of CVAS, Navania:

Brief about Library: The Library remains open on all working days during working hours of college. Efforts are made to acquire latest useful text book/ reference book needed specifically for students, researcher and faculty.

Sr. No.	Documents	Total
1.	General Books	6593
2.	Book-Bank Books	275
3.	Social-Welfare Books	98
4.	Mrs. Kusum Rathor Trust Books	-
5.	Bound Journals	180
6.	Thesis	150
7.	Reports	70
8.	E-BOOKS	93
9.	Video-Cassette	-
10.	Books CD	12
11.	VET/BEAST CD-ROM DATABASE	
12.	CAB-CD, CD-ROM DATABASE	-
	Total	7471

Library of PGIVER, Jaipur:

Well developed digitalized library with RFID and good number of books, journals, computer with internet facility and reading space.

S. No.	Documents	Total
1	General Books	3417
2	Book-Bank Books	3957
3	Social-Welfare Books	Nil
4	Mrs. Kusum Rathore Trust Books	Nil
5	Bound Journals	Nil
6	Thesis	138
7	Reports	Nil
8	E-Books	Nil
9	Video-Cassette	Nil
10	Books CD	97
11	VET/BEAST CD-ROM DATABASE	Nil
12	CAB-CD, CD-ROM DATABASE	Nil
	Total	**7609**

Convocations of RAJUVAS

During the reporting period two convocations were organized by RAJUVAS to award degrees and medals to pass out students.

Fifth Convocation

The fifth convocation of the RAJUVAS was held on 29th April, 2022 in the university's auditorium. Hon'ble Governor of Rajasthan and Chancellor of RAJUVAS, Shri Kalraj Mishra joined the convocation through online mode and presided over the function. Hon'ble Minister of Agriculture and Animal Husbandry Sh. Lalchand Kataria and Deputy Director General (Agriculture Education), ICAR, New Delhi Dr. Rakesh Chandra Agrawal was special guests of the convocation. Prof. A.K. Srivastava, Chairman, ASRB, New Delhi was convocation guest of the programme. In this convocation, 217 graduate degree, 167 postgraduate and 39 Ph.D degrees were awarded to students. A total of 35 meritorious students were awarded with gold medals, 2 students with Chancellor's gold medals and one student each with silver and bronze medals. Hon'ble Vice-Chancellor Prof. Satish Kumar Garg welcomed all the guests and presented the university report. Convocation was telecasted live on the university website and large number of people watched this.

Sixth Convocation

Sixth Convocation of RAJUVAS was held on 21.03.2023 in hybrid mode. Hon'ble Governor, Rajasthan and Chancellor of RAJUVAS Sh. Kalraj Mishra presided over the function and read preamble to the constitution and fundamental duties of citizens in the beginning of Convocation via online mode. Dr. B. N. Tripathi, DDG, Animal Science, ICAR, New Delhi was the distinguished guests. Convocation guest was Padam Shree Vigyan Ratna Prof. M. L. Madan, Former Vice-Chancellor DUVASU, Mathura and Krishi Vidhyapeeth, Akola who delivered the convocation address and he was awarded with Doctor of Science. Total 331 UG, 96 MVSc, 34 Ph.D. degrees, 18 gold medals, one silver medal and one bronze medal and 1 Chancellors medals were distributed in the convocation. Hon'ble Vice-Chancellor Prof. Satish Kumar Garg welcomed all the guests and presented the university report. Convocation was telecasted live on the university website and large number of people watched this.