

वार्षिक प्रतिवेदन
ANNUAL REPORT
2013 - 2014



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उ.प्र. पंडित दीनदयाल उपाध्याय पशु चिकित्सा विज्ञान विश्वविद्यालय
एवं गौ अनुसंधान संस्थान (दुवासु), मथुरा - 281 001 (उ.प्र.) भारत
U.P. Pt. Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya
Evam Go-Anusandhan Sansthan (DUVASU), Mathura - 281 001 (U.P.) INDIA

DIGNITARIES VISITED



DUVASU

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DUVASU ANNUAL REPORT 2013 - 2014

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Vice Chancellor

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Chief Editor:

Dr. Satish K. Garg

Dean, College of Veterinary Science & A.H.

Editors:

Dr. Archana Pathak

Associate Professor, Veterinary Anatomy
Co-ordinator, Printing & Publication Division

Dr. A.K. Madan

Associate Professor, Veterinary Physiology

Dr. Madhu Tiwari

Assistant Professor, Animal Genetics & Breeding

Photographic Support:

Mr. Braj Mohan

Junior Clerk

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E.mail: sandybly@gmail.com; (M) 094127 38797



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FOREWORD

It is indeed a matter of great pleasure and satisfaction to present the Annual Report of 2013-14 of U.P. Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan (DUVASU) highlighting our various academic activities including research and extension and also our achievements. The University is mandated to address basic, strategic and applied issues related to livestock in addition to human resource development and collaborative linkages with government and national institutes and overall improvement in the socio-economic status of farmers and livestock owners. University continues to make efforts for improvement in academic environment and attainment of excellence.



The year 2013-14 has been buzzing all through with plethora of activities including teaching, research, extension and human resource development. Along with the mandate of developing competent veterinarians, University took an initiative to start two Diploma programs in Livestock Extension and Veterinary Pharmacy under RKVY funded scheme. To inculcate entrepreneurial skills among the students, they have been given hands on training in animal feed manufacturing, UMMB preparation, poultry rearing and value addition in milk and meat. University is proud to have encouraged its graduates and also guided them to compete in ICAR JRF examination and seek admissions in national institutes of repute. Interesting and beneficial findings are expected from the ongoing externally and university funded research projects being undertaken by different departments of Veterinary College. During 2013-14, University took initiatives to reach out to the farmers of Uttar Pradesh and neighbouring states through organization of Kisan Mela, radio talks, camps and visits of farmers to University for exposure and training.

I am happy to share that University has started exhibiting its potential to generate more revenue from its agriculture, dairy and poultry farms, and feed and fish seed production units. I am grateful to the State Government, ICAR and RKVY for their regular financial assistance.

University is on the path of development and we all have been striving very hard to attain respectable positioning among the sister SAUs and Animal Science Institutes of ICAR under the patronage and guidance of Dr. S. Ayyappan, Secretary, DARE and DG, ICAR and other officers of ICAR. Financial support from Govt. of Uttar Pradesh and Education Division of ICAR has really changed the shape and destiny of our University. I am extremely thankful to Principal Secretary to Hon'ble Governor and Principal Secretary, Animal Husbandry, Govt. of Uttar Pradesh for their support and overall development of this institution. I owe my sincere thanks and gratitude to Hon'ble DG, ICAR; DDG (Education), ADG (EPD) and other officers of ICAR for their consistent support. My thanks are also to all the Senior Officers, staff members and students for their cooperation and sincere efforts and contributions in the progress of University and I am confident to have their continual support in achieving our goals. The efforts made by Chief Editor and his team of editors in bringing out this report are highly appreciable.

(A.C. Varshney)
Vice Chancellor

प्राक्कथन

उत्तर प्रदेश पंडित दीन दयाल उपाध्याय पशुचिकित्सा विज्ञान विश्वविद्यालय एवं गौ अनुसंधान संस्थान (दुवासु), मथुरा की 2013-14 की वार्षिक प्रतिवेदन को प्रस्तुत करने में मुझे अति हर्ष एवं संतोष की अनुभूति हो रही है जिसके द्वारा विश्वविद्यालय के विभिन्न शैक्षणिक, अनुसंधान एवं प्रसार गतिविधियों और उपलब्धियों को अंकित किया गया है। विश्वविद्यालय का मुख्य उद्देश्य है, किसानों व पशुपालकों की सामाजिक एवं आर्थिक स्थिति में सुधार, मानव संसाधन का विकास तथा पशुधन से संबन्धित बुनियादी, सामरिक एवं व्यवहारिक मुद्दों का समाधान। विश्वविद्यालय निरंतर शिक्षा एवं अनुसंधान में उत्कृष्टता प्राप्ति हेतु प्रयासरत है।

वर्ष 2013-14 में विश्वविद्यालय ने विभिन्न गतिविधियों जैसे शिक्षण अनुसंधान, प्रसार एवं मानव संसाधन विकास में कई कीर्तिमान स्थापित किये हैं। सक्षम पशुचिकित्सकों के विकास के साथ-साथ आर०के०वी०वाई० वित्त पोषित के अन्तर्गत विश्वविद्यालय ने पशुचिकित्सा फार्मसी एवं पशुधन प्रसार में डिप्लोमा कार्यक्रम शुरू किया है। छात्रों में उद्यमिता कौशल विकसित करने के लिए पशु फीड प्रसंकरण इकाई में फीड बनाना, यू०एम०एम०बी० तैयार करना, मुर्गी पालन और दूध एवं मांस में मूल्य संवर्धन करना इत्यादि सीखाये जाते हैं। विश्वविद्यालय निरन्तर अपने स्नातकों को आई०सी०ए०आर० जे०आर०एफ० परीक्षा की प्रतिस्पर्धा में भाग लेने व प्रतिष्ठित राष्ट्रीय संस्थानों में प्रवेश पाने के लिये प्रोत्साहन एवं मार्गदर्शन देता है। मुझे पशुचिकित्सा संकाय के विभिन्न विभागों में चल रहे बाह्य और विश्वविद्यालय द्वारा वित्त पोषित अनुसंधान परियोजनाओं के अन्तर्गत कई महत्वपूर्ण निष्कर्षों की पूरी संभावना है। इस वर्ष से विश्वविद्यालय ने किसान मेला, रेडियो वार्ता, शिविरों, किसानों द्वारा विश्वविद्यालय भ्रमण और प्रशिक्षणों के माध्यम से उत्तर प्रदेश एवं पड़ोसी राज्यों के किसानों तक पहुँचने की पहल की है।

मैं विश्वविद्यालय के कृषि, डेयरी व पोल्ट्री फार्मों एवं फीड व मछली बीज उत्पादन इकाईयों द्वारा अधिक राजस्व उत्पन्न करने पर हर्षित हूँ। मैं राज्य सरकार, भारतीय कृषि अनुसंधान परिषद् और आर०के०वी०वाई० द्वारा नियमित वित्तीय सहायता देने पर उनका आभार व्यक्त करता हूँ।

भारतीय कृषि अनुसंधान परिषद् के महानिदेशक, डा० एस० अय्यप्पन एवं अन्य अधिकारियों के संरक्षण एवं मार्गदर्शन में विश्वविद्यालय विकास के पथ पर अग्रसारित है एवं अन्य राज्य कृषि विश्वविद्यालयों व पशुविज्ञान संस्थानों में सम्मानजनक स्थिति में है। उत्तर प्रदेश सरकार एवं भारतीय कृषि अनुसंधान परिषद् के शिक्षा प्रभाग द्वारा वित्तीय सहायता ने विश्वविद्यालय के आकार एवं दिशा को बदलने में महत्वपूर्ण योगदान दिया है। मैं माननीय राज्यपाल जी के प्रमुख सचिव एवं प्रमुख सचिव पशुपालन उत्तर प्रदेश सरकार के समग्र विकास में सहयोग के लिए धन्यवाद देना चाहता हूँ। मैं माननीय महानिदेशक, भारतीय कृषि अनुसंधान परिषद्, उपमहानिदेशक (शिक्षा), सहायक महानिदेशक (ई०पी०डी०) और अन्य अधिकारियों के लगातार समर्थन के लिये पूरी ईमानदारी से धन्यवाद एवं आभार व्यक्त करता हूँ। विश्वविद्यालय के वरिष्ठ अधिकारियों, शिक्षकों, छात्रों एवं कर्मचारियों द्वारा विश्वविद्यालय की प्रगति में सहयोग और योगदान देने के लिये मैं उनका धन्यवाद करता हूँ और आश्वस्त हूँ कि विश्वविद्यालय के लक्ष्यों की प्राप्ति के लिये उनका निरन्तर समर्थन मिलता रहेगा। इस रिपोर्ट को वर्तमान स्वरूप में प्रस्तुत करने के लिये मुख्य सम्पादक और उनकी टीम के सम्पादकों के प्रयास अति प्रशंसनीय है।



(ए०सी० वाष्णेय)
कुलपति

EXECUTIVE SUMMARY

TEACHING

- ❖ U.P. Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go-Anusandhan Sansthan (DUVASU) is running academic programmes in two colleges and one more veterinary college is likely to start from next academic session.
- ❖ During 2013-14, College of Veterinary Science and Animal Husbandry admitted 74, 17 and 04 students in BVSc and AH, MVSc and PhD degree programmes, respectively. During the year, 47 graduates 30 post-graduates and one Doctorate student passed out. Apart from this, under RKVY scheme, two Diploma programmes namely Diploma in Livestock Extension and Diploma in Veterinary Pharmacy were started with 40 admissions in each programme.
- ❖ College of Biotechnology admitted one student in MSc (Biotechnology) programme while two students passed out. University has decided to initiate Bachelors degree programme in Biotechnology and Industrial Microbiology and Doctorate programme in Biotechnology from 2014-15 academic session.
- ❖ Teaching Veterinary Clinical Complex is equipped with 500 mA fixed and 100 mA mobile X-ray machines, ultrasonography machines, 9" C-Arm image intensifier and digital radiography unit apart from Endoscopy facilities. Operation theaters for large animals and small animals with operating microscope, laproscopic surgery unit, orthopedic surgery instruments, eye surgery instruments, diathermy, multiparameter monitor, oxygenators, nebulizers and general surgery facilities are also available. ICU, indoor units for pets and large animals, diagnostic laboratory and ambulatory services are strengths of TVCC to train our students and serve the animal keepers.
- ❖ During 2013-14, 8714 clinical cases were treated while 1992 biological samples were processed in diagnostic laboratory. Total revenue generated during the year was Rs. 4,48,540.00.
- ❖ With ambulatory clinical service to nearby villages, 3220 clinical cases were treated. During the year, 22 clinical camps were organized, in which 3197 cases were treated.
- ❖ On the occasion of World Veterinary day free antirabies vaccination was provided to 89 dogs.
- ❖ Under experiential learning programme, feed manufacturing unit manufactured 2575 quintals of feed in 387 batches and 1st year BVSc & AH students were trained in compounding the animals feed. Ninety eight students of 1st and 2nd year BVSc & AH programme were trained for UMMB preparation at farm in Urea molasses mineral block unit.
- ❖ Poultry breeder farm, layer farm and hatchery of 'Experiential Learning Unit' in Poultry Science department served as an important unit for teaching and imparting hands on training on rearing of broiler birds and layers under 'Earn While You Learn' programme.
- ❖ During the year, Department of LPT trained students on milk and meat processing including Value addition and under this programme. Milk produced from ILFC was processed into Paneer, Khoa, Ice-cream, Cream and Lassi. Meat nuggets were also prepared.
- ❖ Forty seven students completed their compulsory rotatory internship training programme after rigorous training in Departments of Surgery and Radiology, Gynaecology and Obstetrics, Medicine, LPM, LPT, Poultry farm and ILFC. Students also attended training in BP section

Lucknow, Zoological Park, Kanpur, NIAW, Ballabgarh, CIRG, Makhdoom and 1UP R&V SQN, NCC, Mathura.

- ❖ Out of batch of 38 students, 29 students qualified Junior Research Fellowship Examination (JRF) conducted by ICAR during 2013. Dr. Sudheer Kumar topped the examination in Animal Science group and maximum graduates of this college sought admission in MVSc degree programme in IVRI, Izatnagar and NDRI, Karnal.
- ❖ The University library added 2285 books during the year raising the total number of books to 33,335. Library also ensured online journal facility (www.CeRA.JCCC.in) to students and faculty members.
- ❖ AKMU and ensured internet facility to all the Departments, Hostels, Administrative Block, College of Biotechnology, Vice Chancellor's Camp Office, ILFC apart from procuring new server and firewall Internet facility was also extended to the newly constructed LPT building through wireless.

RESEARCH

- ❖ University is running eight externally funded projects in various Departments of College of Veterinary Science and Animal Husbandry apart from Nine University funded projects.
- ❖ Apart from developing an anti-bacterial and anti-viral topical herbal agent, one patent has also been filed under ICAR Outreach Programme on Ethno-Veterinary Medicine and the formulation is ready for its transfer for commercialization.
- ❖ Academic research in various departments has resulted in submission of one PhD and 28 MVSc theses in College of Veterinary Science and Animal Husbandry and two MSc (Biotechnology) theses in College of Biotechnology.

EXTENSION

- ❖ Two-day 'Pashudhan Evam Kisan Mela' was organized on 14th and 15th March, 2014 with the theme of "Managing Livestock & Agricultural Production in Context of Food Security" wherein more than 1200 farmers of U.P., Rajasthan, M.P. and Chhattisgarh participated.
- ❖ Twenty Live Phone-in Programmes and Six Radio Roopaks were aired on All India Radio, Vrindavan, Mathura by University on various aspects of animal husbandry and health.
- ❖ Three training programmes of 12 weeks duration each were organized by Department of Veterinary and Animal Husbandry Extension for retired army personnels and farmers on the request of Govt. of India.
- ❖ KVK organized 233 'On-Campus' and 200 'Off-Campus' trainings in which more than 5300 and 7900 farmers/farm women were imparted trainings.
- ❖ Gosthies, Diagnostic Visits and Kisan Samman Diwas were organized for improving connectivity with farmers and animal owners.
- ❖ Through 23 visits of different units of University, 386 farmers were extended the knowledge and information regarding animal health and poultry production.

- ❖ Nineteen clinical camps were organized in different villages of Mathura district and also in adjoining districts.
- ❖ Faculty members attended eighteen disease outbreaks to assist the state AH Department of Uttar Pradesh.

SPORTS, CO-CURRICULAR AND EXTRA-CURRICULAR ACTIVITIES

- ❖ To enrich the academic and professional knowledge and improve their technical skills, All India Educational Tour was organized for 5th year students while North India tour for 4th year students of BVSc&AH wherein students visited Veterinary Colleges of Mumbai, Bangalore, Veterinary College Hyderabad and Fisheries Institute, Goa and Veterinary Colleges at Amritsar, Ludhiana and Hisar as well as NDRI, Karnal.
- ❖ Sports meet 2014 was organized on 11th and 12th March 2014 wherein 43 events were held before the closing ceremony in which Dr. S.K. Agarwal, Director CIRG was the Chief Guest.
- ❖ Fresher's Day was celebrated on 31.08.2013 in Kisan Bhawan.
- ❖ Hindi Pakhwara was celebrated through organization of a debate competition on 21.09.2013 on the topic "तकनीकी शिक्षा के विकास के लिए हिन्दी आवश्यक है".
- ❖ As a part of University foundation day celebration, Annual Cultural programme "Jhankar" was organized on 27.10.2013 by the students of University.
- ❖ Three students of College of Veterinary Science & AH participated in debate competition organized by IVRI, Izatnagar on 25th Feb. 2014 on the occasion of National Science Day during Kisan Mela.
- ❖ During the year, thirty four students of the College appeared for 'C' certificate examination of R&V NCC and all of them qualified the exam.
- ❖ 6th Zydus All India Drawing Competition 2013 was organized in the month of September 2013 on the topic "Indian breeds of cattle or buffalo or dog" in Department of Physiology, CVSc & AH wherein three students received merit certificates and cash prize of Rs. 2000.00, 1500.00 and 1000.00.
- ❖ One Student of Doctor of Philosophy, 21 students of Master of Veterinary Science, 03 students of Master of Science (Biotechnology), 171 students of Bachelor of Veterinary Science and Animal Husbandry and 49 students of diploma in Veterinary Pharmacist/ Livestock Extension Officer were provided Post Matric Scholarship granted by Government of Uttar Pradesh.

UNIVERSITY FARMS

- ❖ Madhuri Kund Farm produced a total of 6000.67 quintal paddy, til, sarson, oats, wheat, barley and barseem and an generated a revenue of approximately 110.0 lacs.
- ❖ Dairy Farm at ILFC produced 1,98,469 L of milk, 13725 Q green fodder, 306.9 Q bhusa , 401.9 Q jau and 92.6 Q jae.
- ❖ Poultry Farm of the College maintained a variety of species and breeds including layers, Chabro, Aseel Peela, Kadaknath, Naked neck, Japanese Quail, Turkey, guinea fowl, Emu, Black Rock, White Rock, Chandigarh Broiler, Red Cornish, Dahlem Red, Barred Rock, PB Broiler, PB-

1 Layer, Punjab Brown and Chandigarh Black and earned a revenue of Rs. 1,89,796.00 through selling off eggs, chicks and birds.

- ❖ Fish Seed Production Unit produced 6,77,141 Common carp seed, 4,24,759 Rohu seed and 2,66,666 Catla seed and generated a revenue of Rs. one lakh forty three thousand six hundred ninety seven.
- ❖ Through production of green fodder Jowar and Barley grain Pasture Farm generated a net revenue of Rs. 7,55,877.00.

HUMAN RESOURCE DEVELOPMENT

- ❖ University signed a MOU with NRC on meat (ICAR) Hyderabad on 24th Nov, 2013 to enhance quality research in the area of meat science and it will go a long way to boost human resource for state as well as the country.
- ❖ Annual Review Meets of the ICAR funded research projects on “Outreach programmes on Zoonotic Diseases and Ethnoveterinary medicine running in the Department of Veterinary Public Health and Department of Pharmacology and Toxicology, respectively, were successfully organized by College of Veterinary Science and Animal Husbandry, DUVASU, Mathura on August 23 and 24, 2013.
- ❖ Two days State level Seminar on “Challenges and Strategies for Conservation of Small Ruminants in India” and a Poster Presentation Competition on “Conservation of threatened breeds of livestock in India” was organized under the Govt. of India sponsored project on “Conservation and genetic improvement of Muzaffarnagari sheep for multiplication of superior germplasm” on 9-10 October, 2013 by Department of Animal Genetics and Breeding, CVSc & AH, DUVASU, Mathura.
- ❖ XXXIII Annual Conference of Society of Toxicology (India) for “Synergy of Toxicology Research in SAARC Countries” & National Symposia on “Toxico-genomic technologies in predictive toxicology”, “Alternatives to use of animals for modern toxicity testing” and “Phyto-remedial approaches against environmental pollutants for human and animal health” was organized by Department of Pharmacology and Toxicology on Oct. 23-25, 2013.
- ❖ Department of Veterinary Physiology organized three days “XXII Annual Conference of Society of Animal Physiologists of India and National Symposium on “Physiological and Nutri-genomic Interventions to Augment Food Security and Animal Welfare” from Nov. 19-21, 2013.
- ❖ The second annual meeting of Society of Veterinary Science and Biotechnology and National Seminar was organized by Department of Veterinary Biochemistry, College of Veterinary Science & Animal Husbandry Mathura on the topic “Biotechnological Approaches to Challenges in Animal Health and Production” from March 06-07, 2014.
- ❖ Fourteen faculty members participated in trainings/workshops organized by ICAR institutes and SAUs/SVUs during the year for improving their professional competence and skills.
- ❖ Fifty Three faculty members participated in national conferences/symposia/seminars during the year and presented their research papers.

AWARDS AND RECOGNITIONS

- ❖ Professor A.C. Varshney Hon'ble Vice Chancellor of the University has been awarded the coveted Dr. Ratan Singh Memorial Award-2013 by the Indian Society for Veterinary Surgery (ISVS) at its Annual Convention held at Kerala Veterinary and Animal Science University.
- ❖ Prof. Satish K. Garg, Dean, College of Veterinary Science & Animal Husbandry, DUVASU, Mathura has been selected as President of Society of Toxicology (India) for a period of two years.
- ❖ Dr. P.K. Shukla, Professor and Head, Poultry Science received the 'Lifetime Achievement Award' for his significant contributions in the field of poultry production on 13 October, 2013 in a function held at CPDO, Chandigarh.
- ❖ Dr. Vikas Pathak, Professor & Head, Dept. of Livestock Products Technology was conferred Fellow of Indian Association of Agricultural Biochemists.
- ❖ Faculty members received one young scientist awards, five best paper awards and nine best poster presentation awards during various conferences held all over India during the year. One MVSc student of Department of Pharmacology received Prof. Natarajan Young Scientist Award for his research work on Pharmacodynamics.

FINANCE AND BUDGET

- ❖ University received Rs. 1.00 crore under Plan and Rs. 3.00 crores under non-plan from State Govt.
- ❖ Indian Council of Agricultural Research, New Delhi granted Rs. 4.70 crores under strengthening and development grant, apart from Rs. 75.00 lacs for strengthening of Library services.
- ❖ Rs. Ninety Two lacs were received under RKVY for development of infrastructure for starting two new diploma programmes.
- ❖ University generated a total revenue of Rs. 4,50,251,22.00 from internal resources.

INFRASTRUCTURE ADDED

- ❖ With the funding of Rs 2.25 crores from ICAR, New Delhi, University has been able to renovate its lecture halls, S.N. Hostel and Gautam Hostel, Large Animal Operation theatre and X-ray room of Teaching Veterinary Clinical Complex apart from laboratories of Departments of Microbiology, Pathology, Physiology, Extension, Animal Genetics & Breeding, Livestock Production and Management and Poultry Science. Four paddocks at Instructional Livestock farm complex have also been extensively renovated.

OTHER HIGHLIGHTS AND ACTIVITIES

- ❖ University celebrated Ambedkar Jayanti, Gandhi Jayanti, World Veterinary Day, Independence Day, Pt. Deen Dayal Upadhyaya Jayanti, University Foundation Week and Republic Day with gusto and enthusiasm.
- ❖ University successfully conducted Pre-Veterinary test-2013, Pre-Diploma test-2013 and Post Graduate Entrance Examination 2013 for admission to various academic programmes in the University.

कार्यकारी सारांश

शिक्षण कार्य

- ❖ उ०प्र० पण्डित दीन दयाल उपाध्याय पशु चिकित्सा विज्ञान विश्वविद्यालय एवं गो अनुसन्धान केन्द्र में अभी दो महाविद्यालय कार्यरत हैं तथा एक और पशु चिकित्सा महाविद्यालय अगले शैक्षणिक सत्र में शुरू होने वाला है।
- ❖ वर्ष 2013-14 के दौरान पशु चिकित्सा विज्ञान एवं पशुपालन महाविद्यालय में क्रमशः 74, 17, 04 विद्यार्थी बी०वी०एससी० एण्ड ए०एच०, एम०वी०एससी० एवं पीएच०डी० में प्रविष्ट हुए जबकि 47 स्नातक, 30 स्नातकोत्तर एवं 01 विद्यार्थी ने पीएच०डी० की परीक्षा उत्तीर्ण की। इसके अतिरिक्त आर०के०वी०वाई० परियोजना के अन्तर्गत शुरू हुए पशुधन प्रसार अधिकारी एवं वैटनरी फार्मासिस्ट डिप्लोमा कोर्स में 40-40 विद्यार्थियों ने प्रवेश प्राप्त किया।
- ❖ जैव प्रौद्योगिकी महाविद्यालय में 01 विद्यार्थी ने स्नातकोत्तर कोर्स में प्रवेश प्राप्त किया जबकि 02 विद्यार्थियों ने स्नातकोत्तर की परीक्षा उत्तीर्ण की। आने वाले शिक्षा सत्र से जैव प्रौद्योगिकी में तथा इण्डस्ट्रियल माइक्रोबॉयलॉजी प्रोग्राम में स्नातक डिग्री एवं जैव प्रौद्योगिकी में पीएच०डी० प्रोग्राम शुरू किया जाना प्रस्तावित है।
- ❖ टीचिंग वैटनरी क्लीनिकल कॉम्प्लेक्स में 500 mA फिक्सड तथा 100 mA की चलित X-ray मशीन, अल्ट्रासाउण्ड मशीन, 9" C आर्म इमेज इन्टेनसीफायर तथा डिजीटल रेडियोग्राफी की सुविधा हाने के साथ-साथ एण्डोस्कोपी की सुविधा, छोटे तथा बड़े जानवरों हेतु शल्य चिकित्सा कक्ष, दूरबीन द्वारा शल्य क्रिया, हड्डी जोड़-तोड़ शल्य क्रिया, नेत्र शल्य क्रिया हेतु उपकरणों से सुसज्जित है। इसके अतिरिक्त इन्टेनसिव केयर यूनिट तथा अन्तः रोगी परिचर्या हेतु बड़े तथा छोटे जानवरों के लिए सघन चिकित्सा उपचारशाला तथा सतीक्षण निदान कार्यशाला, दन्त चिकित्सा यूनिट तथा सचल पशु चिकित्सालय की सुविधा भी उपलब्ध है।
- ❖ वर्ष 2013-14 के दौरान 8,714 रोगी पशुओं का उपचार किया गया जबकि 1992 नमूनों का परीक्षण करने के उपरान्त उपचार सुझाव दिए गए। इन सेवाओं से टी०वी०सी०सी० को कुल चार लाख, अड़तालिस हजार पाँच सौ चालीस रुपये की राजस्व प्राप्ति हुई।
- ❖ सचल पशु चिकित्सालय द्वारा 3,220 पशुओं का इलाज किया गया तथा 22 चिकित्सा शिविर लगाए गए जिसमें 3,197 पशुओं का इलाज किया गया।
- ❖ इस वर्ष विश्व पशु चिकित्सा दिवस पर 89 कुत्तों का मुफ्त रेबीज टीकाकरण किया गया।
- ❖ प्रायोगिक प्रशिक्षण योजना के अन्तर्गत, फीड मेन्यूफेक्चरिंग यूनिट द्वारा 2,575 कुन्तल फीड का उत्पादन हुआ। पशुचिकित्सा विज्ञान एवं पशुपालन प्रथम वर्ष के छात्रों का विभिन्न पशुओं के लिए विभिन्न अनुपात में फीड बनाने का प्रशिक्षण प्रदान किया। पशु चिकित्सा विज्ञान एवं पशु पालन प्रथम वर्ष के 98 छात्रों को यूरिया मोलेसिस ब्रिक्स बनाने का प्रशिक्षण भी दिया गया।
- ❖ पोल्ट्री विभाग के प्रायोगिक प्रशिक्षण यूनिट में मौजूद पोल्ट्री ब्रीडिंग फार्म, लेयर फार्म तथा हेचरी, छात्रों को उचित शिक्षा प्रदान करने हेतु तथा उनको मुर्गी पालन एवं प्रबन्धन व अण्डे सेवन सम्बन्धित विषयों का व्यवहारिक ज्ञान प्रदान करने में एक महत्वपूर्ण भूमिका निभाते हैं।
- ❖ वर्ष 2013-14 में पशुधन उत्पाद प्रौद्योगिकी विभाग द्वारा विद्यार्थियों को दूध एवं मॉस परीक्षण तथा वेल्यू एडिशन पर प्रशिक्षण दिया गया। इस प्रोग्राम के अन्तर्गत डेयरी फार्म द्वारा उत्पादित दूध द्वारा पनीर, खोया, आइसक्रीम, क्रीम तथा लस्सी का उत्पादन हुआ। इसके अतिरिक्त मीट नगेट्स भी बनाए गये।
- ❖ 47 छात्रों ने सघन अन्तः पशु चिकित्सक प्रशिक्षण योजना के दौरान इस विश्वविद्यालय के शल्य चिकित्सा विभाग, औषध विज्ञान विभाग, मादा पशुरोग विज्ञान विभाग, पशु उत्पादन एवं प्रबन्धन विभाग, पशुधन उत्पाद प्रौद्योगिकी विभाग, कुक्कुट फार्म एवं वीर्य संसाधन प्रयोगशालाओं में तथा लखनऊ के बी०पी० सेक्शन, प्राणी

विज्ञान प्रक्षेत्र कानपुर नेशनल वेलफेयर इन्सटीट्यूट, बल्लभगढ, केन्द्रीय बकरी अनुसंधान केन्द्र, मखदूम एवं उ०प्र० आर०वी०सी० स्कवाड्रन एन०सी०सी० मथुरा में प्रशिक्षण प्राप्त किया।

- ❖ इस वर्ष 38 विद्यार्थियों में से 29 विद्यार्थियों ने आई०सी०ए०आर० (भारतीय कृषि अनुसंधान केन्द्र) द्वारा आयोजित जे०आर०एफ० प्रतियोगी परीक्षा में सफलता प्राप्त की।
- ❖ इस वर्ष विश्वविद्यालय के पुस्तकालय में 2,285 नई पुस्तकें प्राप्त की गई जिससे पुस्तकालय में कुल पुस्तकों की संख्या 33,335 हो गई है। इसके अतिरिक्त विद्यार्थियों को विभिन्न जर्नलों के अवलोकन हेतु "सेरा" ऑनलाइन सर्विस द्वारा प्रदान किया गया।
- ❖ इस वर्ष ए०के०एम०यू० ने विभिन्न महाविद्यालयों के विभिन्न संकायों, छात्रावासों, एडमिनिस्ट्रेटिव ब्लॉक, माननीय कुलपति के कैम्प ऑफिस में तथा इंस्ट्रक्शनल लाईवस्टॉक फार्म में इन्टरनेट सुविधा प्रदान की। इसके अतिरिक्त नया सर्वर तथा फायरवाल खरीदा तथा नवनिर्मित एल०पी०टी० भवन तक इन्टरनेट की सुविधा वायरलैस द्वारा पहुँचाई।

अनुसंधान

- ❖ विश्वविद्यालय में पशुचिकित्सा एवं पशु पालन महाविद्यालय के विभिन्न संकायों में आठ बाह्य एजेन्सियों द्वारा वित्तिय पोषित योजनाएँ चल रही हैं। इसके अतिरिक्त 9 वि०वि० द्वारा अनुमोदित योजनाएँ भी चल रही हैं।
- ❖ एण्टीबैक्टीरियल तथा एन्टीवायरल ट्रॉपिकल हर्बल एजेन्ट बनाने के अतिरिक्त आई०सी०ए०आर० द्वारा पोषित आउटरीच प्रोग्राम ऑन एथनो-वेटेनरी मेडिसिन एण्ड फॉरम्युलेशन के अन्तर्गत एक पेटेन्ट दायर किया गया है।
- ❖ विभिन्न विभागों में चलने वाले अनुसंधान कार्यों पर आधारित विषयों पर 01 पीएच०डी०, 28 एम०वी०एससी० तथा 02 एम०एससी० (बायोटेक) शोध ग्रंथ पूरे किए।

प्रसार

- ❖ विश्वविद्यालय में दिनांक 14-15 मार्च 2014 को दो दिवसीय "पशुधन एवं किसान मेला" आयोजित किया गया। जिसका मुख्य विषय "खाद्य सुरक्षा के सन्दर्भ में पशुधन एवं कृषि प्रबन्धन" था। इस मेले में उत्तर प्रदेश, मध्य प्रदेश, राजस्थान तथा छत्तीसगढ राज्यों से लगभग 1200 किसानों ने हिस्सा लिया।
- ❖ पशु पालन एवं स्वास्थ्य से सम्बन्धित विभिन्न विषयों पर 20 "लाइव फोन इन" प्रोग्राम तथा 6 "रेडियो रूपक" प्रोग्राम ऑल इन्डिया रेडियो वृन्दावन द्वारा प्रसारित किए गए।
- ❖ सेवानिवृत्त भारतीय सेना के जवानों हेतु तथा किसानों के लिए भारतीय सरकार के निवेदन पर 12 हफ्तों के तीन प्रशिक्षण कार्यक्रम पशुचिकित्सा एवं प्रसार विभाग द्वारा आयोजित किये गये।
- ❖ कृषि विज्ञान केन्द्र द्वारा 233 "ऑन कैम्पस" तथा 200 "ऑफ कैम्पस" प्रशिक्षण कार्यक्रम आयोजित किये गये, जिसमें 53,300 तथा 7,900 किसानों तथा किसान महिलाओं ने भाग लिया।
- ❖ पशु स्वास्थ्य एवं कुक्कुट पालन के विषय में ज्ञान देने हेतु 386 किसानों को 23 विभिन्न भ्रमण कार्यक्रम आयोजित कराये गये।
- ❖ मथुरा जिले तथा आसपास के विभिन्न जिलों में 19 क्लीनिकल कैम्प आयोजित किए गए।
- ❖ विश्वविद्यालय के शिक्षकों ने 18 रोग प्रकोप की घटनाओं में उ०प्र० पशुपालन विभाग की सहायता की।

खेल सहपाठ्यक्रम एवं अतिरिक्त पाठ्यक्रम क्रियाएं

- ❖ ऑल इन्डिया एजुकेशनल टूर के दौरान बी०वी०एससी० एण्ड ए०एच० के पंचम वर्ष के छात्रों ने कलकत्ता, हैदराबाद, बेंगलूर, मुम्बई और अन्य पशुचिकित्सा महाविद्यालयों का भ्रमण किया। चतुर्थ वर्ष के छात्रों ने उत्तर

भारत के शैक्षणिक भ्रमण के दौरान वेटेनरी कॉलेज, अमृतसर, लुधियाना तथा हिसार का भ्रमण किया। इसके अतिरिक्त वह एन०डी०आर०आई०, करनाल भी गए।

- ❖ 11 एवं 12 मार्च 2014 को वार्षिक खेलकूद प्रतियोगिता आयोजित हुई, जिसमें 43 खेलों का समावेश किया गया।
- ❖ 21.09.2013 को हिन्दी पखवाड़ा मनाया गया जिसमें "तकनीकी शिक्षा के विकास के लिए हिन्दी आवश्यक" विषय पर वाद-विवाद प्रतियोगिता आयोजित की गई।
- ❖ विश्वविद्यालय स्थापना दिवस के अवसर पर छात्रों द्वारा वार्षिक सांस्कृतिक कार्यक्रम "झन्कार" का आयोजन किया गया।
- ❖ पशुचिकित्सा एवं पशुपालन महाविद्यालय के तीन छात्रों ने आई०वी०आर०आई० द्वारा आयोजित वाद-विवाद प्रतियोगिता में भाग लिया।
- ❖ इस वर्ष 34 छात्रों ने आर० एण्ड वी०, एन०सी०सी० की "सी" सर्टीफिकेट परीक्षा दी तथा सभी छात्रों ने यह परीक्षा उत्तीर्ण कर ली।
- ❖ वर्ष 2013 की छठवीं ऑल इण्डिया जाइडस ड्राइंग एवं पेंटिंग प्रतियोगिता सितम्बर 2013 में आयोजित की गई जिसका विषय "इन्डियन ब्रीड्स ऑफ केटल या बफेलो या डॉग" था। इसमें तीन छात्रों ने रू० 2000, रू० 1500 तथा रू० 1000 का नगद पुरस्कार तथा प्रशस्ति पत्र हासिल किया।
- ❖ एक पीएच०डी०, 21 एम०वी०एससी०, 3 एम०एससी० (बायोटेक), 71 बी०वी०एससी० तथा 49 डिप्लोमा छात्रों को उ०प्र० सरकार की मेरिट छात्रवृत्ति प्रदान की गई।

विश्वविद्यालय फार्म प्रक्षेत्र

- ❖ माधुरी कुण्ड फार्म ने 6000.67 कुन्तल धान, तिल, सरसों, जई, गेहूँ, जौ तथा बरसीम उगाकर रू० 110 लाख अर्जित किए।
- ❖ आई०एल०एफ०सी० के पशुधन फार्म पर 1,98,469 लीटर दूध, 13,725 कुन्तल हरा चारा, 306.9 कुन्तल भूसा, 401.9 कुन्तल जौ तथा 92.6 कुन्तल जई का उत्पादन हुआ।
- ❖ कुक्कुट फार्म पर विभिन्न प्रजातियों की मुर्गियाँ जैसे चाबरो, असील, कड़कनाथ, नेकड नेक, जापानी तीतर, टर्की, गिन्नी फॉउल, ऐमू पालन किया गया। इनके अण्डो, चूजों तथा मुर्गियों के विक्रय से कुल रू० 1,89,796.00 राजस्व की प्राप्ति हुई।
- ❖ मत्स्य बीज उत्पादन इकाई ने 6,77,141 कॉमनकार्प, 4,24,759 रोहू तथा 2,66,666 कतला मत्स्य बीजों को बेचकर रू० 1,43,697.00 का राजस्व का सृजन किया।
- ❖ पाश्चर फार्म पर ज्वार तथा जई हरे चारे से रू० 7,55,877.00 के राजस्व का सृजन किया गया।

मानव संसाधन विकास

- ❖ 24 नवम्बर 2013 को विश्वविद्यालय तथा एन०आर०सी० ऑन मीट के मध्य एम०ओ०यू० हुआ।
- ❖ आई०सी०ए०आर० द्वारा वित्त पोषित आउटरीच परियोजनाओं की वार्षिक रिव्यू बैठक 23 एवं 24 अगस्त 2013 को दुवासु, मथुरा में आयोजित की गई।
- ❖ 9 एवं 10 अक्टूबर 2013 को दो दिवसीय स्टेट लेवल सेमिनार "चैलेन्जिस एण्ड स्ट्रेटेजीस फॉर कन्जरवेशन ऑफ स्माल ऐनिमल इन इन्डिया" तथा पोस्टर प्रेजेन्टेशन "कन्जरवेशन ऑफ थ्रेटेन्ड ब्रीड्स ऑफ लाइव स्टॉक इन इन्डिया" पर डिपार्टमेन्ट ऑफ एनिमल जैनेटिक्स द्वारा आयोजित किये गये।
- ❖ सोसाइटी ऑफ टॉक्सीकोलॉजी का 33वां वार्षिक सम्मेलन डिपार्टमेन्ट ऑफ फार्माकोलॉजी द्वारा 23-25 अक्टूबर 2013 को आयोजित किया गया।

- ❖ सोसाइटी ऑफ फिजियोलॉजी का 22वां वार्षिक सम्मेलन डिपार्टमेन्ट ऑफ फिजियोलॉजी द्वारा 19–21 नवम्बर 2013 को आयोजित किया गया।
- ❖ एस०वी०एस०बी०टी० की द्वितीय वार्षिक बैठक तथा सेमिनार डिपार्टमेन्ट ऑफ बायोकेमिस्ट्री द्वारा 6 एवं 7 मार्च, 2014 को आयोजित की गई।
- ❖ वर्ष 2013–14 में 14 संकाय सदस्यों ने अपनी व्यवसायिक गुणवत्ता बढ़ावे हेतु विभिन्न प्रशिक्षण/कार्यशालाओं में भाग लिया।
- ❖ 53 संकाय सदस्यों ने विभिन्न सस्थानों में आयोजित सम्मेलनों/संगोष्ठियों/सेमिनारों में भाग लेकर अपने शोध पत्र प्रस्तुत किए।

पुरस्कार एवं सम्मान

- ❖ माननीय कुलपति, प्रो० ए०सी० वार्ष्णेय को डा० रतन सिंह मेमोरियल अवार्ड–2013 से सम्मानित किया गया।
- ❖ प्रो० सतीश कुमार गर्ग, अधिष्ठाता पशु चिकित्सा संकाय को दो वर्ष के लिए सोसाइटी ऑफ टॉक्सीकोलॉजी का अध्यक्ष चुना गया।
- ❖ डा० पी०के० शुक्ला, आचार्य एवं विभागाध्यक्ष कुक्कुट विज्ञान को लाइफ टाइम अचीवमेन्ट अवार्ड से सम्मानित किया गया।
- ❖ डा० विकास पाठक, आचार्य एवं विभागाध्यक्ष पशुधन प्रौद्योगिकी विज्ञान को इन्डियन एसोसिएशन ऑफ एग्रीकल्चर बायोकेमिस्ट द्वारा “फेलो” की उपाधि प्रदान की गई।

वित्त एवं बजट

- ❖ विश्वविद्यालय को राज्य सरकार से रू० 1.00 करोड़ प्लान एवं रू० 3.00 करोड़ नॉन प्लान के लिए प्राप्त हुए।
- ❖ आई०सी०ए०आर० नई दिल्ली ने रू० 4.70 करोड़ की वित्तीय सहायता शिक्षा के सुदृढीकरण एवं विकास हेतु प्रदान किए।

परिवर्धित संसाधन

भारतीय कृषि अनुसंधान संस्थान द्वारा अनुदान किए गए रू० 2.25 करोड़ सहायता से विभिन्न भवनों जैसे छात्रावास, व्याख्यान कक्ष, शल्य क्रिया अनुभाग, का पुर्ननिर्माण किया गया। इसके अतिरिक्त विभिन्न संकायों जैसे माइक्रोबायोलॉजी, पैथोलॉजी, फिजियोलॉजी, एक्सटेंशन, एनिमल जेनेटिक्स एवं ब्रीडिंग, एल०पी०एम० तथा पोल्ट्री साइंस में भी मरम्मत का कार्य हुआ।

अन्य झलकियाँ एवं कार्य कलाप

- ❖ विश्वविद्यालय में अम्बेडकर जयन्ती, विश्व पशुचिकित्सा दिवस, स्वतन्त्रता दिवस, पं. दीन दयाल उपाध्याय जयन्ती, गाँधी जयन्ती, विश्वविद्यालय स्थापना सप्ताह, बसन्त पंचमी व गणतन्त्र दिवस धूमधाम से मनाये गये।
- ❖ विश्वविद्यालय ने 2013 की प्री-वेटेनरी टेस्ट, पी०जी० एन्ट्रेन्स टेस्ट–2013, डिप्लोमा हेतु प्रवेश टेस्ट सफलतापूर्वक सम्पादित किए गये।

MISSION

University was established by U.P. Govt. in 2001 with the basic objective of imparting quality veterinary and allied education, undertake need-based and basic research, integrate education and research and offer efficient extension services for the farmers and livestock owners.

VISION

- ❖ Produce competent and skilled human resource in the field of animal health and production and allied sectors who are socially sensitive and responsible professionals;
- ❖ Undertake region-based, need-based and basic research for improving animal health and productivity adopting modern technology;
- ❖ Validate indigenous traditional knowledge (ITK) on scientific basis;
- ❖ Provide efficient extension services at the doorstep of poor and marginal farmers and livestock owners and motivate them to adopt animal husbandry, poultry, fishery and related vocations as an engine of economic growth and social empowerment;
- ❖ Social empowerment of women to become “knowledgeable stake holders” and giving them economic identity;
- ❖ Interface Industry and stakeholders in the newer perspectives of open global market;
- ❖ Ensure enhanced production from rural and urban livestock through effective disease surveillance and diagnosis, health care and vaccination programme; and
- ❖ Empower rural youth for self-employment adopting integrated farming practices.

MANDATE

University is the premier Veterinary and Animal Science Institution and is known for quality education and research on various aspects of animal health including disease diagnosis and providing advisory and extension services through scientific knowledge and expertise for :

- ❖ Strengthening hands on training to students with special emphasis on capacity building;
- ❖ Providing opportunity to Faculty and staff to improve their scientific and working capacity and capability to make the University a vibrant organization;
- ❖ Undertaking need-based, applied and basic research;
- ❖ Bringing livestock owners, poor and marginal farmers and rural women to the Center of Technology Information System and catalyze them for continuous improvement in production and productivity of their livestock and economy;
- ❖ Collaborate with State Agriculture and Animal Husbandry functionaries, SAU's, Indian Council of Agricultural Research Institutes related to animal health and production, Livestock Industry and NGO's in an attempt to develop resurgent, sustainable, profit-oriented market-based production system for livestock, poultry, fishery and allied sectors.

CHALLENGES

Concept of integrated farming which includes agriculture, livestock, poultry and fishery has been recognized as “high power engine” for sustainable agricultural and rural economy. Therefore, to translate the idea into reality, it is imperative:

- ❖ To produce Veterinarians and other technocrats related to animal health and allied sectors who become “Job providers” not the “Job seekers”;
- ❖ To substantially improve the faculty strength to a level which commensurates with the minimum requirements as per the specifications of Veterinary Council of India for undergraduate teaching ;
- ❖ To improve laboratory facilities for imparting quality education including training of post-graduate and doctoral degree programme students in an attempt to make them capable enough to meet the current and emerging challenges;
- ❖ To re-establish and achieve at par research excellence through optimized internal and external research fund support from the State and Central Govt. agencies; and
- ❖ To muster sufficient financial support in conformity to what a Veterinary University needs under resurgent economy and global education and trade scenario.
- ❖ Challenges enumerated above have to be faced through concerted efforts of University Academia with full support of the Government of U.P. And ICAR.

UNIVERSITY TARGETS

- ❖ Revamp teaching programmes and “Teaching Methodologies”, set up e-learning classrooms, introduce net-based “virtual class-rooms” and promote e-teaching and learning;
- ❖ Set up “State of the Art” Instructional Livestock Farms, Demonstration Units, Teaching Veterinary Clinical Complex, Disease Investigation and Research Laboratories;
- ❖ To achieve at least 15 per cent increase per annum in the number of University graduate and postgraduate students qualifying for national competitive examinations;
- ❖ To produce competent and skilled clinicians, entrepreneurs and livestock business managers and team leaders;
- ❖ Faculty up-gradation, filling vacant teaching posts and creating faculty positions in newer and upcoming faculties;
- ❖ Encourage faculty members to garner more financial assistance from outside agencies through externally funded research projects and support atleast one University funded research project in each department to give impetus to research;
- ❖ As per University Act, to obtain state support for generating trained and competent human resource in fisheries, biotechnology, livestock products technologies and industry and business management through designated colleges/faculties; and
- ❖ To augment University financial resource and refurbish infrastructure.



I. INTRODUCTION

U.P. Pandit Deen Dayal Upadhyaya Pashu-Chikitsa Vigyan Vishwavidyalaya Evam Go Anusandhan Sansthan Mathura was established vide Act 27 of 2001 on 25.10.2001 by Govt. of U.P. with the objective of imparting quality veterinary and allied education, undertake need-based and basic research, integrate education and research and offer efficient extension services for farmers and livestock owners. Erstwhile U.P. College of Veterinary Science & AH, Mathura with all its moveable and immovable assets including land of almost 2200 acres of Veterinary College was transferred to this University.

Administrative Block of University was inaugurated by His Excellency Shri T.V. Rajeshwar, Hon'ble Chancellor and Governor of U.P. on February 24, 2009. All central offices of University have been housed in the new building. College of Biotechnology building was inaugurated by Sh. John George, Advisor, DBT, Ministry of Science and Technology, Government of India in the august presence of Prof. M.L. Madan, the Hon'ble Vice Chancellor, Dr. Lal Krishna, ADG (Animal Health) ICAR, New Delhi and other officers of the University on September 25, 2009.

Directorate of Research and Directorate of Extension were established in 2009 to augment and coordinate research and extension activities. College of Biotechnology initiated teaching programmes under self-financing scheme from the academic session 2010-11 consequent to the approval by Government of UP. The Act of University envisages opening of three more colleges, namely- College of Fisheries, College of Livestock Products Technology and College of Animal Industries and Business Management. One more Veterinary College is expected to be started in eastern part of the state. New campus of the University, apart from the College building, has University Gymnasium, residential quarters for teaching and non-teaching staff and student's hostels.



II. ORGANIZATIONAL SET-UP

The organizational set-up of the University (Flow Chart 1) is in almost conformity with other state agricultural, veterinary and academic universities. Various bodies and authorities of the University exercise their powers at various levels to coordinate and regulate administration, education, research and extension activities.

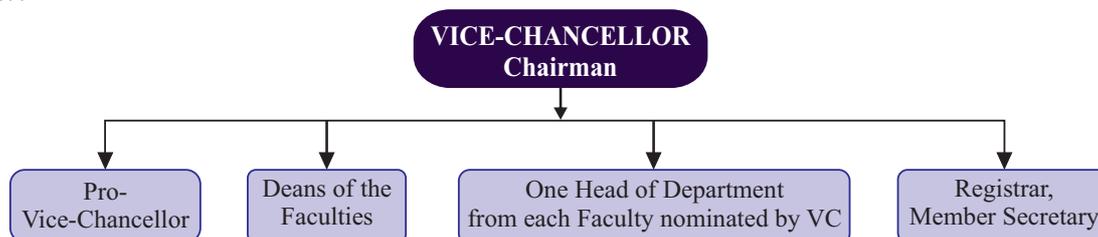
A. AUTHORITIES OF THE UNIVERSITY:

1. Executive Council

Executive Council (EC) of the University is the main executive body empowered to monitor, supervise and control the University affairs. Vice Chancellor is the Chairman of EC and other members of the EC are Pro-Vice Chancellor, Secretary Animal Husbandry and Fisheries, Secretary Finance, Secretary Higher Education, Govt. of U.P., Director of Animal Husbandry U.P., one reputed Industrialist nominated by Govt. of U.P., two eminent Veterinarians nominated by the Chancellor on the recommendation of UP Govt., two livestock farmers/breeders nominated by U.P. Govt. and one social worker nominated by Govt. of U.P.

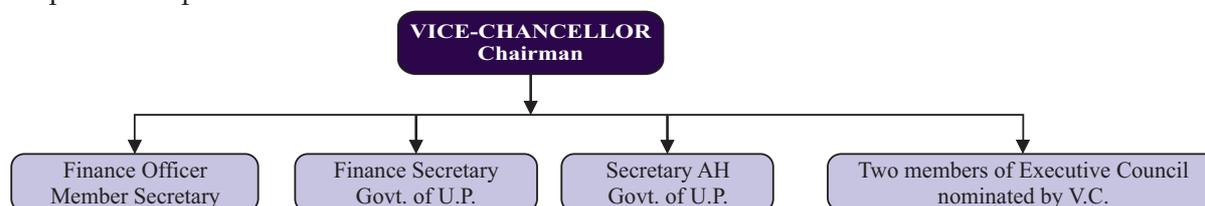
2. Academic Council

Academic Council of the University is the principal academic body which controls and frames all the academic regulations and responsible for maintenance of standards of instruction, education and examination in the University. The flow chart of Academic council composition is presented below:



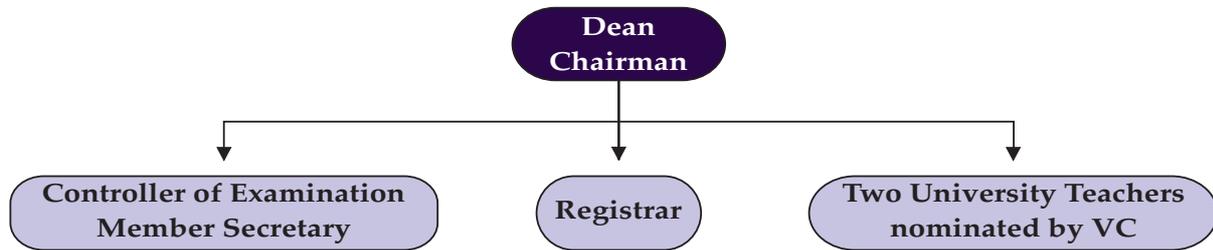
3. Finance Committee

Finance Committee of the University advises the Executive Council on matters relating to administration of property and funds of the University. The flow chart of Finance Committee composition is presented below:



4. Examination Committee

Examination Committee of the University coordinates and supervises all the examinations of the University including Pre Veterinary Test (PVT), appointment of examiners, tabulation and moderation of results and make recommendations to the Academic Council for improvement in examination system. The flow chart of the composition of the Examination committee is presented below:

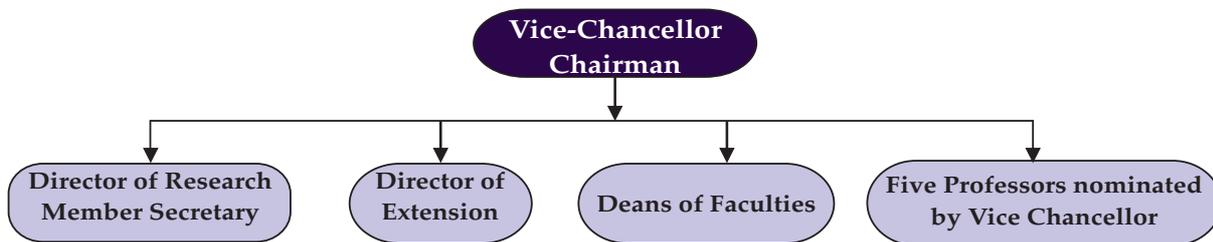


5. Board of Faculty

Board of Faculty is for framing the curricula for undergraduate and post graduate programmes and to make recommendations to the Academic Council for the establishment of new departments, abolition / subdivision or otherwise reconstitution of the existing departments. Dean of the Faculty is the Ex- Officio Chairman of Board of Faculty, and Faculty Secretary is elected on the basis of consensus amongst the faculty members. All Professors, Associate Professors and Assistant Professors of the faculty are the members of Board of Faculty.

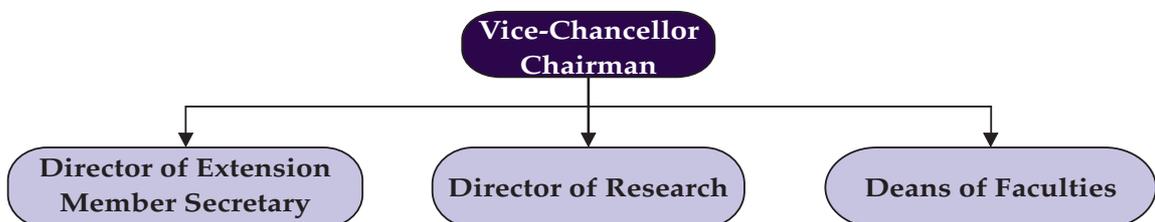
6. Research Advisory Committee

Research Advisory Committee is the policy making body on research activities of the University with Vice Chancellor as its Chairman and Director of Research as the Member Secretary. The set up of this Committee is shown below :



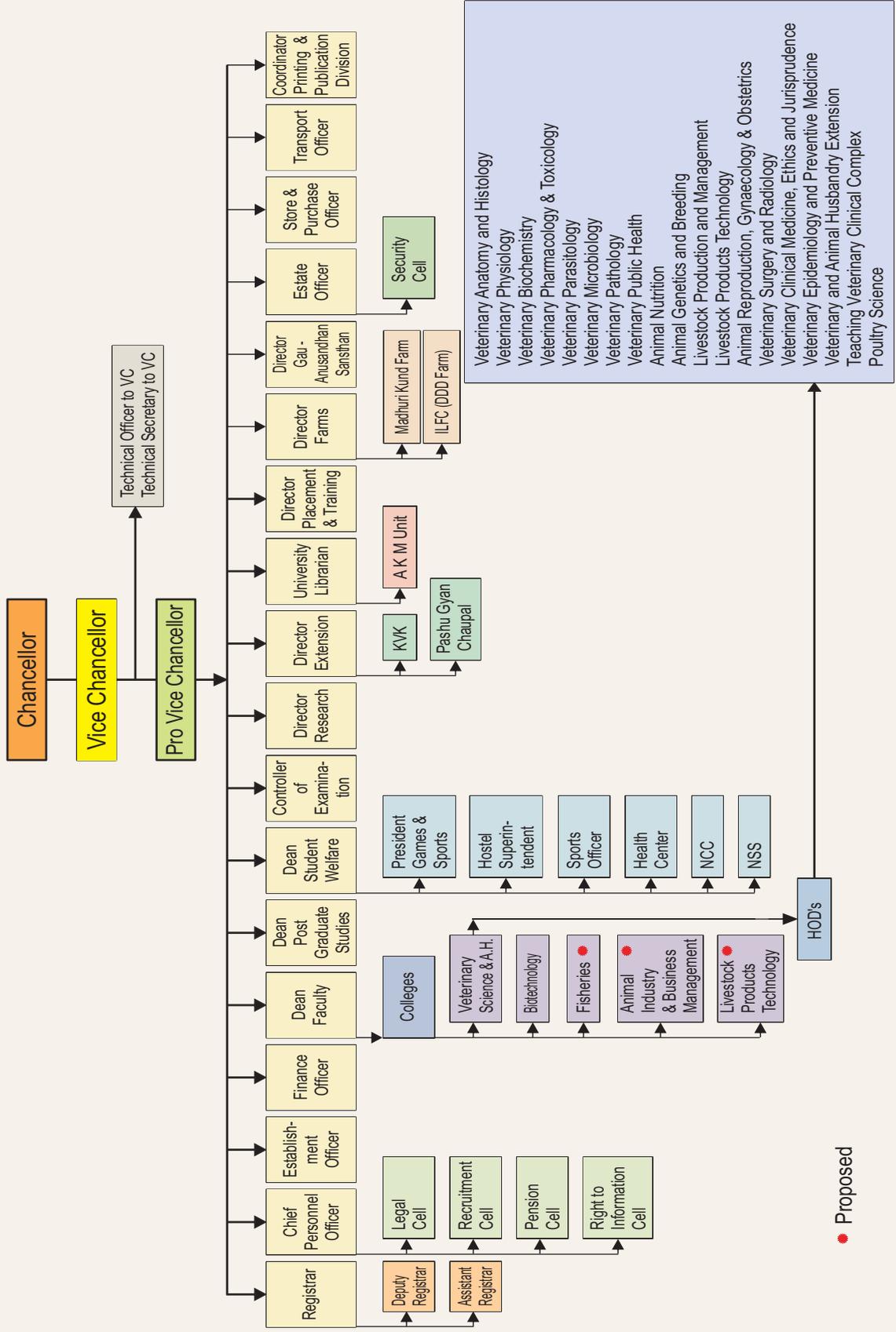
7. Extension Advisory Committee

The Extension Advisory Committee is the policy making body on extension activities of the University with Vice Chancellor as its Chairman and Director of Extension as the Member Secretary. The set-up of this committee is as shown here :



ORGANIZATIONAL STRUCTURE

U.P. Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go-Anusandhan Sansthan (DUVASU), Mathura



● Proposed

B. Organizational Meetings (2013-2014)

S.No.	Authority	Meeting No.	Date	Venue
1.	Executive Council	21 st	19-02-2014	DUVASU, Mathura
2.	Academic Council	44 th	20-08-2013	DUVASU, Mathura
3.	Academic Council	45 th	11-02-2014	DUVASU, Mathura
4.	Academic Council	46 th	16-02-2014	DUVASU, Mathura
5.	Academic Council	47 th	27-03-2014	DUVASU, Mathura

C. Officers of the University (2013-14)

S.No.	Designation/ Post	Name of Officers	Date	
			From	To
1.	Chancellor	His Excellency Shri B.L. Joshi, Governor of Uttar Pradesh		
2.	Vice Chancellor	Prof. A.C. Varshney	Feb. 20, 2013	Continuing
3.	Registrar	Dr. Bharat Singh	July 01, 2011	31.12.2013
		Dr. R.P. Pandey	Jan. 01, 2014	Continuing
4.	Finance Officer	Sh. A.C. Singh	July 10, 2012	Continuing
5.	Controller of Examination	Dr. Daya Shankar	Aug 29, 2012	Continuing
6.	Dean, College of Veterinary Science & AH	Prof. Satish Kumar Garg	June 30, 2009	Continuing
7.	Dean, College of Biotechnology	Dr. Rajesh Nigam	Feb. 05, 2013	Continuing
8.	Dean, Postgraduate Studies	Dr. P.K. Shukla	Jan. 15, 2013	Continuing
9.	Director of Research	Dr. Atul Saxena	Nov. 24, 2009	Continuing
10.	Director of Extension	Dr. Sarvajeet Yadav	Nov. 24, 2009	Continuing
11.	University Librarian	Dr. Ajay Prakash	Aug. 29, 2012	May 26, 2013
		Dr. Vikas Pathak	May 27, 2013	Continuing
12.	In charge, Student's Welfare	Dr. A.K. Madan	Nov. 20, 2012	Continuing

III. TEACHING

U.P. Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya Evam Go-Anusandhan Sansthan (DUVASU) is running its teaching programme in the following two colleges:

1. College of Veterinary Science & Animal Husbandry
2. College of Biotechnology

In addition, Government of Uttar Pradesh has sanctioned one more constituent Veterinary College at Azamgarh, which is likely to start from 2015-16.

COLLEGE OF VETERINARY SCIENCE & ANIMAL HUSBANDRY, MATHURA

College of Veterinary Science & Animal Husbandry was established in 1947 to generate trained manpower in terms of qualified veterinarians to improve the animal husbandry and veterinary health services in the state and to undertake research and extension education programmes. With the passage of time, the college became one of the premier Veterinary Colleges of country and ultimately resulted in the establishment of Veterinary University in 2001. College is running three academic programmes, namely Bachelor of Veterinary Science and Animal Husbandry (BVSc & AH) (as per Veterinary Council of India Regulation-2008), Master of Veterinary Science (MVSc) and Doctor of Philosophy (PhD).

During 2013-14, College had faculty strength of 75 who are well qualified. Besides teaching, research and extension faculty members of the College are shouldering all the responsibilities of managing the University affairs and activities. In addition, they also shared the responsibility of running post graduate programme of College of Biotechnology. During 2013-14, College also started two diploma programmes under RKVY to meet the growing demand of trained Veterinary Pharmacists and Livestock Extension Officers in State Animal Husbandry Department to strengthen the animal health and production services in the state.

- ❖ Diploma in Veterinary Pharmacy (DVP)
- ❖ Diploma in Livestock Extension (DLE)

For effective teaching and imparting hands on training to students, laboratories have been established.

Admissions and turn out of students during 2013-14

Degree Programme	Intake Capacity	Students Admitted			Student Turn Out		
		Male	Female	Total	Male	Female	Total
BVSc & AH	78	57	17	74	35	12	47
MVSc	38	17	08	25	20	10	30
PhD	19	04	00	04	00	01	01
DVP	40	34	06	40	-	-	-
DLE	40	38	02	40	-	-	-

COLLEGE OF BIOTECHNOLOGY

College of Biotechnology was started in 2010-11 to impart postgraduate degree in biotechnology so as to generate human resource. University has decided to start Undergraduate and Doctorate degree programmes from the academic year 2014-15.

Admissions and turn out of students during 2013-14

Degree Programme	Capacity	Students Admitted			Student Turn Out		
		Male	Female	Total	Male	Female	Total
MSc Biotechnology	25	1	0	1	1	1	2

ACTIVITIES OF COLLEGE OF VETERINARY SCIENCE & ANIMAL HUSBANDRY

Clinical Services

Teaching Veterinary Clinical Complex (TVCC): TVCC, erstwhile Kothari Veterinary Hospital, is a multi-speciality Veterinary Clinic. It is well equipped with the modern facilities and has operation theaters for large animals and small animals, radiology unit, ICU for pets, indoor unit for pets and large animals with loading and unloading platform facility, diagnostic laboratory, animal dentistry unit and ambulatory services. BVSc & AH degree programme students are thoroughly trained in disease diagnosis and treatment of animals. Students are well exposed to different types of medical, gynecological and surgical clinical cases under guidance and supervision of well qualified faculty members. Quality clinical services are provided to farmers and animal owners in TVCC and also at the doorsteps of farmers through ambulatory services. Imaging diagnostics unit is equipped with 500 mA fixed and 100 mA mobile X-ray machines, ultrasonography machines, 9" C-Arm image intensifier and digital radiography unit apart from Endoscopy facilities. Besides these, operating microscope, laproscopic surgery unit, orthopedic surgery instruments, eye surgery instruments, diathermy, multiparameter monitor, oxygenators, nebulizers and general surgery facilities are also available.



During 2013-14, 8714 clinical cases were treated. Out of these 3547 were large animals, 674 small ruminants, 3642 pets, 482 equines and 369 other animals. Emergency clinical services were also provided round the clock by undergraduate and postgraduate students under the direct supervision of teachers from clinical departments including those on on-call duty during late

night hours. For the farmers and animals owners, coming from distant places, facility for their stay is available. TVCC also actively participated in celebration of World Veterinary Day, wherein, free antirabies vaccine was provided to 89 dogs. Total revenue generated during the year was Rs. 4,48,540.00.

Diagnostic Laboratory: Disease diagnostic laboratory in the clinical complex is having all the facilities required for proper diagnosis of diseases. Laboratory also serves as an important unit for training of undergraduate students and is equipped with semi-automatic blood and biochemical analyzers, urine analyzer, electrolyte analyzer, blood auto analyzer etc. Samples requiring microbiological, toxicological and histopathological examinations are sent to the concerned departments. During 2013-14, 1992 samples were processed in diagnostic laboratory. Out of these, 1582 samples of blood, 398 samples of serum and biochemical analysis and 12 samples of urine were examined. Based on laboratory test reports, animals were accordingly treated for respective diseases.

Ambulatory Service: TVCC also provides ambulatory clinical services in nearby villages. Ambulatory clinical services are rendered on roaster basis in which group of students along with the teachers visit villages and clinical camps in Mathura and adjoining districts with the help of Gram Pradhans and local Veterinary Officers. Students learned to practice their clinical knowledge under field conditions. During 2013-14, 3220 clinical cases were treated during ambulatory clinical camps. Out of these, 112 surgical cases, 2394 medicine cases and 714 gynecological cases were treated. During the year, 22 clinical camps were organized, in which 431 cattle, 1419 buffaloes and 1347 other animals which included sheep, goats, dogs and pigs were treated.

ACADEMIC ATTAINMENTS OF STUDENTS

Students excelled in ICAR Junior Research Fellowship Examination

Forty three students of College of Veterinary Science and Animal Husbandry, DUVASU, Mathura appeared in Junior Research Fellowship Examination (JRF) conducted by ICAR during 2013. Out of these, 24 students qualified the examination and bagged fellowship in Animal Sciences group and five in Veterinary Science stream. Student Sudheer Kumar top at National Level in Animal Science group. Based on their top ranking, maximum graduates of this college sought admission in MVSc degree programme in IVRI, Izatnagar and NDRI, Karnal.

HANDS ON TRAINING OF STUDENTS UNDER EXPERIENTIAL LEARNING PROGRAMMES

Feed manufacturing unit

This unit was established in 2012 to provide hands on training to students in compounded feed manufacturing and training as per VCI curricula. In addition, this unit also ensures constant supply of concentrate feed to ILFC farm animals. Total 2575 quintals of feed was manufactured in 387 batches during 2013-14. The student of 1st year BVSc & AH (ANN-121 and 211) were imparted practical training in feed manufacturing with on the spot batch mixing, grinding and packing.

Urea molasses mineral block unit

This unit was installed on Sept 2012, for manufacturing UMMB for farmers and training to students in urea mineral molasses block technology. The training is given to students for manufacturing of UMMB during practical classes and Internship. During 2013-14, ninety eight students of 1st and IInd year BVSc & AH programme were trained. UMMB prepared at farm are being routinely used at ILFC and also sold to farmers.

Training of students on broiler production and poultry management

The breeder farm, layer farm and hatchery of Experiential Learning Unit in Poultry Science department serves as important unit for teaching of UG and research of PG and PhD students. This unit also served as good model for internship students to train them about various farm activities pertaining to feeding, watering and management. Further, they were also imparted hands on training on rearing of Chabro birds and layers. These units also catered to the training needs of the army persons during their training courses on poultry conducted by Department of Veterinary Extension & AH. The resources of ELU viz. dead birds and embryonated eggs of different stages of development were used for teaching and research purposes by students and staff of Anatomy, Pathology, Biotechnology and Microbiology departments.

During 2013-14, Chabro chicks obtained from hatchery were used for 'Entrepreneurial training of 3rd Year BVSc & AH students on poultry production from 05.11.2013 to 02.12.2013. Another 'Entrepreneurial training on poultry production' was conducted for BVSc & AH 2nd Year students from 24.03.2014 to 24.04.2014. In addition to this, experiential trainings were given on hatchery management to the students of BVSc & AH 22 batches of hatches and 8660 day old chicks were obtained during this period. 2nd year, 3rd Year and internship students of BVSc & AH and P.G students of the department were also trained on hatchery management during this period.



A U.G. student feeding chicks under Entrepreneurial Training



An army person adding growth promoter in water during 'Entrepreneurial Training'



Army persons feeding the chicks during 'Entrepreneurial Training'

Value addition to milk and meat products

Department of Livestock Products Technology, under the revolving fund scheme on “Processing of meat, milk and eggs for value added products”, imparted hands on training to undergraduate and post-graduate students. Students were trained in pasteurization of milk, milk packaging and preparation of paneer, khoa, ice-cream, cream, lassi and meat-nuggets.



OTHER ACADEMIC SERVICES/ FACILITIES

Library Services

Library of the university is constructed in 18x25 square meter area. It is housed in double storey building, divided into 8 sections *viz*; acquisition section, circulation section, stock section, reference section, study section, journal section, technical section and news paper section. 125 students can be accommodated comfortably at a time in different sections of the library. Library facility is open for students and faculty members on all working days from 10.00 A.M. to 5 P.M. During 2012-13, 2285 books were purchased. Presently the total number of books in library is 33,335 Library provides online journal facility (www.CeRA.JCCC.in) in which numerous journals are subscribed. Besides these, CD-ROM, online database and Xerox facility is also available in library for visitors and readers. Seven Hindi and four English newspapers are regularly subscribed for readers to update day to day information of students, faculty and staff.

Agricultural Knowledge Management Unit (AKMU)

The AKMU of DUVASU, Mathura has 30 computers systems with internet connectivity. Through AKMU, internet connectivity has been provided to different units of University *viz*. All the Departments, Hostels, Administrative Block, College of Biotechnology, VC Camp Office, ILFC etc. During 2013-14, a new server and firewall were installed at AKMU and the Internet connectivity has been extended to the newly constructed LPT building through wireless.

Directorate of Counseling, Training and Placements

Coaching classes of ICAR-JRF examination for students: Directorate has arranged coaching classes for ICAR-JRF Examination in Animal and Veterinary Science group for internship students from January to March 2014. The students getting the benefit from these coaching classes and bringing the laurels to the institution by achieving top ranks in the national level examination.

Students outperformed in national level fellowship examinations 2014: Continuing the vogue of last few years, this year again students of College of Veterinary Science and Animal Husbandry proved their potential in the national level competitive examinations. Twenty eight students out of thirty seven qualified the ICAR-JRF examination (AIEE-PG) 2014. Out of these 28 students, 04 students opted for JRF in Animal Science while 04 students opted for JRF in Veterinary Science. Hon'ble Vice-Chancellor and Dean of Veterinary College not only congratulated the awardees for bringing glory to the Institution but also praised the faculty members for their efficient teaching, counseling and coaching to students for ICAR-JRF examination 2014.

Students selected in campus interview: For placement of Veterinary Graduates in companies, Training and Placement Cell of University has arranged two campus interviews this year. O'Leche Dairy Farms Pvt. Ltd, Gaziabad on January 15, 2014 shortlisted 8 students while Centre Point Pet Hospitals Pvt. Ltd., Gurgaon on May 05, 2014 selected 8 students. Dr. Vijay Pandey, Incharge, Training and Placement Cell of the University played an active role and facilitated the smooth conduct of campus interviews.

IV. RESEARCH

A. ONGOING EXTRAMURAL FUNDED PROJECTS

S. No.	Name of the Project	Name of PI and Co-PI	Funding Agency	Total Budget
1.	Conservation and Genetic Improvement of Muzaffarnagari Sheep for Multiplication of Superior germplasm	Dr. Deepak Sharma Dr. Madhu Tiwari	Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Govt. of India	79.66 lacs
2.	Outreach Programme on Zoonotic Diseases-Verocytotoxic <i>E.coli</i>	Dr. Basanti Bist Dr. Udit Jain	ICAR	73 lacs
3.	Out-reach Programme on Ethnoveterinary Medicine "Pharmacological studies and Development of a Poly herbal formulation for Reproductive disorders in Animals"	Dr. Satish K. Garg	ICAR	80 Lacs
4.	Adhoc Research Project of Niche Area of Excellence entitled "Toxicodynamic studies on Impact of Environmental Pollutants on Bovine Reproduction with Particular Reference to Regulatory Pathways"	Dr. Satish K. Garg	ICAR	4.67 crores
5.	A Study on State Wise Yield of Meat and By-products of Cattle, Buffalo, Goat, Sheep, Pig and Poultry	Dr. Vikas Pathak Dr. V.P. Singh Dr. S.K. Bharti	Ministry of Central Statistical Organization & Program Implementation, GoI, New Delhi.	5.96 lacs
6.	Comparative efficacy of supplementation of herbal liver tonic products on growth & performance in broilers	Dr. Amitav Bhattacharyya Dr. P.K. Shukla	Ayurved Ltd, Baddi, H.P.	69,212.00
7.	All India Co-ordinated Research Project on FMD At Regional Research Centre, Mathura	Dr. Rashmi Singh Dr. Ajay Pratap Singh	ICAR, New Delhi	3.00 lacs
8.	FMD-Control Programme	Dr. Rashmi Singh Dr. Ajay Pratap Singh	ICAR, New Delhi	3.00 lacs

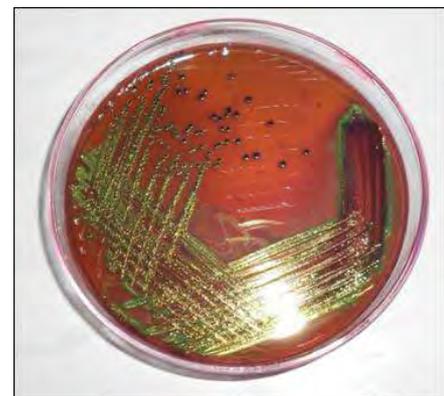
Project-1: Conservation and genetic improvement of Muzaffarnagari sheep for multiplication of superior germplasm

This project of two years was sanctioned in August, 2012 and the financial assistance was started by February, 2013. Till date, 39 female and 10 male purebred Muzaffarnagari sheep have been bought and are reared under proper managerial practices and bred by selective breeding to increase the number of superior germplasm. Upto now we have obtained 30 lambs which have led to 61% increase in the total flock size. In near future, there is provision of creating a nucleus herd of superior germplasm of purebred Muzaffarnagari sheep at our centre.

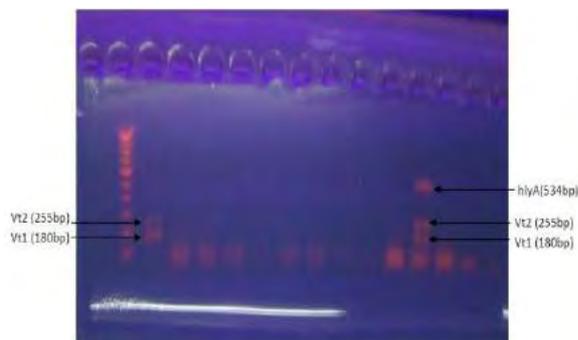


Project-2: Outreach Programme on Zoonotic Diseases-Verocytotoxic *E.coli*

A total no. of 1881 samples were collected from different districts of U.P. comprising milk samples (332), milk products (573), water (483), faeces (388), soil samples (64) and Human Urine samples (41). Of 1881 samples, 627 (33.33%) *E.coli* were isolated. Of 627 *E.coli* isolates, 114 isolates were found positive for VTEC with 6.06%. Over all prevalence of VTEC in milk samples, milk products, water, cattle faeces, soil samples, and human urine samples were 5.12% (17/332), 2.26% (13/573), 3.93% (19/483), 14.94% (58/388), 6.25% (4/64) and 7.31% (3/41) respectively. Congo red dye binding ability of VTEC isolates -59/60 (98.33%). Haemolysin activity of VTEC isolates -51/60 (85.00%). Among Top six non O157 VTEC causing HUS O26 and O91 serotypes were obtained from faecal samples of cattle. Predominant serotypes of VTEC reported were O11, O27, O9, O134 and O34. A total of 29 PCR products of genes (vt1, vt2, eae and hlyA genes) were prepared from VTEC isolates and purified by using **Geneipure quick PCR purification kit** and sequenced by **Invitrogen bioservices India Pvt. Ltd Gurgaon Haryana**. VTEC strains were **highly sensitive** for Co-trimoxazole (98.33%) followed by ceftriaxone (90%), ciprofloxacin (81.66%), cefuroxime and ceftriaxime (80%) each. VTEC strains were **highly resistance** for ampicillin (91.66%) followed by streptomycin and tetracycline (80%) each. Different gene combination in VTEC isolates were obtained namely Stx1, Stx2, Stx1and Stx2 both, Stx1 and eae, Stx1 Stx2 and hlyA, Stx1 Stx2 and eae, Stx1 and hlyA, eae, and Stx1 Stx2 eae hlyA. Out of 16VTEC strains obtained from raw milk, 3 VTEC isolates of raw milk harboured all the four genes.



E. coli Colonies with Characteristics Greenish Metallic Sheen on EMB agar



Showing vt1, vt2 and hly genes and vt1.



Showing eae, vt1 and hly genes in Agarose gel vt2 in Agarose gel electrophoresis.

Project-3: Pharmacological studies and Development of a Poly herbal formulation for Reproductive disorders in animals

GC-MS analysis of three plants extracts possessing promising activities revealed presence of large number of phytochemical constituents, but the major ones were LUP-20(29)- ENE- 3,28-DIOL, HEXACOSANE and 1H-Cycloprop[e]azulene and these possess antimicrobial, antitumour and anti-inflammatory activities. HPLC studies revealed the presence of different polyphenolic acids in test extracts. Electron microscopic studies (TEM) on antibacterial action of test extracts, coded as D7D, D16D and D23D, revealed that two of these exerted very good antibacterial activity and affected the cell wall, cell membrane, and nuclear material but there was no disintegration of DNA of *Staphylococcus aureus*. Causative bacteria for bovine endometritis were identified as *Staphylococcus aureus*, *E. coli*, *Klebsiella pneumonia* and *Pseudomonas* sp. But *E. coli* and *Staph aureus* were the predominant ones. Antibacterial efficacy of crude methanolic extracts of D7D, D23D, D6D and D14D was evaluated against these and D7D and D23D were found to be most effective at 250 mg/ml and 500 mg/ml concentrations. For evaluation of the efficacy of test extracts against bacterial endometritis, experimental murine bacterial endometritis model was well established and validated and efficacy of two of the test extracts was proven beyond any doubt and it was found to be almost comparable to that of gentamicin as determined based on decrease in uterine weight, secretion index, TLC and uterine bacterial load. Antiviral activity of two plant extracts coded as **D7D** and **D23D** were also evaluated against PPRV by using Vero cell line and both these were found to be effective. Based on the results of this project, Patent on “NOVEL HERBAL ANTIMICROBIAL GEL FOR ANIMALS DUVATOP-G”. (No. 130/DEL/2014 dated 15.01.2014) has been filed and efforts are on for transfer of technology for its commercial use.

Project-4: Toxicodynamic studies on Impact of Environmental Pollutants on Bovine Reproduction with Particular Reference to Regulatory Pathways

Histamine-induced myometrial contraction in non-pregnant buffalo myometrium is predominantly mediated by H1- histaminergic receptors and mRNA transcript of H1receptor was identified to be of 311 bp length while protein in the membrane fraction was detected having a molecular mass of approximately 57 kDa. Gene sequence of H1 receptors in buffalo uterus has been detected and registered in NCBI. Histamine-induced buffalo myometrial

contraction is mainly regulated by extracellular calcium and intracellular calcium release through IP₃ and ryanodine-sensitive calcium channels plays minor role. Further, in histamine-induced uterotonic effect, besides the conventional pathways, possible involvement of non-selective cation channels cannot be ruled out. Efficacy of oxytocin in inducing myometrial contraction in buffaloes increased with advancement of pregnancy stage. But endometrial plays a minor role in OT-induced uterotonic effect in buffalo uterus. Both myometrium and endometrium-derived prostanoids significantly influenced OT-induced myometrial contraction in buffaloes, however, nature of these prostanoids needs to be identified. Oxytocin-induced myometrial contraction is predominantly extracellular calcium-dependent but intracellular calcium release from SR plays also plays some role irrespective of the stage of pregnancy. PGF_{2α}-induced myometrial contraction in non-pregnant buffalo myometrium is nifedipine-sensitive, however, extracellular calcium entry through other channels remains to be elucidated. ATP sensitive K-channels functionally exist in buffalo myometrium irrespective of stage of pregnancy, albeit, relaxant response to levocromakalim, an opener of K_{ATP} channel, increased during early pregnancy stage compared to that in non-pregnant or mid-pregnancy stage of buffaloes. Lead-induced buffalo myometrial contraction is prazosin (alpha1-adrenoceptor) and nifedipine (L-type Ca²⁺ channel) sensitive. Further, extracellular calcium predominantly regulates lead-induced uterotonic effect while intracellular calcium release from sarcoplasmic reticulum seems to have almost negligible influence.

Project-5: A Study on State Wise Yield of Meat and By-products of Cattle, Buffalo, Goat, Sheep, Pig and Poultry

Under this project the important carcass parameters were obtained from different species. A data on 200 buffaloes, 100 pig, 500 poultry, 300 sheep and 300 goats were taken and compiled. The report has been submitted to Principal Investigator, Lead Centre (NRC on Meat). The compilation will provide baseline data for carcass parameters and by-products yield of our food animals. The results will also be helpful for formulating breeding strategies and nutritional interventions to improve the carcass traits of livestock.

Project-6: Comparative efficacy of supplementation of herbal liver tonic products on growth & performance in broilers

One hundred and eighty day old commercial broiler chicks were procured from a reputed poultry farm after having vaccinated against the Ranikhet disease (F1 Strain). Primarily, the chicks were wing banded and then kept in deep litter system under standard managerial and hygienic condition for one week. The chicks were given standard starter ration for first half of the week on plain paper and then in the chick feeder up to the end of the week. At the end of the first week, these chicks were weighed individually and randomly divided in to five groups, each consisting of four replicates and nine chicks in each replicate. The birds were provided the dietary treatments till 49 days of age. The first group was provided Basal diet (without supplementation) Control (23% CP & 2800 K cal/kg ME till 21 days and 20% CP & 2900 k cal/ kg till the end of the experiment). The second group was provided basal diet supplemented with Superlv liquid @ 5ml/100 birds/day during 1-2 week, 10 ml/100 birds/day during 2-4 week and 20ml/100 birds/day 4-6 week. The third group was provided basal diet supplemented with

AV/SSL/12 @ 2.5ml/100 birds/day during 1-2 week, 5 ml/100 birds/day during 2-4 week and 10ml/100 birds/day during 4-6 week. The fourth group was provided basal diet supplemented with AV/SSL/12 @ 4ml/100 birds/day during 1-2 week, 8 ml/100 birds/day during 2-4 week and 15ml/100 birds/day during 4-6 week. The fifth group was provided basal diet supplemented with Liv.52 Protec liquid @ 5ml/100 birds/day during 1-2 week, 10 ml/100 birds/day during 2-4 week and 20ml/100 birds/day during 4-6 week. Weekly body weight, body weight gain, feed consumption was recorded till 6 weeks of age. Serum Total Protein, Serum Uric acid, Serum Alkaline phosphatase (ALP), Serum Glutamate Oxaloacetate Transaminase, Serum Glutamate Pyruvate Transaminase were recorded after 3rd & 6th week of experimental study on representative 9 birds/ group. After 6 weeks of age, general immune response was studied by taking 9 birds from each treatment group and measuring important immunocompetence traits such as antibody response to sheep red blood cells (SRBC), 2-mercaptoethanol resistant antibodies (MER or IgG) and mercaptoethanol sensitive antibodies (MES or IgM) against SRBC and Cell mediated immune response to PHA-P. After 42 days of the experimental trial, four representative birds from each treatment group were randomly selected and slaughtered to study the gastrointestinal tract development (proventriculus, gizzard, small intestine, large intestine & caeca) and various slaughter traits. Statistical analysis and compilation of results is under process.

Project-7: All India Co-ordinated Research Project on FMD at Regional Research Centre, Mathura

A total of 18 specimens (vesicular tongue epithelium) were collected from clinically affected cattle, buffaloes, goats and pigs from 10 outbreaks in different districts of Uttar Pradesh recorded at the Centre. Fourteen specimens were typed as virus type "O" by Sandwich ELISA. Others remained untypeable. The outbreaks were recorded during June, 2013-Dec, 2013. Under AICRP, a total of 1023 random serum samples were tested for antibody titer against all three serotypes and also for the presence of antibody against non-structural protein NSP-3AB3 using DIVA ELISA test. The overall percentage of protective animals having antibody titre ≥ 1.8 was 43.21%, 42.72% and 45.45% against type "O", "A" and "Asia-1", respectively. Overall 56.40% animals were found positive by DIVA ELISA.

Project-8: FMD-Control Programme

A total of 11770 serum samples of pre and post vaccinations (13th and 14th phases) from FMD-CP districts of Uttar Pradesh were tested by LPB ELISA for antibody titres against FMD types O, A and Asia1. Out of the samples screened the overall percentage of protective animals during 13th prevaccination phase was 14.85%, 7.01% and 22.38% against FMDV type 'O', 'A' and 'Asia-1', respectively. Similarly, the percentage of protective animals after 13th phase vaccination was found to be 32.41%, 26.47% and 35.77% against FMDV type 'O', 'A' and 'Asia-1', respectively in comparison to pre vaccination. The overall percentage of protective animals during 14th pre vaccination phase was 61.19%, 61.89% and 60.99%, respectively against FMDV type 'O', 'A' and 'Asia-1'. Similarly, the percentage of protective animals after 14th phase vaccination was found to be 66.36%, 56.28% and 29.13% against FMDV type 'O', 'A' and 'Asia-1', respectively in comparison to pre vaccination.

B. UNIVERSITY FUNDED PROJECTS

S.No.	Name of Project	Name of PI and Co-PI	Total Budget
1.	Association between polymorphisms of Interleukin-2 (IL-2) and Signal transducers & activators of transcription 5 A (STAT5A) genes with milk production traits in Sahiwal and Haryana cattle	Dr. S.P. Singh Dr. Deepak Sharma Dr. Madhu Tiwari Mr. Rakesh Goel	2.10 lacs
2.	Association between polymorphisms of Solute carrier 27A1 (<i>SLC27A1</i>) genes with milk production traits in Sahiwal and Haryana cattle	Dr. Madhu Tiwari Dr. Deepak Sharma Dr. S.P. Singh Mr. Rakesh Goel	1.45 lacs
3.	Effect of newer mode of nutrient supplementation on growth and nutrient utilization in growing cattle	Dr. Vinod Kumar	2.024 lacs
4.	Growth performance of cattle supplemented with fortified urea molasses mineral block fed on roughage based diet	Dr. Vinod Kumar	2.34 lacs
5.	Effect of mist cooling and bathing/wallowing during summer stress in lactating cattle vis-à-vis buffalo	Dr. Brijesh Yadav Dr. Yajuyendra Singh Dr. Rajneesh Sirohi Dr. Vijay Pandey Dr. Vinod Kumar	0.75lacs
6.	Modulation of host innate and adaptive immune system affecting production in Sahiwal and Haryana cattle in the changing climate scenario	Dr. Jitender Kumar Dr. Dilip Kr. Swain Dr. Yajuyendra Singh	2.97 lacs
7.	Molecular basis of host immune response in mastitic dairy cows of different production potential, parity, and lactation and identification of suitable markers for early diagnosis of subclinical mastitis and development of therapeutics for mastitis	Dr. Dilip Kr. Swain Dr. Brijesh Yadav Dr. Sarvajeet Yadav Dr. Shankar Singh	2.46 lacs
8.	Utilization of Azolla powder as a feed stuff for commercial broilers	Dr. Amitav Bhattacharyya Dr. Vinod Kumar Dr. Debashis Roy Dr. Meena Goswami	The resources available in the Department of Poultry Science were utilized for carrying out the project.
9.	Screening of superficial wound and skin infections in animals for bacterial and mycotic pathogens and their drug sensitivity pattern against commonly used antimicrobial agents	Dr. Ruchi Tiwari	1 lac

Project 1: Association between polymorphisms of Interleukin-2 (IL-2) and Signal transducers & activators of transcription 5 A (STAT5A) genes with milk production traits in Sahiwal and Haryana cattle

Interleukin-2 (IL-2) is an antigen-nonspecific lymphokine synthesized and secreted by a subset of mature lymphocytes after stimulation by antigen, mitogen or alloantigen and it plays the central molecule for the activation of both helper and cytotoxic T-cells leading to clonal expansion of these cells. STAT5A are members of transcription factors and are thought to play a central role in signal transmitting from prolactin to milk protein genes. STAT5A dimes bind to GAS sequences located in promoters of milk protein genes and activate their transcription. Both IL-2 and STAT5a gene polymorphisms have association with milk production traits. The project has been undertaken with the objectives to study the polymorphisms of Interleukin-2 and STAT5 gene in Sahiwal and Haryana breeds of cattle by SSCP technique, to estimate the gene & genotype frequencies of these genes and to study the association between the polymorphic genotypes of these genes and milk production traits. Till now, the blood samples from 50 adult Haryana and 50 adult Sahiwal female cattle maintained at ILFC, DUVASU, Mathura, had been collected for DNA isolation.

Project 2: Association between polymorphisms of Solute carrier 27A1 (SLC27A1) genes with milk production traits in Sahiwal and Haryana cattle

SLC27A1 is a member of the fatty acid transport protein (FATP) family. It is the transmembrane protein that facilitates long chain fatty acid transport across the cytoplasmic membrane and plays a role as regulator of Krebs' cycle activity and therefore assists in mitochondrial function. SLC27A1 encoding gene was mapped to bovine chromosome 7 and its SNPs were found to be significantly associated with milk production traits in cattle. The project has been undertaken with the objectives to study the polymorphisms of SLC27A1 gene in Sahiwal and Haryana breeds of cattle by PCR-RFLP technique, to estimate the gene & genotype frequencies of the gene and to study the association between the polymorphic genotypes of the gene and milk production traits. Till now, the blood samples from 50 adult Haryana and 50 adult Sahiwal female cattle maintained at ILFC, DUVASU, Mathura, had been collected for DNA isolation.

Project-3: Effect of newer mode of nutrient supplementation on growth and nutrient utilization in growing cattle

A study was conducted *In vitro* and in vivo to assess the bypass mustard cake by formaldehyde treatment on heifer growth and nutrient utilization and mineral bioavailability. It was found that 1.5% of CP treatment of mustard cake with formaldehyde improve growth rate and feed conversion ratio. The mineral bioavailability was also not affected except for phosphorus.



Area specific mineral mixture DUMIN-AS

Project-4: Growth performance of cattle supplemented with fortified urea molasses mineral block fed on roughage based diet

Under this project, the testing of different feed additive through UMMB in heifers is being done. A 4 month trial involving, herbal additives, organic acid DL-mallate and trace minerals supplement have been conducted and analysis of samples is under progress.

Project-5: Effect of mist cooling and bathing/wallowing during summer stress in lactating cattle vis-à-vis buffalo

The study was intended to investigate the effectiveness of two cooling systems i.e. sprinkling and wallowing on production and physio-biochemical parameters of lactating cattle and buffalo during conditions of severe hot ambient temperatures. The study was conducted at ILFC, DUVASU, Mathura on eighteen lactating cattle and buffalo. The experiment was carried out in the months of May-July, 2013, when Temperature Humidity Index (THI) in Mathura (semi-arid region) was very high. The experimental animals were divided in control and two treatment group containing six animals each. The animals of the control group were not given any cooling whereas T₁ and T₂ treatment group were given cooling by misting and bathing/wallowing respectively. The recording of meteorological variables of the shed, physiological parameters and milk yield of the animals, and collection of blood and milk samples was done fortnightly. In lactating buffalo misting and wallowing both were found to be effective in month of May and June while wallowing was found to be effective in month of July as a cooling methodology in summer season. The lactating cattle (Sahiwal breed) were only little affected by summer stress however this stress could be ameliorated by either misting or bathing.

Project-6: Modulation of host innate and adaptive immune system affecting production in Sahiwal and Haryana cattle in the changing climate scenario

The project has been undertaken with the objectives to elucidate key surface innate receptors on neutrophils (TLR2 and TLR4), evaluate *In vitro* neutrophil and lymphocyte competence of blood neutrophils throughout the year in different seasons, study the protein tyrosine phosphorylation in blood neutrophils in different seasons, correlate the neutrophil and lymphocyte parameters with milk production and evaluate apoptosis like changes in neutrophils and lymphocytes. Till now, blood samples have been collected twice in the month (April, May, June, July and August) from Haryana and Sahiwal cows and neutrophils and lymphocytes have been isolated and lysates have been made for signaling studies.

Project-7: Molecular basis of host immune response in mastitic dairy cows of different production potential, parity, and lactation and identification of suitable markers for early diagnosis of subclinical mastitis and development of therapeutics for mastitis

The project has been undertaken with the objectives to study the surface expression of CD11b, CD62L, TLR 2 and TLR 4 on neutrophils, the surface alterations of neutrophils in terms of pseudopods in Coliform and Staphylococcal mastitis by SEM, assess differential tissue damage in mastitis, evaluate *In vitro* and *in vivo* neutrophil competence of blood and milk neutrophils during different types of mastitis and evaluate protein tyrosine phosphorylation pathways in the neutrophils during different forms of mastitis. Till now, blood and milk have

been collected from infected animals (both cows and buffaloes) and screening of milk has been done for clinical coliform mastitis. Neutrophils and lymphocytes have been isolated and lysis has been carried out for signaling studies. Tissue damage has been assessed by morphoanatomical changes and cells have been fixed in paraformaldehyde for scanning electron microscopy.

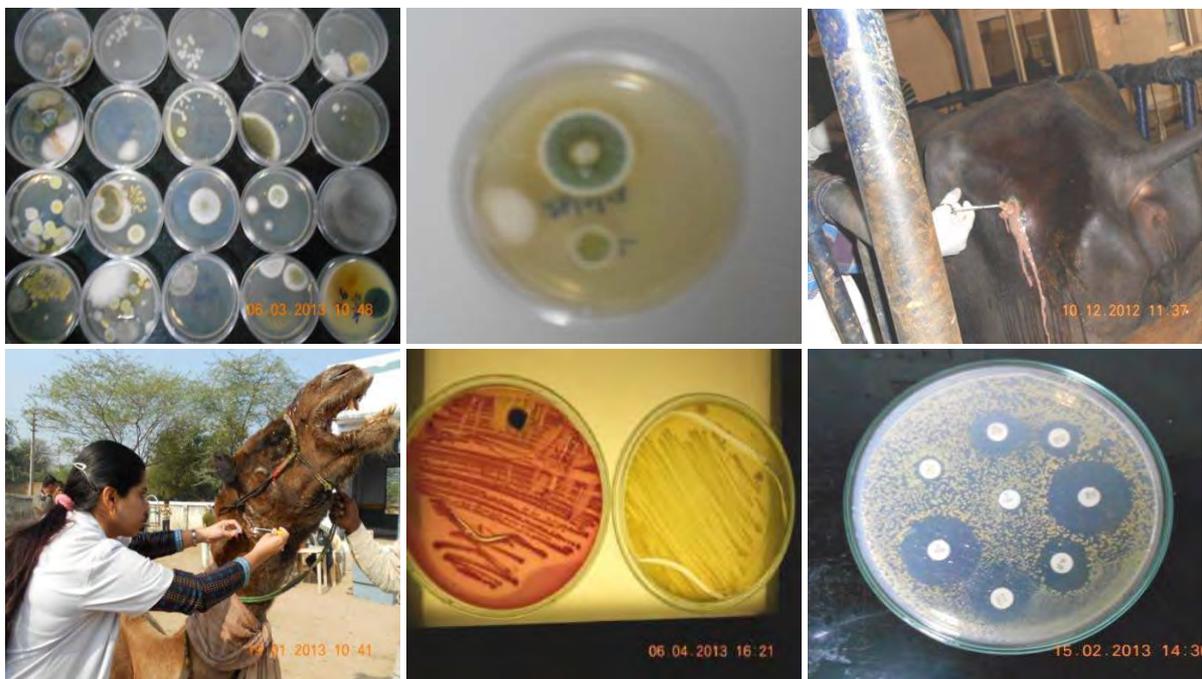
Project-8: Utilization of Azolla powder as a feed stuff for commercial broilers

One hundred and twenty old commercial broiler chicks were procured from a reputed poultry farm after having vaccinated against the Ranikhet disease (F1 Strain). Primarily, the chicks were wing banded and then kept in deep litter system under standard managerial and hygienic condition for one week. The chicks were given standard starter ration for first half of the week on plain paper and then in the chick feeder up to the end of the week. At the end of the first week, these chicks were weighed individually and randomly divided into five groups, each consisting of four replicates and nine chicks in each replicate. The birds were provided the dietary treatments till 49 days of age. The first group was provided Basal diet (without supplementation) Control (23% CP & 2800 K cal/kg ME till 21 days and 20% CP & 2900 k cal/ kg till the end of the experiment). The second group was provided basal diet replaced with 4.5% Azolla powder on dry matter basis. The third group was provided basal diet replaced with 5.5% Azolla powder on dry matter basis. Weekly body weight, body weight gain, feed consumption was recorded till 6 weeks of age. A metabolic trial was carried out after 6 weeks to study the effect of dried Azolla powder on nutrient retention. Six representative birds of each group were housed individually in metabolic cages for 6 days and excreta of individual birds was collected. The feed intake and weight of excreta was recorded. The analysis of feed and excreta was done to estimate Percent dry matter retention, percent crude protein retention and percent calcium and phosphorus retention. Serum Total Protein, Serum Uric acid, Serum Alkaline phosphatase (ALP), Serum Glutamate Oxaloacetate Transaminase, Serum Glutamate Pyruvate Transaminase were recorded after 3rd & 6th week of experimental study on representative 10 birds/ group. After 6 weeks of age, general immune response was studied by taking 10 birds from each treatment group and measuring important immunocompetence traits such as antibody response to sheep red blood cells (SRBC), 2-mercaptoethanol resistant antibodies (MER or IgG) and mercaptoethanol sensitive antibodies (MES or IgM) against SRBC and Cell mediated immune response to PHA-P. After 42 days of the experimental trial, four representative birds from each treatment group were randomly selected and slaughtered to study the gastrointestinal tract development (proventriculus, gizzard, small intestine, large intestine & caeca) and various slaughter traits. Statistical analysis and compilation of results is under process.

Project-9: Screening of superficial wound and skin infections in animals for bacterial and mycotic pathogens and their drug sensitivity pattern against commonly used antimicrobial agents

A total of 244 samples of wound and skin affections were collected from different species of cattle, buffalo, goats, sheep, horses, dogs, cats, camel and monkey irrespective of gender and age to screen the cases of superficial wounds and skin infections of animals for bacterial and mycotic causes from clinical cases and field in and around the Mathura city. Study involves

wounds of various types viz. horn abscess, gangrenous wound, chronic abscess, deep suppurative wounds, open, gun-shot, lacerated, abrasive, incised, ulcerated and post-operative wounds. Out of collected 244 samples, 7 samples were negative while 237 samples revealed presence of different species of bacteria as well as fungi. Microbiological investigation revealed isolation of strains of *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *E.coli*, *Klebsiella spp.*, *Protius*, *Bacillus*, *Clostridium*, *Streptococcus*, *Diplococcus*, *Micrococci* and few fungal pathogens such as dermatophytes and opportunistic fungi viz. *Aspergillus*, *Penicillium*, *Mucor* etc. Isolated bacterial strains were subjected to antibiotic sensitivity testing (ABST) against 22 antimicrobial discs i.e., Ampicillin (AMP), Amoxycillin, Ampicillin/ Sulbactam (A/S), Amikacin (AK), Erythromycin (E), Gentamicin (Gen), Kanamycin (K), Methicillin (MET), Norfloxacin (Nx), Penicillin-G (P-G), Ciprofloxacin (CIP), Chloramphenicol (C), Streptomycin (S), Tetracycline (T), Enrofloxacin (En), Vancomycin (Va), Ceftriaxone (CTR), Cefotaxime (CTX), Cotrimoxazole (Co-T), Gatifloxacin (GAT), Sparfloxacin (SPX), Clindamycin (CD), Colistin (CL) by disc diffusion method. Gatifloxacin, sparfloxacin, amikacin and gentamicin were highly sensitive drugs in most of cases, however other drugs were found resistant as they failed to produce any zone of inhibition against the tested microorganism while performing the ABST. *In-vitro* anti-fungal sensitivity testing did not reveal any sensitive anti-fungal drug among Fluconazole, Itraconazole, Ketoconazole, Amphotericin-B and Nystatin. Multi-drug resistant strains of *Pseudomonas aeruginosa*, antibiotic resistant strains of *Staphylococcus aureus*, *E.coli* and *Klebsiella* were observed. Hence, in current scenario of emerging antibiotic resistance in many bacterial genera, need of alternative therapeutic approaches such as application of herbal medication, ethno-veterinary medicine, bacteriophage therapy and panchgavya therapy should be looked for.



C. ACADEMIC RESEARCH

Veterinary Sciences and Animal Husbandry

S.No.	Title of the Thesis	Name of the Student	Name of the Guide	Subject
PhD				
1.	Evaluation of different varieties of maize for their composition, <i>In vitro</i> rumen fermentation and production performance in lactating cows	Dr. Shalini Vaswani	Dr. Ravindra Kumar	Animal Nutrition
MVSc				
2.	The study of PIT-1 gene polymorphism in Sahiwal cattle by using PCR-RFLP	Dr. Ankur Chauhan	Dr. Madhu Tiwari	Animal Genetics & Breeding
3.	Manipulation of dietary cation-anion difference to reduce nutrient deficiency in periparturient cows	Dr. Bokan Abhay Mohan Rao	Dr. Vinod Kumar	Animal Nutrition
4.	Effect of strategic mineral mixture supplementation on nutrient utilization and blood mineral profile of heifers	Dr. Vivek Prasad Gupta	Dr. Vinod Kumar	Animal Nutrition
5.	Effect of supplementing rumen-protected lysine and methionine on growth performance and nutrient utilization of growing Haryana cattle	Dr. Jai Kumar Singh	Dr. Debashis Roy	Animal Nutrition
6.	Studies on quality evaluation of some important edible byproducts of Barbari goats (<i>Capra hircus</i>)	Dr. Pramila Umaraw	Dr. Vikas Pathak	Livestock Products Technology
7.	Development and quality assessment of meat momos	Dr. Tanuja	Dr. Vikas Pathak	Livestock Products Technology
8.	Gross, histological and histochemical studies on the adrenal glands in prenatal goat (<i>Capra hircus</i>)	Dr. Satish Pathak	Dr. M.M. Farooqui	Veterinary Anatomy
9.	Gross, histological and histochemical studies on the pancreas in prenatal goat (<i>Capra hircus</i>)	Dr. Dharmendra Singh	Dr. Ajay Prakash	Veterinary Anatomy
10.	Circulating Estradiol 17 β and Progesterone <i>vis a vis</i> Nitric Oxide (NO) and Nitric Oxide Synthase (NOS) Levels Related to Estrus behaviour in Cycling Buffaloes and Cows	Dr. Shailaza Sharma	Dr. Rajesh Nigam	Veterinary Biochemistry

11.	Studies on semen quality, freezability and fertility performance of Murrah bull	Dr. Devender Singh	Dr. Vijay Singh	Veterinary Obstetrics and Gynaecology
12.	Studies on effect of different concentration of egg yolk and glycerol in Tris based extender on cryopreservation of Haryana bull semen	Dr. Vikas Sachan	Dr. Atul Saxena	Veterinary Obstetrics and Gynaecology
13.	Studies on different concentration of egg yolk and glycerol in tris based extender on cryopreservation of Bhadawari bull semen	Dr. Vipin Sonker	Dr. Atul Saxena	Veterinary Obstetrics and Gynaecology
14.	Pathology of cadmium induced toxicity in the rats with ameliorative effect of S-adenosyl methionine	Dr. Pratima Singh	Dr. A.K. Srivastava	Veterinary Pathology
15.	Status Of Pathological Lesions Vis A Vis Diagnostic Efficacy of different tests for <i>Mycobacterium avium</i> subspecies <i>paratuberculosis</i> (MAP) infection in adult goats	Dr. Shivam Chaturvedi	Dr. A.K. Srivastava Dr. S.V. Singh	Veterinary Pathology
16.	Studies on anthelmintic activity of <i>Xanthium strumarium</i> and <i>Calotropis gigantia</i> against gastrointestinal nematodes in sheep	Dr. Mithales Kumaree	Dr. Daya Shanker	Veterinary Parasitology
17.	Epidemiological and phytotherapeutic studies on gastrointestinal parasites of small ruminants	Dr. Kanojiya Dharamendra Hariprasad	Dr. Daya Shanker	Veterinary Parasitology
18.	Epidemiological and phytotherapeutic studies on gastrointestinal parasites of large ruminants	Dr. Amreesh Sachan	Dr. Daya Shanker	Veterinary Parasitology
19.	Binary mixture toxicity of Arsenic and Deltamethrin in Broiler chick & its amelioration with phytobiotics formulation	Dr. Vikram	Dr. Satish K. Garg	Veterinary Pharmacology and Toxicology
20.	Sub-acute co-exposure toxicity studies of environmentally relevant heavy metals on urogenital system in male rats	Dr. Shaikh Mohammed Zoheb Mohammed Ahmed	Dr. Atul Prakash	Veterinary Pharmacology and Toxicology
21.	Capacitation like changes in the spermatozoa during the process of cryopreservation of Barbari buck semen	Dr. Gunjan Baghel	Dr. S. Yadav	Veterinary Physiology
22.	Studies on effect of antioxidants on cryogenic manipulation in Bhadawari bull semen	Dr. Pavan Kumar Mittal	Dr. A. K. Madan	Veterinary Physiology

23.	Prevalence of verotoxic <i>E. coli</i> in meat and meat products from different sources in certain areas of Uttar Pradesh	Dr. Tanu Singh	Dr. Basanti Bist	Veterinary Public Health
24.	Epidemiological studies of Brucellosis in Cattle and Buffaloes in Mathura and adjoining areas of Uttar Pradesh and its Zoonotic significance	Dr. Pragati Swarnkar	Dr. Basanti Bist	Veterinary Public Health
25.	Isolation and characterization of verocytotoxic <i>Escherichia coli</i> in faecal samples, milk, milk products and animal handlers from certain areas of Mathura and Vrindavan	Dr. Charul Rajpoot	Dr. Udit Jain	Veterinary Public Health
26.	Occurrence of salmonella organisms in foods of animal origin(milk, meat, fish & egg) and water & their public health significance in Mathura District	Dr. Rakhi Sharma	Dr. Udit Jain	Veterinary Public Health
27.	Development and clinico-biomechanical evaluation of prosthetic limb in dogs	Dr. Mohd. Shiyad, K.K.	Dr. Vivek Malik	Veterinary Surgery and Radiology
28.	B-Mode ultrasonographic evaluation of teat in dry and lactating buffalos	Dr. Pramod Kumar	Dr. Sanjay Purohit	Veterinary Surgery and Radiology
29.	Studies on common dental affection in dogs	Dr. Rahul Kumar	Dr. R. P. Pandey	Veterinary Surgery and Radiology

College of Biotechnology (MSc)

30.	Comparative evaluation of different serological tests for diagnosis of caprine brucellosis	Ajay Singh	Dr. V.K. Gupta	
31.	Detection and Prevalence of Rotavirus Infection in Diarrhoeic Bovine Calves	Tripti Singh	Dr. Rashmi Singh	

Research 1: Evaluation of different varieties of maize for their composition, *In vitro* rumen fermentation and production performance in lactating cows

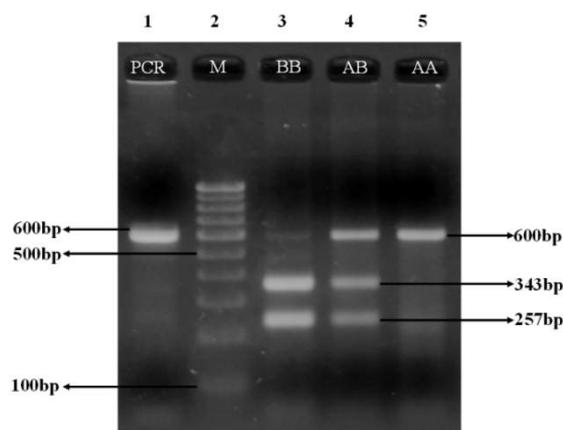
The present study was conducted to know the chemical composition, *In vitro* rumen fermentation pattern and performance of different maize varieties. Seeds of Sorghum (Purva) along with four normal maize varieties (HTHM 5101, DHM 117, HM 5 and Shaktiman/900M Gold) and three QPM varieties (HQPM 5, HQPM 7, HQPM 9/ Vivek) of maize procured from CIMMYT Centre, New Delhi were grown in different plots of ILFC, DUVASU, Mathura under same environmental and agronomic conditions. Fodder from these varieties was harvested at 45-50 days (pre-cob) and 80-90 days (post-cob) stage after sowing. Maize grains were also collected at post cob stage. The nutrient composition of Sorghum, different varieties of maize

fodder at pre-cob and post-cob stage and maize grain was found in the normal range. The variety DHM 117 at pre-cob stage exhibited higher values for CP (10.62%), EE (2.70%) and NFE (65.49%) whereas, the content of CF (16.16%) and TA (5.03%) was found lower in comparison to other varieties. The CP content decreased and the DM, CF, NDF, ADF, Cellulose and ADL content of different varieties increased at post-cob stage in comparison to pre-cob stage of fodder. The CP (14.06%), EE (8.97%), CF (3.37%) and TA (4.20%) of grains of DHM 117 variety was found higher in comparison to other maize grain varieties. The Ca (%), Fe (ppm) and Mn (ppm) was reported to be higher in the pre-cob and post-cob maize fodder than the grains of different varieties of maize. The Mn (ppm) content of HQPM 9 variety was found higher at both pre-cob (102.66) and post-cob (72.54) stage than other maize varieties (33.58 -55.56) and (25.92-52.02) at pre and post-cob stage respectively. *In vitro* rumen fermentation parameters of different varieties of maize fodder singly and in combination wheat straw+ maize fodder (50:50) and wheat straw + fodder+ concentrate (40:40:20) in different feeding systems were analyzed using *In vitro* gas production test with buffalo rumen liquor. The IVDMD (%) and IVOMD (%) was significantly ($P < 0.05$) higher in HQPM 7 and HQPM 9 varieties. The ammonia nitrogen (12.16 mg/dl) and PF (5.06) was significantly ($P < 0.05$) higher in DHM 117 variety. The microbial protein synthesis (mg) and the pH did not differ significantly ($P > 0.05$) among different varieties. The IVDMD (%) was significantly ($P < 0.05$) higher for HQPM 5 (53.79) and HQPM 7 (53.30) varieties when the different varieties were incubated along with wheat straw in 50:50 ratio. The pH and ammonia nitrogen did not differ significantly. The partitioning factor (PF) was significantly higher ($P < 0.05$) for variety Shaktiman (7.18) and lower for DHM 117 (4.28) variety. The IVDMD (%) and IVOMD (%) was significantly ($P < 0.05$) higher for HQPM 5, HQPM 7 and HQPM 9 varieties when the varieties were incubated with wheat straw and concentrate in 40:40:20 ratio. The pH, microbial protein synthesis (mg) and partitioning factor (PF) did not differ significantly among different varieties. Thus, under different feeding systems, the QPM varieties i.e. HQPM 5, HQPM 7 and HQPM 9 have shown better digestibility and other rumen fermentation parameters in comparison to other varieties. *In vitro* net methane (1.50 ml), methane per gm dry matter (7.47ml/g), and methane per gm digestible dry matter (14.13 ml/g DM) was significantly ($P < 0.05$) lower for DHM 117 variety as compared to other varieties with goat rumen liquor. Similarly net methane (3.27 ml), methane per gm dry matter (16.27 ml/g) and methane per gm digestible dry matter (16.86 ml/g DM) was also lower for maize grain of DHM 117 variety with goat rumen liquor. The milk yield (kg/d), 4% FCM milk yield (kg/d) and milk composition (%) (Fat, protein, lactose, total solid and SNF) of Sahiwal cows fed with different varieties of maize fodder was statistically similar at pre and post-cob stage. Nutrient intake and digestibility of different groups of cows fed with different varieties of maize fodder were studied at pre-cob and post-cob stages of fodder. During pre-cob stage, the DMI (kg), green fodder intake (kg) and total roughage intake (kg) was also significantly ($P < 0.05$) higher for DHM 117 variety. The DCP (g/d) and TDN (kg) was significantly higher for DHM 117 variety. Digestibility (%) of DM, OM and CP was significantly ($P < 0.05$) higher for DHM 117 variety. At post cob stage, DMI (kg), green fodder intake (kg) was significantly ($P < 0.05$) higher for DHM 117, HQPM 9 and HTHM 5101 variety. The DCP (g/d) was significantly ($P < 0.05$) higher for variety HTHM 5101. The TDN (kg) showed non-significant difference but, the TDN (kg/100kg

BW) and TDN (g/ kgW^{0.75}) was significantly ($P<0.05$) higher for DHM 117 variety. Digestibility (%) of DM and OM was significantly ($P<0.05$) higher for DHM 117, HM 5 and HTHM 5101 variety. From present study, it can be concluded that nutrient composition varies with different varieties grown in similar environmental and agronomic conditions. The methane production was least for grain and fodder of DHM 117 variety of maize. Milk yield and composition was not found to be significantly affected by different varieties of maize fodder while digestibility and intake of nutrients was found to be affected.

Research 2: The study of PIT-1 gene polymorphism in Sahiwal cattle by using PCR-RFLP

In the present study, identification of PIT-1 gene polymorphism and its association with milk production traits was undertaken in 77 Sahiwal cattle maintained at NDRI, Karnal by using PCR-RFLP technique. Amplification of DNA sample revealed 600 bp product and restriction digestion with *Hinf I* showed three types of genotypes, namely, AA (600 bp), AB (600, 343 & 257 bp) & BB (343 & 257 bp) genotypes. The frequency of BB genotypes was highest (64.98%) in all screened samples, followed by AB genotype (31.16%). However, the AA genotype was the least frequent (3.89%). The allelic frequency of PIT-1 A & B alleles were 19.48% and 80.51%, respectively. Association studies of PIT-1 gene with milk production traits showed that AFC, GP, DP & LP had non-significant variation among all the three genotypes over all four lactation. However, a significant difference ($P\leq 0.05$) was found among the three genotypes for total milk yield & milk yield at 300 days with AA genotype showing higher value than AB & BB genotypes in the first lactation. From present investigation, the *Hinf I*/PCR-RFLP revealed polymorphic pattern of PIT-1 gene in Sahiwal cattle and association studies showed significant effect of A allele on total milk yield and milk yield at 300 days.



PIT-1/Hinf I PCR-RFLP assay showing genotype pattern in 2.0% agarose gel; Lane 1: Undigested PCR product, 2: Marker (100bp ladder), 3: BB genotype (343 & 257bp), 4: AB genotype (600, 343 & 257bp), 5: AA genotype (600bp only)

Research 3: Manipulation of Dietary Cation-Anion Difference to Reduce Nutrient Deficiency in Periparturient Cows

The advanced pregnant animal's diets can be manipulated simply by adding relatively more anions or cations which affect blood buffering capacity and acidity. In present study, twelve Haryana cows in advanced pregnancy divided into 3 groups i.e. G1, G2 and G3 (n=4) experimental animals received diets containing +11, +21 and +31 mEq per 100 g DM DCAD.

Requirement of the animals were fulfilled by feeding basal ration containing concentrate mixture, maize fodder and wheat straw with supplementation of 83, 50, and 109g/d mineral mixture per cow in G1, G2 and G3, respectively. All experimental animals were maintained from -30 days pre-partum to +7days postpartum experimental period. Daily Feed intake and fortnightly body weights were not significantly different ($P>0.05$) in three groups. Feeding of +11 mEq/100 g of DM DCAD diets improved blood calcium levels in periparturient cows in their last month of pregnancy without affecting dry matter intake and balance of other minerals. Feeding of +21 mEq/100 g of DM DCAD diets provide sufficient buffer and mineral balance for pregnant animals and improve milk yield post calving. Feeding of diet higher than +31 mEq/100 g of DM DCAD raised blood pH more than 7.3 and leads to metabolic alkalosis. Feeding of manipulated DCAD did not adversely affect the reproductive health of cows in all three respective groups. It can be concluded that feeding of +11 mEq/100 g of DM DCAD diet during advanced pregnancy maintain blood Ca homeostasis from bone and however feeding of +21 mEq/100 g of DM DCAD diet can provide normal mineral balance and improve milk production in periparturient cows.

Research 4: Effect of strategic mineral mixture supplementation on nutrient utilization and blood mineral profile of heifers

The present study was to access the mineral status of different feed stuffs, animals and strategic mineral mixture supplementation on nutrient utilization, growth performance and blood biochemical in heifers. Commonly available feeds and fodders used for feeding of animals were assessed for mineral content. Dry roughage like wheat straw is found deficient in Ca (3.33%), P (52.00%), Cu (54.75%) and Zn (60%) than critical level. However green fodder like maize and sorghum is deficient in Na and Mn. Percent deficiency of Na in maize and sorghum was 16.67 and 73.33% respectively. Level of Mn deficiency in maize and sorghum were 42.83 and 73.83%, respectively. Leguminous green like berseem was found to be deficient in Na and deficiency level was 84.67% than critical level. Regarding cereal grain (barley, oat and wheat grain) were deficient in Ca, Na, Mn and Cu and level of deficiency were ranges between 67.33 to 84.00%, 46.67 to 83.33%, 3.25 to 20.00 and 7.50 to 11.25%, respectively. In present findings, cattle and buffalo of different stage of maturity and stage of production were assessed for their mineral status and plasma levels of different minerals were above the recommended critical level except Cu. In animal trail, eighteen heifers were randomly blocked into three (G1, G2 and G3) groups having six animals in each on body weight basis and fed for 60 days. The requirements of experimental animals were met by feeding concentrate mixture, green fodder, wheat straw (NRC, 2001). Experimental heifers either received a basal diet devoid of supplemental mineral mixture (G1) or supplemented with type 1 (G2) and type 2 (G3) mineral mixture. Effect of feeding type 1 and type 2 mineral mixtures on nutrient intake was recorded daily. However effect on body weight change and blood biochemical was recorded at 0, 15, 30, 45 and 60 days of mineral mixture supplementation. Supplementation of type 1 and type 2 mineral mixtures did not have any effect ($P>0.05$) on dry matter intake (DMI) and body weight change. In present findings supplementation of type 1 and type 2 mineral mixtures have significant effect ($p<0.05$) on Ca and Na absorption (gram/day). However, supplementation of

mineral mixture did not affect intake, absorption and faecal excretion of P and Mn. Feeding of type 1 and type 2 mineral mixtures in heifer have significant effect ($P < 0.05$) on intake, absorption and out go of Cu and Zn among three respective groups. Plasma Ca, Cu, Zn, Fe and Mn level was significantly affected ($P > 0.05$) by supplementation of mineral mixture and plasma level was found higher in group G2 and G3. Conversely, plasma level of Na and P was not affected by feeding type 1 and type 2 mineral mixtures. In present findings, supplementation of strategic area specific mineral mixture did not have any effect on liver function, immunity and antioxidant status of heifers fed on type 1 and type 2 mineral mixtures. In conclusion, feed stuffs and animal's blood were deficient in vital minerals and supplementation of type 1 and type 2 mineral mixtures in heifers help to improve their plasma mineral status without altering nutrient utilization, growth performance and blood biochemical.

Research 5: Effect of supplementing rumen-protected lysine and methionine on growth performance and nutrient utilization of growing Haryana cattle

Present study was conducted to see the effect of supplementing rumen protected methionine (RPM) and rumen protected lysine (RPL) on growth performance, blood biochemical and nutrient utilization of growing Haryana heifers. Eighteen growing Haryana heifers were randomly distributed into three groups i.e. C, T1 and T2 on body weight basis. Chemical compositions of all the dietary components were found to be in normal range. Animals in T1 and T2 group were supplemented with 1 g RPM, 5 g RPL and 2 g RPM, 10 g RPL along with basal diet. The average body weights (kg) and metabolic body weight ($\text{kg W}^{0.75}$) of heifers were not significantly different ($P > 0.05$) within groups at all the fortnights. Animals of T1 and T2 groups showed significant increase in fortnightly body weight gain and ADG in 4th and 5th fortnight, respectively as compared to control. Though DMI (Kg) did not differ significantly within groups, DMI% decreased ($P < 0.05$) significantly in both the treatment groups at 1st, 4th, 5th and 6th fortnight. FCR was found lower ($P < 0.05$) for T1 group as compared to control at 3rd and 4th fortnights whereas, both T1 and T2 groups were lower ($P < 0.05$) in FCR in comparison to control at 5th fortnight. Body condition score (BCS) of animals were found similar in all the groups throughout the experimental period. The overall average BCS ranged from 2.17 to 3.80. The total protein ranged from 7.22 to 7.78 (g/dl) in control, 6.59 to 7.68 (g/dl) in T1 and 6.31 to 7.10 (g/dl) in T2 group, respectively. The plasma albumin concentration of experimental animals varied from 3.42 to 3.43 (g/dl) in control, 3.06 to 3.46 (g/dl) in T1 and 3.10 to 3.39 (g/dl) in T2 groups. Initially Immunoglobulin concentration was found to be 29.60, 29.60 and 29.58 mg/dl in control, T1 and T2 groups, respectively. Final values at the end of third month of the trial were 29.67, 29.69 and 29.72 mg/dl respectively. Though, AST activity of T2 (78.03 IU/l) was significantly higher ($P < 0.05$) than control (61.12 IU/l) at the end of second month of trial, ALT and AST activities were statistically similar. Though BUN concentration of treatment groups was lower than control group during whole trial period but the difference was not statistically significant. Average plasma creatinine concentration varied from 0.80 to 1.47 mg/dl in control, 0.38 to 0.75 mg/dl in T1 and 0.41 to 0.57 mg/dl in T2 groups, respectively. At the end of trial, the creatinine concentration was found lower ($P < 0.05$) in both treatment groups as compared to control groups. Digestibility coefficients of all the nutrients i.e. DM, OM, CP, EE, CF, NFE, NDF

and ADF were found similar in treatment and control groups. Though digestibility coefficient of CP were higher in both the treatment groups than control, the difference was not statistically significant. Similarly digestible nutrient intake was also found similar in control and treatment group. In conclusion, supplementing basal diet with rumen protected lysine and methionine was found beneficial in terms of weight gain and feed efficiency without affecting protein metabolism, liver function and nutrient digestibility.

Research 6: Studies on quality evaluation of some important edible byproducts of Barbari goats (*Capra hircus*)

The production of edible byproducts is concomitant with meat production. The present utilization of edible organs is much lower than its potential. Edible byproducts of Barbari kids constitute about 3% of the live weight of an animal of which liver contributed maximum (1.47%). This could increase the saleable cost of animal by 6.94%. Physicochemical, proximate, mineral, fatty acid profile, texture, colour, and microbiological analysis was conducted taking *Longissimus dorsi* muscle as reference. Physicochemical properties revealed a higher pH values in all organs as compared to reference muscle. Cooking loss varied significantly ($p < 0.05$) among the organs. Maximum cooking loss was observed in kidneys (34.67%). Proximate analysis of each organ was conducted to find out the nutritive value. The moisture, protein, fat, ash, carbohydrate and energy values differed significantly. Except liver all organs evinced higher moisture values than muscle. Protein content of offals was significantly ($p < 0.05$) lower than that of muscle. Liver and heart exhibited high protein content in comparison to other organs (19.66% and 16.08%). Fat content was found to be highest in brain followed by heart (8.49%). Ash content was significantly ($p < 0.05$) highest in spleen (3.30%) whereas carbohydrate value was highest for liver (1.76%) and brain (1.85%). Percent energy value was significantly ($p < 0.05$) different among all organs studied. Liver had the highest energy value (133.8%). Mineral profile analysis revealed significant difference between muscle and organs and even differed significantly among them. Kidney had highest sodium content (202.39mg/100g), potassium content was highest in testicles (362.61mg/100g). Copper, iron and zinc were found to be highest in liver (6.97mg/100g), spleen (31.1661mg/100g) and muscle (4.1561mg/100g). Fatty acid contents displayed significant difference among organs and muscles. Each organ had its characteristic fatty acid content. Saturated fatty acid content differed significantly and spleen evinced the highest value (54.95%) although monounsaturated fatty acid content was highest in muscle (40.36%). Polyunsaturated fatty acids were maximum in liver (22.54%). PUFA/SFA ratio of liver (0.49) was similar to the recommended level. Spleen, brain and testicles showed favorable n6/n3 ratio. All edible byproducts exhibited characteristic textural and color parameters. Liver required the maximum shear force and work of shear (121.48N and 32.19 kg-sec). The total viable count (TVC), Coliform count showed slight differences for all organs studied. The *staphylococcus* counts were low with little differences among organs.

Research 7: Development and quality assessment of meat momos

The present study was conducted for the development and quality assessment of health oriented meat Momos. The meat level and cooking time were optimized on the basis of physicochemical parameters, colour and textural profile and sensory attributes. The 50% meat level

with 30 minutes cooking time was selected with significant ($P < 0.05$) difference in cooking yield, moisture content, protein content, and non-significant difference in color and textural profile. The optimized product was improved with the incorporation of three different percent of corn and potato starch (4%, 6% and 8% separately) in the dough during the preparation of chicken momos. The chicken momos containing 6% corn starch in dough was selected as the best treatment on the basis of physicochemical, color and textural parameters and sensory attributes. There was significant ($P < 0.05$) difference observed in cooking yield, moisture content, protein content, fat content, carbohydrate and energy values. The mean L^* , and a^* values were differ significantly ($P < 0.05$) and highest for 6% corn starch but b^* value differ non-significantly and increased with potato starch. The textural parameters i.e. hardness, adhesiveness, springiness, cohesiveness, gumminess and chewiness values increased slightly in a non-significant manner with increased level of corn as well as potato starch. Potato starch showed more hardness, gumminess and chewiness values than corn starch. The mean appearance, flavour, texture, mouth coating and overall acceptability values were significantly ($P < 0.05$) higher for momos with 6% corn starch. Further study was conducted by replacing the chicken meat with four different variants of fish meat i.e. 25%, 50%, 75% and 100% for enhancing the nutritional value of meat momos. There was no significant difference was found in mean pH value, cooking yield, weight gain and water activity but significant difference ($P < 0.05$) was observed in mean moisture content, fat and ash content with increased level of fish. The mean L^* , a^* and b^* values differ in non-significant manner in which lightness and yellowness slightly increased with fish meat but redness decreased. The hardness, springiness, gumminess and chewiness values decreased but adhesiveness and cohesiveness values increased non-significantly with fish meat incorporation. The mean flavour, texture, meat flavor intensity, mouth coating and overall acceptability values were highest for F3 (75%) in comparison to other treatments. Meat Momos prepared with the incorporation of 75% fish meat were finally selected to study the quality characteristics at 0, 3, 6, 9 and 12 day of storage with control and 100% fish meat level at refrigeration temperature ($4 \pm 1^\circ\text{C}$). The mean pH value was non-significantly higher for $F4 > F3 > S2$. The mean values for TBA and FFA increased in highly significant ($P < 0.01$) manner with the advancement of storage period and found to be highest in F4. The Total plate count, Psychrophillic count and Yeast and mould count were significantly ($P < 0.01$) higher but within the safety limits upto 9th day of storage. *Coliforms* and *Salmonella* were not detected during whole storage period in any treatment due to steam cooking and hygienic handling during processing and storage. The scores for all sensory parameters including overall acceptability were significantly ($P < 0.05$) higher for F3 as compared to F4 and S2.

Research 8: Gross, histological and histochemical studies on the adrenal glands in prenatal goat (*Capra hircus*)

The present study was conducted on the 24 healthy and normal embryos/foeti of non-descript goat (*Capra hircus*) varying from day old to 150 days of gestation. The embryo/foeti were assigned into three groups according to their gestational ages; Groups I (0-50 days), II (51-100 days) and III (101-till term). At 38 days of gestation the primordia of right and left adrenal gland were observed as a pea shaped spherical swelling located just cranial to the respective

metanephros. Biometrical studies revealed the increase in the all parameters of the adrenal gland with the advancement of age. Adrenal glands were harvested first grossly at 50 days of gestation. A very thin reticular loosely arranged discontinuous capsule was observed in Group-I. The primordium of the adrenal gland observed at 38 days of gestation composed of cluster of loosely arranged cells in the form of indistinct whorls in the close proximity of cranial extremity of metanephros. Two types of cells, large and small cells were observed in the primordium. Reticular and collagen fibers were first noticed in present study at 50 days and 55 days respectively. At 69 days of gestation the cells just below the capsule were darkly stained than other cortical cells referred as definitive cortex (zona glomerulosa). Zona fasciculata clearly differentiated at 130 days of gestation. In the present study only two zones of adrenal gland (zona glomerulosa and zona fasciculata) were observed zona reticularis were not observed even in full term of foetus. Degeneration of foetal cortical cells was a constant phenomenon throughout the gestation. Migratory future medullary cells were characterized by spherical vesicular nuclei and their cytoplasm was highly eosinophilic observed at 42 days of gestation. At 60 days of gestation they were concentrated in the center and arranged in short chains or small cluster surrounded by sinusoidal capillaries. At 101 days of gestation central region of parenchyma showed loosely arranged medullary cells. At this stage two types of cells were encountered in the medulla viz: large A (adrenalin) cells or adrenal secreting cells and small NA (noradrenalin) or noradrenalin secreting cells. The extra capsular and intra capsular accessory adrenal nodules were observed at 55 days, 60 days and 76 days of gestation and at 55 days, 60 days, 91 days, 107 days and 115 days of gestation respectively, whose histomorphological structure was similar to adrenal cortex. Intensity of PAS reaction increased in connective tissue of adrenal capsule as the age advanced. The cytoplasm of foetal and definitive cortical cells exhibited moderate to weak PAS reaction. Cytoplasm of medullary cells exhibited moderate PAS reaction. Cytoplasm of foetal cortical cells and definitive cortex showed slight reaction for lipids but showed moderate reaction as age advanced. Connective tissue of capsule showed intense to moderate reaction for AMPS. The cytoplasm of foetal cortical cells and definitive cortical cells showed weak reaction for AMPS which became intense as age advanced. Cytoplasm of medullary cells showed moderate to intense reaction for AMPS but showed weaker reaction after 130 days onwards. The wall of sinusoids, trabeculae and cytoplasm of degenerating cells showed intense reaction for AMPS. Connective tissue of capsule showed moderate acid and alkaline phosphatase reactions, whereas foetal cortex showed weak acid and alkaline phosphatase reactions. Nuclei of mesenchymal cells and differentiating fibroblast in the capsule showed moderate fuelgen reaction, whereas nuclei of cortical (foetal and definitive) cells and medullary cells showed weak reaction.

Research 9: Gross, histological and histochemical studies on the pancreas in prenatal goat (*Capra hircus*)

The present study was conducted on the 24 goat foeti of either sex ranging from 42 days to full term gestation. The material was divided into early prenatal (0 to 50 days), mid prenatal (51 to 100 days) and late prenatal (101 to till term) periods. After recording morphometrical parameters the tissue were fixed in various fixatives for histological and histochemical studies.

Morphometry was not noticed in early prenatal period due to very small size of pancreas. In all goat foetuses the pancreas lied in the abdominal cavity partly on right and partly on left side of median plane. Its left and right lobes were creamish white in color and were fused to form an irregularly quadrilateral mass. From 53 days the topographic location of foetal goat pancreas to adjacent organs was changes. The biometric parameters via; weight, length and width of the pancreas were significantly increased with the advancement of foetal age.

At 42 and 44 days gestation the primordium of fetal goat pancreas lied in close vicinity of developing duodenum and abomasum. Initially the parenchyma consisted of pancreatic tubules lined by simple cuboidal, columnar and stratified epithelium with spheroid or spherical nuclei. At various places, particularly the end tubules formed tubular buds. In addition to these free bud cells were also found in the intertubular areas. From 69th day of gestation the parenchyma began to divide in to lobes and lobules. With the advancement of foetal age occurrence of tubules, buds and free buds cells gradually decreased. Up to 59 days gestation the reticular fibers, collagen fibers and elastic fibers were absent in foetal goat pancreas. Fine reticular fibers along with fibroblasts were first observed at 69 days of gestation. From 76 days onwards reticular fibers and fibroblast were more pronounced in capsule, interlobar and interlobular areas. Moreover, these encircled the tubules, buds, acini, islets and blood vessels. Beyond this the reticular fibers gradually became coarser with the increase in age of foetus. Fine collagen fibers were seen around vicinity of blood vessels at 115 days and distinct collagen fibers were observed at 118 days of gestation.

The beginning of the process of acini formation in the fetal goat pancreas was first observed at 76 days of gestation where cells of several buds became loosely arranged and their peripheral cells began to arrange in the form of either a complete or a part of circle to form a central lumen. From 115 days onwards the cytoplasm of few acinar cells around the nucleus had a little bluish tinge. From 132 to full term fetus the pancreas was chiefly formed by developed acini, however at few places some immature acini were also found. From 115 days centroacinar cells were seen in few acini. At 76 days of gestation it was observed that the ducts were originated by the branching of tubules. The differentiation of the duct from tubules gradually became more pronounced with the advancement of fetal age. The lining epithelium of the smaller ducts was simple cuboidal having spherical and spheroidal vesicular nuclei with *eosinophilic cytoplasm*. However, larger ducts were lined by a single layer of low columnar or cuboidal cells. Occasionally at few places, the ducts were either lined by two layers of cuboidal cells or by pseudo stratified epithelium.

At 42 and 44 day of gestation the endocrine part of foetal goat pancreas was seen in the close vicinity of tubules in the mesenchyme. The cytoplasm of the cells of these developing islets of Langerhans was relatively darker eosinophilic than the cytoplasm of the mesenchymal and tubular epithelial cells and gave them muddy appearance. The endocrine part was developed by two methods, the first was direct proliferation of tubular bud cells, second tubules enveloped the blood vessels and whole mass proliferated and differentiated into endocrine cells. Up to 56 days the islets were generally found in apposition with the tubular parenchyma but at some places these began to separate from the tubules and partially or fully encircled by

the blood capillaries. Distinct capsule around the islets was observed at 76 days onwards which was made up of reticular fibers, fibroblasts and mesenchymal cells. From this stage an empty space was usually found between its capsule and islets. The average diameter and occurrence of islets gradually increased with the advancement of foetal age. Generally central cells of islets were loosely arranged than peripheral parts. Up to 69 days the blood vessels were found within the islets as well as at its periphery beyond this day of gestation the blood vessels were absent but free erythrocyte were observed in some stages. From 87 days the islets chiefly consisted of larger dark eosinophilic spheroid and polyhedral cells with large spherical or oval vesicular nuclei. In addition to these the islets contained some smaller light colored cells which had relatively darker spheroid and oval nuclei. These dark and light color cells were alpha and beta cells, respectively. As age advanced the percentage of beta cells were increased and scattered in the whole islets.

In all the structural components (Tubules cells, bud cells, islets cells, acinar cells, pancreatic duct cells, mesenchymal cells, stromal tissue and wall of blood vessels) of foetal goat pancreas showed positive reaction for glycogen, mucopolysaccharides, acid mucopolysaccharides and lipid in mid and late prenatal period except in the stromal tissue where lipids were almost absent. In both groups the reaction for alkaline phosphate in mesenchymal cells, islets and acinar cells exhibited mild reactions whereas the stromal tissue and wall of blood vessels showed mild to moderate and moderate amount of this enzyme, respectively. The nuclei of the cells of all structural components in goat foetal pancreas showed weak reaction for DNA whereas these showed negative reaction of acid phosphatase.

Research 10: Circulating Estradiol 17 β and Progesterone *vis a vis* Nitric Oxide (NO) and Nitric Oxide Synthase (NOS) Levels Related to Estrus Behaviour in Cycling Buffaloes and Cows

The present study was designed to measure the circulating levels of Estradiol-17 β and Progesterone *vis-à-vis* Nitric Oxide (NO) and Nitric Oxide Synthase (NOS) levels at and around estrus in cycling Sahiwal cows and Murrah buffaloes. Blood samples were collected -2,-1, 0, +1, and +2 days of estrus cycle of cycling animals and analyzed for NO, NOS, Estradiol-17 β and Progesterone levels. The findings of the study revealed gradual increase in NO levels from day -2 to day 0 and then sharp fall up to day +2 in cows where as gradual decrease from day -2 to day +2 of estrus cycle in buffaloes. The profile of NOS concentration at and around estrus showed similar pattern as exhibited by NO in both cattle and buffaloes. The levels of Estradiol-17 β progressively increased from day -2 and peaked at day of estrus and then declined sharply to day +2 in both the animals and the pattern was similar to those of NO and NOS. The circulating levels of NO, NOS, and Estradiol-17 β were observed to be higher in buffaloes compared to cattle except progesterone. The present study establishes the data on NO, NOS, Estradiol-17 β and progesterone at and around estrus in cattle and buffaloes and that is of academic as well as practical importance for clinical and experimental interpretations.

Research 11: Studies on semen quality, freezability and fertility performance of Murrah bulls

This experiment was designed to compare GEYT extender with GEYC extender for cryopreservation of Murrah bull semen. For this purpose, ejaculates were collected from three

Murrah bulls using artificial vagina at biweekly interval. Semen ejaculates were diluted (80×10^6 motile spermatozoa/ml) in GEYT and GEYC extender. Diluted semen was filled in straws, equilibrated for 5 hrs at 4°C , freezing was carried out in Biological freezer for 7.25 minutes and then stored in the liquid nitrogen. Thawing was performed after 24 hrs. of storage, at 37°C for 45 sec. Progressive motility, live spermatozoa, abnormal spermatozoa, plasma membrane integrity and acrosomal integrity were assessed at different stages (half dilution of semen, full dilution of semen, end of equilibration and post-thawing). Amongst the two extenders used, GEYT and GEYC there was no significant difference found. To further evaluate the breeding performance of bulls, In-Vitro fertility test (IVF) was conducted by co-incubating fresh semen with zona free oocytes of Golden hamster (Zona Free Hamster Ova Penetration Test). The penetration rate and penetration index were in the range of 90.62 to 100.00 per cent and 1.40 to 5.24. The conception rate was in range of 46.66 to 66.66. These tests further verify the fertilizing ability and quality of individual bull semen.

Research 12: Studies on effect of different concentrations of egg yolk and glycerol in tris based extender on cryopreservation of Hariana bull semen

This experiment was designed to study the effect of different concentrations of egg yolk and glycerol along with effect of two different thawing protocols on cryopreservation of Hariana bull semen. For this purpose, ejaculates were collected from four Hariana bulls using artificial vagina at biweekly interval. Semen ejaculates were splitted into 6 equal parts to do dilution with GEYT having six different combinations of egg yolk and glycerols i.e. 5% glycerol with 12% egg yolk, 5% glycerol with 16% egg yolk, 5% glycerol with 20% egg yolk, 7% glycerol with 12% egg yolk, 7% glycerol with 16% egg yolk, 7% glycerol with 20% egg yolk upto 100 millions sperms/ ml. Diluted semen was filled in straws, equilibrated for 5 hrs at 5°C , kept in biological freezer for 7.25 minutes and then stored in liquid nitrogen. Thawing was performed after 24 hrs of storage at 37°C for 45 seconds and also at 50°C for 15 sec. Live spermatozoa, progressive motility, plasma membrane integrity, acrosomal integrity and abnormal spermatozoa were evaluated at different stages of cryopreservation (After dilution, after equilibration and after thawing). Amongst the three egg yolk concentrations, 20% egg yolk and 16% egg yolk were found better as they preserve the maximum seminal attributes after thawing consider for the study better than 12% egg yolk with significant difference. Simultaneously amongst two glycerol concentrations, 7% glycerol proved better than 5% glycerol in preserving all seminal characters up to thawing. Amongst two thawing protocols used, 50°C for 15 sec showed better results regarding seminal characters than 37°C for 45 sec at post thaw.

Research 13: Studies on effect of different concentrations of egg yolk and glycerol in tris based extender on cryopreservation of Bhadawari bull semen

This experiment was designed to study the different concentration of egg yolk and glycerol along with effect of different thawing protocols on cryopreservation of Bhadawari bull semen. For this purpose, ejaculates were collected from four Bhadwari bulls using artificial vagina at biweekly interval. Ejaculates which confirms the basic criteria for cryopreservation were split into 6 equal parts fpr dilution with GEYT having six different combinations of egg yolk and glycerols i.e. 5% glycerol with 12% egg yolk, 5% glycerol with 16% egg yolk, 5% glycerol

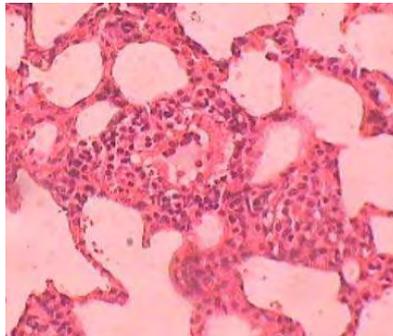
with 20% egg yolk, 7% glycerol with 12% egg yolk, 7% glycerol with 16% egg yolk, 7% glycerol with 20% egg yolk in order to achieve a final dilution of 100 millions sperms/ ml. Diluted semen was filled in straws, equilibrated for 5 hrs. at 5°C and were kept in biological freezer for vapour freezing completing in 7.25 minutes. The cryopreserved samples were then stored in liquid nitrogen. After 24 hr of storage in liquid nitrogen the straws were thawed at 37°C for 45 seconds and also at 50°C for 15 sec. Parallel straws were thawed at two different thawing protocols and 8 observations from each bull (8×4=32) were evaluated for Live spermatozoa, progressive motility, plasma membrane integrity, acrosomal integrity and abnormal spermatozoa at different stages of cryopreservation (After dilution, after equilibration and after thawing). Amongst the three egg yolk concentrations, 20% egg was found better in preserving the semen character at all stages of cryopreservation and thawing. Amongst two glycerol concentrations, 7% glycerol proved better than 5% glycerol in preserving all seminal characters up to thawing. Amongst two thawing protocols, 50°C for 15 sec showed better result than 37°C for 45 sec at post thaw. Thus best combination was 20% egg yolk and 7% glycerol with thawing of semen at 50°C for 15 sec.

Research 14: Pathology of cadmium induced toxicity in the rats with ameliorative effect of S-adenosyl methionine

For this purpose a total of 72 rats were randomly divided into four groups comprising 18 rats in each. Cadmium chloride was given @ 200 mg/L in distilled water in rats of group-II and group-IV and S-adenosyl methionine @ 1 mg/kg body weight in distilled water in rats of group-III and group-IV daily by oral route for 90 days. The rats of group-I were kept as control. At the intervals of 30, 60 and 90 days post study of various parameters were carried out.



Liver showing paleness and mottling on the surface in the rats of group-II on day 90.



Lung showing perivascular cuffing in the rats of group-II on day 90. (H&E 400X)



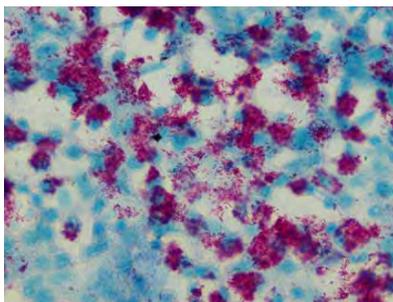
Lungs showing small to large grayish white nodules protruding on the surface in the rats of group-II on day 90

The rats of group-II fed cadmium @ 200mg/L distilled water grossly revealed pale and occasional pinpoint hemorrhages on the dorsal surface of liver. Lungs revealed congested and edematous with grayish nodules. Kidney and testis showed mild congestion. Microscopically, liver showed cellular swelling to vacuolization and coagulative necrosis. Lungs revealed mild congestion of alveolar capillaries with extravasations of erythrocytes in the lumen, lymphoid aggregation in the alveolar septa and around bronchi and bronchioles with mononuclear cell infiltration. Necrotic changes in tubules, sub acute interstitial nephritis in kidney. Heart showed

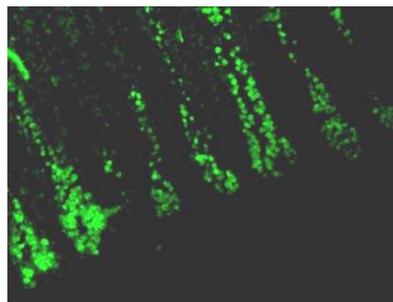
vacuolization and separation of cardiac myofibres and haemorrhages. Intestinal mucosa revealed hyperplasia of goblet cells, degeneration and necrosis of villous epithelium. Brain showed congestion of blood vessels in piamater and choroid plexus of ventricles, neuronophagia, spongiosis and encephalomalacia. Testis showed depletion of spermatogonial cells of seminiferous tubules. The lungs of three rats of groups II on day of 90 also revealed the lesion of pneumocyto-carcinoma featured by presence of large, flat, pleomorphic squamous type cells filling the alveolar lumen having hyper chromatic nuclei. Similar but mild morbid lesions except pneumocyto-carcinoma and encephalomalacia were recorded in rats of group-IV treated with S- adinosyl methionine @ 1 mg/kg body weight orally as compared to the rats of group II.

Research 15: Status of Pathological Lesions Vis-a-Vis Diagnostic Efficacy of Different Tests for *Mycobacterium avium* subspecies *paratuberculosis* (MAP) Infection in Adult Goats

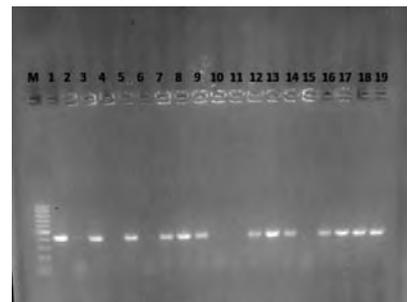
Understanding pathogenesis during progressive stages of infection by *Mycobacterium avium* subsp. *paratuberculosis* (MAP) and finding suitable methods for its diagnosis is the key to the control of Johne's disease in animals. In this study, the pathological lesions and the diagnosis of Johne's disease in goats is investigated using histopathological (HP) examination, Acid Fast



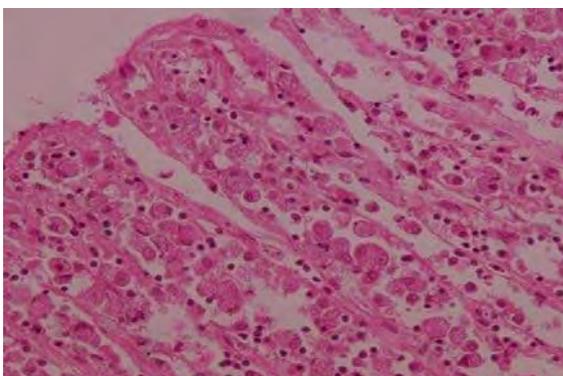
Mesenteric lymph node showing pink colour acid fast bacilli individually or in clusters or individually in epithelioid cells. (Ziehl Neelsen 1000X)



Epithelioid cells containing MAP showing green fluorescence in lamina propria of villi in terminal ileum. (FAT 100X)



Mycobacterium avium subsp. *paratuberculosis* specific amplicons (413 bp) by PCR using IS900 specific primers. Lane M: 100 bp DNA ladder, Lane 1: Positive control; Lane 2-19: test DNA samples



Intestine showing Infiltration of lymphocytes, macrophages and epithelioid cells forming indistinct granuloma. (H&E400X)



Small intestine showing velvety thickening with folded mucosa

Staining (AFS) of tissue sections, immunofluorescent test, tissue PCR and culture. These tests were carried out on 74 paired tissue samples of intestine and mesenteric lymph nodes. The gross lesions were mainly observed at the terminal ileum especially at ileo-caecal valve and the mesenteric lymph nodes. Histopathological examination of routine stained tissue sections from the 74 ilea and corresponding lymph nodes revealed variable grade of lesions of JD in 37 (50%) ilea and 21(28.40%) mesenteric lymph nodes. In general, the affected part of the intestine revealed degeneration and partial to complete denudation of lining epithelial cells forming naked villi. The villi exhibited variable changes that included dilated lacteals, villous distortion and thickening and fusion of villi. At places, the villi were shortened, thin and atrophied. Histologic lesions were classified into four grades from grade 1 (least severe) to grade 4 (most severe) on the basis of types and density of cellular infiltrate (lymphocytes, macrophages and epithelioid cells). In AFB staining, 16 (21.60%) and 10 (13.50%) out of 74 paired cases of intestine and MLN respectively, revealed presence of acid fast pink colour bacilli individually or in clusters in the epithelioid cells indistinguishable from *Mycobacterium Avium paratuberculosis*. Thirteen (17.56%) and 9 (12.16%) out of 74 paired tissue samples of intestine and MLN respectively were found positive in fluorescent antibody test. Eleven (14.86%) and 7 (9.40%) cases of intestine and mesenteric lymph nodes were found positive by PCR (IS900). Culture was positive in 7 (9.50%) and 8 (10.81%) cases out of 74 paired tissue samples of intestine and MLN respectively. In present study, sensitivity of histopathology (H&E staining) was found to be more than the any other test for diagnosis of MAP infection in goats. Sensitivity of ZN staining was 100% in comparison to PCR (69.23%). The strength of agreement the ZN staining and FAT was considered to be very good. Sensitivity of FAT was 90.91% in comparison to ZN staining (76.92%). The strength of agreement between the FAT and PCR was considered to be very good. Sensitivity of FAT was 100% in comparison to PCR (81.82%). Bacterial culture showed poor sensitivity. There was no significant difference between the sensitivity of ZN staining, FAT and PCR in grade II, III and grade IV lesions. In grade I lesions, histopathologic H&E staining based diagnosis was found to be more sensitive followed by ZN staining. Histopathology was found to be a better indicator of paratuberculosis infection in goat.

Research 16: Studies on anthelmintic activity of *Xanthium strumarium* and *Calotropis gigantea* against gastrointestinal nematodes in sheep

The *In vitro* anthelmintic activity of methanol, ethyl acetate and chloroform extracts of *Xanthium strumarium* (leaves) and *Calotropis gigantea* (leaves) against the GI nematodes in sheeps were evaluated via egg hatch test (EHT) and larval development test (LDT). Distilled water and albendazole were used as negative and positive control respectively for test. Percentage efficacy and ED₅₀ value were evaluated by using log probit analysis using SAS 9.2. Ethyl acetate and chloroform extracts of *Xanthium strumarium* at 50 mg/ml concentration had 100% egg hatch inhibition but methanol extract 91.4%. The ED₅₀ values for ethyl acetate, chloroform and methanol extracts of *X. strumarium* were calculated 0.83, 0.79 and 1.21mg/ml. The ethyl acetate and chloroform extracts of *Calotropis gigantea* was found highly effective as inhibited 100% egg hatching at 50 mg/ml and above concentration. In methanol extract of *C. gigantea* at 50 mg/ml concentration 89.4% egg hatch inhibition was recorded. The ED₅₀ values for ethyl acetate,

chloroform and methanol extracts of *C. gigantia* calculated for ovicidal activity and were found 0.86, 0.87 and 1.13mg/ml respectively. In LDT dose dependent larval development inhibition was reported. The methanolic extract of *Xanthium strumarium* showed 100% larval development inhibition at the concentration of 25 and 50 mg/ml and above concentration. Ethyl acetate extract was secondly effective showing 100% efficacy against larval development at 50 mg/ml concentration. The minimum larvicidal effect found in chloroform extract at 50 mg/ml concentration 96.4%. The ED₅₀ values for methanol, ethyl acetate and chloroform extracts of *X. strumarium* were calculated 1.01, 0.87 and 0.87 mg/ml respectively. Results revealed ethyl acetate extract of *Calotropis gigantia* was most effective against larval development showing 100% larval development inhibition at 25, 50 and 100 mg/ml concentration. Methanol extract at 100 mg/ml concentration exhibited 98.2% and chloroform extract at 100 and 50 mg/ml concentration showed 100% larval development inhibition. The calculated ED₅₀ values for ethyl acetate, methanol and chloroform extracts of *C. gigantia* for larval development inhibition were 0.79, 1.00 and 0.86 mg/ml, respectively.

Research 17: Epidemiological and phytotherapeutic studies on gastrointestinal parasites of small ruminants

Out of 1869 animals (939 sheep and 930 goats) examined, 1606 animals were found to be affected with either one or more helminthic infection. Goats were found to be more affected (86.34% with 810 positive cases) than sheep (84.45% with 793 positive cases). Adults (87.08% adult sheep and 85.55% adult goats) were found to be more prone (78.19% young sheep and 80.50% young goats). Highest endoparasitic prevalence was seen in August month in both sheep and goat. The highest and lowest EPG values were observed in May and February months for both sheep and goat species, respectively. The highest EPG values for adult, young one and male sheep were observed in May, August and June months, while lowest EPG output was observed in February month. However, adult, young and male goat showed highest and lowest EPG values during May, June, May and February, December, December months, respectively. Regarding season wise prevalence, maximum and minimum EPG were observed during pre monsoon and winter seasons, respectively in both species regardless of the age and sex. Coproculture revealed *Haemonchus* to be the most prevalent species affecting both sheep and goat in the studied area followed by *Trichostrongylus* spp., *Strongyloides* spp. and *Oesophagostomum* spp. Regardless of individual species, OPG revealed highest incidence of coccidiosis during August and September months in sheep and goats, respectively, while the lowest incidence was observed during April and March months. The anthelmintic potential of three medicinal plants viz., *Eucalyptus globules*, *Ocimum sanctum* and *Allium sativum* was evaluated in the present study using both *In vitro* and *in vivo* tests employing Egg hatch test, Larva development test, Larval paralysis test and Faecal Egg Count Reduction Tests, respectively. Aqueous extracts of all these plants were found to be better than methanolic counterparts. The aqueous extract of *E. globules* was most effective amongst all and showed cent percent inhibition in egg hatch assay even at lower concentration of 6.25%. The aqueous and methenolic extracts of *A. sativum* were most effective and showed cent arrest of larval development at 25%. However, in Larval paralysis test both aqueous and methenolic extracts of

E. globulus and *O. sanctum* were found to be equally effective at 100% concentration levels. In general, *E. globulus* was found to be more efficient in all the concentration levels compared to other plant extracts. FCERT results revealed *E. globules* (66% efficacy) and *A. sativum* (56.86% efficacy) to be more effective in controlling parasitism than *O. sanctum* (39.41% efficacy) during the trial period of three weeks compared to albendazole (90.2% efficacy). Significant changes were observed in SGPT, RBCs, Hb, and RDWc while non-significant changes were observed in SGOT, WBCs, HCT, MCV, MCH, MCHC, PLT, MPV, PCT, Lymphocyte %, Monocyte % Granulocyte % and FRAP.

Research 18: Epidemiological and phytotherapeutic studies on gastrointestinal parasites of large ruminants

Out of 2151 animals (1186 cattle and 965 buffaloes) examined, 1602 animals were found to be affected with either one or more helminthes infection. Cattle were found to be more affected than buffaloes (70.08%). Young ones (78.92% cattle and 72.40% buffalo calves) were found to be more prone 77.54% adult cattle and 69.37% adult buffaloes). Highest endoparasitic prevalence was seen in September month in both cattle and buffaloes. The highest and lowest EPG values were observed in September and February months for cattle and March months for buffaloes, respectively. The highest EPG values for adult, calves and male cattle were observed September months, while lowest EPG output was observed in February and April month, However, adult, calves and male buffalo showed highest EPG during September month where as lowest EGP were seen in March, April and February months, respectively. So as season wise prevalence is concerned, overall higher prevalence of gastrointestinal parasitism is cattle and buffaloes were observed in rainy season. Coproculture revealed *Strongyloides* spp. to be the most prevalent species affecting both cattle and buffalo in the studied area followed by *Toxocara* spp., *Haemonchus* spp., *Oesophagostomum* spp. *Trichostrongylus* spp. and *Trichuris* spp. The anthelmintic potential of three medicinal plants viz., *Cucurbita maxima*, *Carica papaya* and *Saraca indica* was evaluated in the present study using both aqueous and methenolic extracts of *Cucurbita maxima* (seeds), *Sarica papaya* (seeds) and *Saraca indica* (leaves) were *In vitro* tested for anthelmintic properties using Egg hatch test, Larval paralysis test and Larva development test. Aqueous extracts of all these plants were found to be better than methanolic extracts. The aqueous extract of *C. maxima* was most effective amongst all and showed cent percent inhibition in egg hatch assay even are concentration of 12.5%. In Larva development test, the aqueous and methenolic extracts of *C. papaya* were found most effective and showed cent percent arrest of larval development at 12.5%. However, in Larval paralysis test methenolic extracts of *C. maxima* and *C. papaya* were to be equally effective at 50% concentration levels while, both the extracts of *S. indica* and extracts of both *C. maxima* and *C. papaya* showed cent percent inhibition at 100% concentration.

Research 19: Binary mixture toxicity of Arsenic and Deltamethrin in Broiler chick and its amelioration with phytobiotics formulation

Present study was undertaken on 48 day old broiler chicks to evaluate the toxicity of binary mixture of arsenic and deltamethrin and ameliorative potential of Superliv concentrate, a phytobiotic. Chicks were randomly divided into eight groups (I-VIII) of six chicks each on 7th

day. Chicks of different groups were offered different experimental feeds; Group I (control) basal feed, Group II- basal feed + Superliv concentrate (250 ppm), Group III- basal feed + arsenic trioxide (50 ppm), Group IV - basal feed + deltamethrin (25 ppm), Group V- basal feed + arsenic trioxide (50 ppm) + deltamethrin (25 ppm), Group VI- basal feed + arsenic trioxide (50 ppm) + Superliv concentrate (250 ppm), Group VII- basal feed + deltamethrin (25 ppm) + Superliv concentrate (250 ppm) and Group VIII - basal feed + arsenic trioxide (50 ppm) + deltamethrin (25 ppm) + Superliv concentrate (250 ppm) for 42 days starting from day 8. Weekly body weights were recorded and weekly body weight gains were determined along with FCR. After 42 days of experimental trial, blood samples were collected from birds of all the treatment groups for determination of different haemato-biochemical parameters. Thereafter, birds were sacrificed for collection of certain vital body organs, their absolute and relative weights were determined and tissues of these organs were also collected for histopathological examination. Arsenic and deltamethrin alone or both in combination markedly to significantly reduced body weights of chicks and this effect was counteracted by Superliv concentrate. Weekly FCR in chicks of different treatment groups ranged from 1.26 to 3.86 and the overall FCR in different treatment group varied between 2.10 ± 0.07 and 2.84 ± 0.06 . Blood haemoglobin (mg/dl) level and PCV in chicks of different treatment groups did not differ significantly from those in control group but TEC ($10^6/\text{mm}^3$) in group V was significantly lower while TLC ($10^3/\text{mm}^3$) was significantly higher in group III compared to control group. Lymphocytes count (%) was significantly lower in group III chicks but there was no effect on per cent count of other leucocytes in any of the groups. Plasma AKP activities were significantly higher in chicks of group III, V and VI compared to control group. Histopathological examination of the liver, kidneys, testes and spleen of chicks revealed different xenobiotics-induced varying degree of tissue insults in different treatment groups compared to those in control. Concurrent treatment of chicks with Superliv concentrate and arsenic, deltamethrin or both in combination revealed protective effects of Superliv concentrate against arsenic, deltamethrin and binary mixture of these both. Therefore, based on the findings of present study, it may be inferred that the phyobiotic used, Superlive concentrate, has bioenhancer, haematinic, hepatoprotective and immunomodulatory potential, however, further investigations are warranted using specific organ-specific biomarkers of toxicity.

Research 20: Sub-acute co-exposure toxicity studies of environmentally relevant heavy metals on urogenital system in male rats

The present study was undertaken to evaluate the renal and reproductive toxicity of mixture heavy metals (lead, arsenic, cadmium, mercury, iron and copper) and its possible amelioration with curcumin in male rats. The study was conducted in two phases- field survey (estimation of level of heavy metals and essential macro-minerals in different samples of soil, water, feed/fodder) and phase II (*in-vivo* trial in rats at 10x and 100x dose of mixture of different metals at the levels obtained from phase-I study). Feed and water intake, body weight gain, absolute and relative organ weight, haemato-biochemical profile, oxidative stress, nephrotoxicity, reproductive toxicity and residual concentration of metals in kidney and testes were estimated. Based on the survey findings, a mixture of lead, arsenic, cadmium, mercury,

iron and copper was formulated. In phase II study, forty two rats were divided into seven groups- control, vehicle control, 10x, 100x, curcumin, 10x plus curcumin and 100x plus curcumin. The metal mixture resulted in a significant and progressive decrease in the feed and water intake resulting in dose dependent reduction in body weight gain at the two dose levels indicative of systemic toxicity which was substantially improved by co-administration of curcumin. The creatinine and urea levels in blood alongwith biomarkers of testes further testify the testicular damage while the rise in total and direct bilirubin are indicative of hepatic damage in mixture alone treated groups though ALT and AST were altered non-significantly. Dose-dependent increase in platelet count, mean corpuscular haemoglobin and haemotocrit and decrease in PCV and TLC was also observed when compared to control and vehicle control groups. A significant ($p < 0.05$) dose dependent increase in the renal and testicular concentration of lead, cadmium and arsenic in 10x and 100x mixture group was observed as compared to control group. Pronounced oxidative stress was recorded in kidney as a significant rise in LPO and a non-significant decrease in SOD at 100x level. In testes, 10x and 100x exposure resulted in a significant ($p < 0.05$) increase the level of lipid peroxidation and decreased the enzymatic activity of catalase. Co-administration of curcumin with 10x and 100x metal mixture improves the level of GSH and enzymatic activities of SOD and CAT as compared to 10x and 100x alone intoxicated groups. A slight increase in the activity of SOD was recorded in the groups receiving curcumin with 10x/100x mixture. The dose dependent rise in the activity of a testicular enzyme, acid phosphatase was reverted by curcumin. No significant change in the activity of SDH and LDH was recorded. The GGT activity was further increased significantly ($p < 0.05$) in 100x as well as 100x plus curcumin group treated group as compared to control and 100x alone group. Histopathology revealed a dose dependent damage of renal glomeruli and tubules. Marked degenerative to necrotic changes at pericapsular area with loss of cellular debris with increase in the periglomerular space were evident at higher dose of intoxication. In 10x/ 100x plus curcumin treated groups, only mild to moderate degree change in tubules with slight increase in periglomerular spaces were recorded, suggesting reparative potential of curcumin in these intoxicated groups. Testes of control and curcumin group rats showed normal histological structure of germ cells and leydig cells in seminiferous tubules. In 10x treated group, there was mild to moderate degenerative changes in spermatogonial cells of seminiferous tubules and also there was degeneration of outer capsules of seminiferous tubules which intensified in 100x group. The histology was significantly restored by co-administration of curcumin. The antioxidant prophylactic potential of curcumin was well proven by the reduction in tissue accumulation of heavy metals leading to decline in oxidative stress level and better histological architecture and enzymatic activity in renal and testicular tissues.

Research 21: Capacitation like changes in the spermatozoa during the process of cryopreservation of Barbari buck semen

This experiment was designed to compare the capacitation like changes in spermatozoa of Barbari buck during different stages of processing by using fluorescence patterns observed in chlortetracycline (CTC) staining. For this purpose ejaculates were collected from five Barbari bucks using artificial vagina at biweekly intervals. Freshly collected semen was divided into

two equal fractions, one fraction of collected semen was examined for different seminal attributes related to semen quality and rest was diluted (200×10^6 motile spermatozoa/ml) in Tris extender and used for processing for cryopreservation. Seminal attributes in freshly ejaculated spermatozoa were compared with that in extended, equilibrated and frozen thawed semen. No significant difference ($p \geq 0.05$) was found in seminal attributes of freshly ejaculated semen. All the results obtained were will within normal range. A significant difference ($p \leq 0.01$) was observed in various parameters during different stages. The results suggested that diluting, cooling and freeze thawing of goat semen cause an increase in capacitation and acrosome reaction status. The most remarkable effects were after the freeze-thawing stage which could be due to the cumulative effects of extending and cooling. The study concluded that the phenomenon of cryopreservation induce cryocapacitation or premature capacitation of buck spermatozoa which can render sperm membranes to fuse prematurely reducing their fertile life. Promotion of capacitation, before reaching the site of fertilization may result in the reduced fertility of cryopreserved spermatozoa and poor results in artificial insemination (A.I.).

Research 22: Studies on effect of antioxidants on cryogenic manipulation in Bhadawari bull semen

This study was conducted to determine the effects of vitamin E, vitamin C and combination of vitamin E+C on standard semen parameters i.e. motility, per cent live sperms, sperm concentration, per cent abnormal sperms, HOST and acrosomal integrity of Bhadawari bull semen after the freeze-thawing process. Ejaculates collected from four Bhadawari bulls were evaluated and pooled at 37°C . Semen samples were diluted with a Tris-based extender containing antioxidants, Vitamin E (1.5 mM), Vitamin C (2 mM) and Vitamin E+C combination (1.5 mM + 2 mM) and without antioxidants (control) were cooled at 5°C and frozen in 0.25 ml French straws in liquid nitrogen. Frozen straws were thawed individually at 37°C for 30 sec in a water bath for evaluation. Semen extender supplementation with vitamin E (1.5 mM) and vitamin C (2 mM) and vitamin E+C combination (1.5 mM + 2 mM) caused significant ($P < 0.01$) increase in all sperm attributes such as per cent progressive motility, per cent live spermatozoa, per cent total sperm abnormalities, HOST and per cent acrosomal integrity while significant ($P < 0.01$) decrease was observed in total sperm abnormality rates in comparison to control group indicating that supplementation of antioxidant in form of vitamin and their combination improves quality of post thaw semen. A Significantly better values of semen parameters were observed in vitamin E+C combination (1.5 mM + 2 mM) followed by vitamin E (1.5 mM) and vitamin C (2 mM) indicating that the combination of vitamin E+C has most profound role in protecting sperms against ROS production and cold shock when compared to vitamin E and vitamin C supplemented alone in extender for semen dilution.

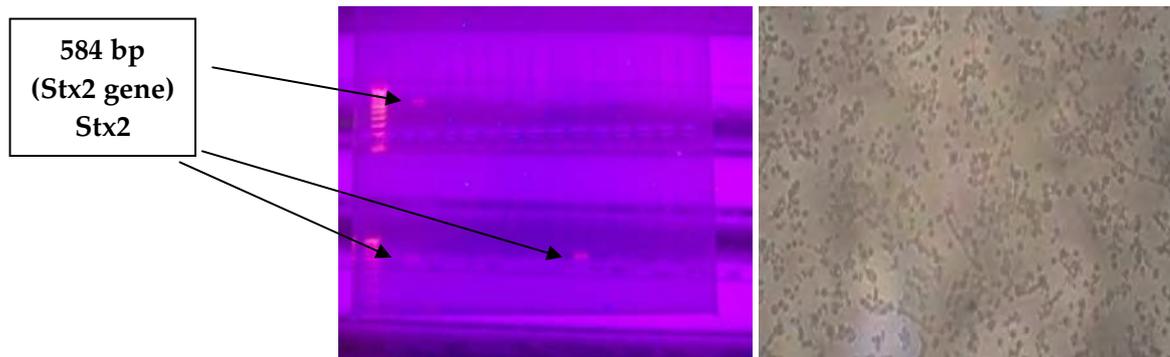
Research 23: Prevalence of verotoxic *E. coli* in meat and meat products from different sources in certain areas of Uttar Pradesh

Present investigation was undertaken to assess the prevalence of verotoxic *Escherichia coli* (VTEC) in meat and meat products in certain areas of UP. Studies were also carried out to detect virulence markers and virulence genes. A total of 300 samples (135 carabeef, 55 chicken, 25fish, 60 chevon, 25 pork) and 150 meat products (20 each of Mutton Patties, Chicken Patties, Mutton

Kabab, Carabeef Kabab, Chicken Nugget, Chicken Burger and 10 each of Chicken Sandwich, Mutton Curry, Fish Pakoda) samples were collected and screened for the presence of virulence genes vt_1 and vt_2 by multiplex PCR.

A total of 4 (1.33%) meat samples and 1 (0.6%) meat product sample were classified as PCR positive. Five isolates (3 from carabeef, 1 from a carabeef kabab and 1 from chevon) were positive for vt genes. All 5 VTEC strains harboured vt_2 gene. None of the VTEC isolates contained vt_1 gene. All except one VTEC isolate exhibited toxic effects on Vero cells. VTEC strains were examined for additional virulence factors i.e., haemolytic activity and Congo red binding activity. 2 of 5 (40%) VTEC isolates were found positive for haemolysis when tested on sheep blood agar. Among the 5 VTEC isolates screened for congo red dye binding ability 4 (80%) were found positive.

Further, the VTEC isolates were tested for 22 antimicrobial agents. VTEC strains exhibited sensitivity to norfloxacin, ciprofloxacin, chloramphenicol, ceftriazone, amikacin and amoxyclav. The VTEC isolates were 100% resistance to novobiocin, penicillin G, fusidic acid, colistin, tylosin and Methicillin. In conclusion, this study demonstrated that retail meats, mainly carabeef, were contaminated with VTEC strains. The presence of VTEC strains in retail meat is also of concern due to their potential to cause human infections like Haemorrhagic Colitis, Haemolytic Uremic Syndrome and Thrombotic thrombocytopenic purpura.



Agarose gel showing PCR amplified product of Stx₂ gene in Vero cells under effects of ultrafiltrated E.coli VTEC isolate from meat & meat products culture after 48 hrs

Research 24: Epidemiological studies of Brucellosis in Cattle and Buffaloes in Mathura and adjoining areas of Uttar Pradesh and its Zoonotic significance

The present study was conducted to know the seroprevalence of brucellosis in cattle and buffaloes of Mathura and adjoining areas with respect of different epidemiological determinants and its public health significance by employing "I-ELISA, RBPT and STAT and comparison of I-ELISA with the other conventional test. A total of 568 serum samples of cattle and buffaloes of different age, sex and places from organized and unorganized farms of Mathura and adjoining areas were collected, which were screened for Brucella antibodies using RBPT, STAT and indirect ELISA test, where as 108 serum samples of 14 veterinary students and 94 animal handlers were collected from different places of Mathura district. The overall prevalence against brucellosis in cattle and buffaloes were found as 9.3%, 6.61% and 5.10% by IELISA, RBPT and STAT respectively. The overall prevalence of brucellosis in human beings was found as 6.48%

and 4.62% by RBPT and STAT, respectively. No veterinary student was found reactor for brucellosis where as 7.44% and 5.31% animal handlers were found positive by RBPT and STAT, respectively. Considering I-ELISA as a standard test, the sensitivity of RBPT and STAT was found to be of 50% and 33.9% and specificity was found to be of 98% and 97% respectively. There was moderate agreement between RBPT and STAT with that of I ELISA. Thus using combination of tests for screening of cattle and buffaloes against brucellosis were useful rather a single test.

Research 25: Isolation and characterization of verocytotoxic *Escherichia coli* in faecal samples, milk, milk products and animal handlers from certain areas of Mathura and Vrindavan

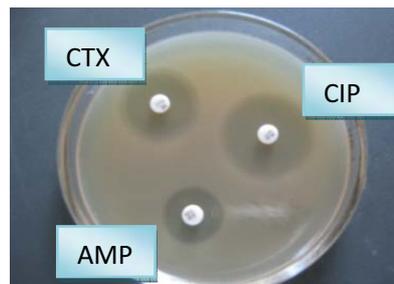
A total no. of 500 samples comprising of 250 faecal samples (Cattle 102, Buffalo 90, Calf 38), 125 raw milk samples, 75 milk product samples (15 each of, Rasgulla, Burfi, Peda, Paneer and Curd) and 50 swabs from hands of animal handlers were collected and assessed for the presence of the virulence genes Stx₁ and Stx₂ by multiplex polymerase chain reaction (PCR). Out of 210 *E.coli* isolates 100 isolates were further processed. Out of these 37 isolates were subjected to verocytotoxic assay and 63 isolates were subjected to PCR. Out of 37 *E.coli* isolates 13 were found to have positive cytopathic effect on vero cell line and 7 *E.coli* isolates out of 63 were found positive for stx gene A total of 119 *E. coli* isolates (63 faecal sample, 30 milk samples and 16 milk product samples) were screened for the presence of *stx* genes. Out of which 9 isolates were found to be positive for *stx* genes. Among these isolates only 1 isolate from faecal sample of diarrhoeic cow was found positive for stx₁ and 1 isolate from faecal sample of healthy cow, 2 isolates from faecal sample of diarrhoeic cow, 1 isolates from faecal samples of diarroeic buffalo, 2 isolate from faecal samples of diarrhoeic calf was found to be positive for stx₂ gene. However, no *stx* gene was detected from animal handlers. Prevalence of VTEC was highest faecal samples followed by milk and milk products. Among faecal samples highest prevalence of VTEC was found in diarrhoeic cattle followed by diarrhoeic calves and lowest in healthy buffalo.



E. coli Colonies with Characteristics Greenish Metallic Sheen on EMB agar.



Brick Red Color Colonies showing Congo Red Binding Activity of Verocytotoxic *E. coli*.



In vitro Antimicrobial Drug Sensitivity Test for VTEC Isolates. CTX-Cefotaxime, CIP-Ciprofloxacin, AMP-Ampicillin

In present study, the overall haemolytic activity and congo red dye binding ability of VTEC isolates was found to be 55.56% and 88.89% respectively. 5 out of 9 (55.56%) VTEC isolates were found positive for haemolytic activity on sheep blood agar. 8 out of 9 (88.89%) VTEC isolates were found positive for Congo red dye binding ability. The VTEC isolates were further tested against 13 antimicrobial agents. VTEC isolates exhibited highest sensitivity to Ciprofoxacin (100%) followed by Nalidixic acid (92%), Ceftriaxone (88%), Cefotaxime (88%) and Highest

resistance was shown by Antibiotics like Co-trimoxazole (80%) showed followed by Penicillin-G (40%), Tetracycline (36%).

Research 26: Occurrence of salmonella organisms in foods of animal origin (milk, meat, fish & egg) and water and their public health significance in Mathura District

Food borne pathogenic zoonotic or potentially zoonotic bacteria in foods of animal origin (milk, meat, fish & egg) and water are the cause of illness and death for many people. During the study, 370 sample analyzed of different markets of various areas and places of Mathura District as sources of carabeef, chevon chicken, pork & fish meat, samples shown the presence of pathogenic *Salmonella* species. In carabeef 13.33%, chevon 10%, chicken 20%, pork 13.33% and fish 0% in meat samples, egg 26.66%,milk 8% and in animal products handlers 3.33% occurrence was estimated. In similar way highest contamination of *Salmonella* species was recorded in chicken meat and least contamination in fish meat. The study also concluded that, the presence of *Salmonella* in meat samples due to the unhygienic conditions, where and from the meat samples were obtained, either from the pond, lake, river (in case of fish) or from the unhygienic storage and pre- processing & handling conditions (in case of meat and poultry chicken) which makes the food contaminated with pathogenic *Salmonella* species. Raw milk may act as vehicle for *Salmonella* infection & can cause serious threat. Milk may get cross contaminated with faecal matter during milking. Majority of the isolates of *Salmonella* were found to be sensitive to Ceftriaxone, Ciprofloxacin, Gentamicin and Ofloxacin are sensitive to *Salmonella* spp. Amikacin, Chloramphenicol, Cefoperazone/ Sulbactam Kanamycin are intermediate to *Salmonella* spp. Ampicillin, Amoxyclav, Cefixime/Clavulanic acid, Tetracycline are resistant to *Salmonella* spp. Streptomycin are nearly 50% intermediate and 50% resistant to *Salmonella* species according to antibiotic sensitivity pattern.



Jet black colour colonies on BSA plate produce by *Salmonella* spp.



Biochemical test kit showing Biochemical reaction of *Salmonella*. MR +ve, VP -ve, Urease -ve, H₂S production +ve, Citrate utilization +ve, Lysine utilization +ve, ONPG -ve.



In vitro antimicrobial drug sensitivity test for *Salmonella* isolates (Mueller Hinton agar).

Research 27: Development and clinico-biomechanical evaluation of prosthetic limb in dogs

The present study was carried out on six dogs of either sex, belonging to various breeds and age group reporting the department of Surgery and Radiology and in the Teaching Veterinary Clinical Complex (TVCC), DUVASU, Mathura. Improved stump socket prosthesis for six dogs of different breeds like Labrador (1), nondescript (2), Pomeranian (1) and crossbreeds (2) were developed. The fabrication of prosthesis using aluminium U- channel and hollow pipes of different sizes (U channel 9mm, hollow pipe 9mm, U channel 6mm) and stainless steel springs

of three different sizes. Different in-vitro biomechanical tests of the prosthetic limb were done. These tests proved that the 6 mm aluminium U channel could be used for construction of prosthetic limb for animal weighing 5-35 kg, hollow pipe (9mm) could be used for animal weighing 35-55 kg and 9mm U channel could be used for animals weighing 55-75 kg. Biomechanical tests of springs with G of 80000 mega Pascal showed that spring A can bear up to a weight of 4.1 kg and can deflect about 10 mm. Spring B can deflect up to 15 mm safely and can carry a load of 8.6 kg. Regarding spring C, it can bear a load of 21.1 kg and could deflect up to 50 mm without damage. So these springs can be used in the construction of the prosthetic limb. Clinical evaluation of prosthesis was done on the basis of the weight bearing ability of dogs on the prosthetic limb. A special weighing platform was designed so as to measure the amount of weight animal applying on the prosthetic limb or the support on the prosthetic. Weighing of animal was done at 5 days interval. Based on the weighing done on the different animals after the attachment of the prosthetic limb helped in summarizing that after the attachment of the prosthetic limb the animal gets completely adapted to the prosthetic by 15 days of its attachment. The adaptability and comfort experienced by the animal after prosthetic application and body's natural reaction to the different materials used in the construction of the prosthetic limb were also studied. The owners were provided with two questionnaires to extract feedback from them. Overall performance of the prosthetic limb was found satisfactory and 4 animals out of the 6 got well adapted and were comfortable with the prosthesis and there was no any skin reaction to the materials we used. Video kinematic analysis study was done to assess the degree of movement in the joints of the prosthetic by recording linear parameters and horizontal and vertical motion by angular parameters.

The results of the gait analysis of the limb after the attachment of the prosthetic limb helped in finding the functioning of the prosthetic limb. We found that animals were using the prosthesis and were applying load over it and not just dragging it. It was concluded that the stump socket prosthesis developed in this study is a feasible and cost effective modality and it could be used to improve the quality of life of the amputee animals.

Research 28: B-Mode ultrasonographic evaluation of teat in dry and lactating buffaloes

The aim of the present study was to determine the normal and abnormal ultrasonographic features of teat parameters in dry, lactating and pathogenic (teat affections) buffaloes. For this study 18 buffaloes (six dry and six lactating from dairy farm and six pathogenic from Kothari hospital) were selected. B-Mode ultrasonographic examination of teat by 8-MHz convex transducer was performed in all three groups. Ultrasonographic finding were described and teat canal length, teat end width, teat wall thickness and teat cistern width were measured. The mean teat length was 7.358 ± 0.523 cm and 7.491 ± 0.289 cm, 6.683 ± 0.711 cm and 7.775 ± 0.808 cm, 7.091 ± 1.055 cm and 7.8 ± 1.043 cm in front and rear teats of dry, lactating and pathogenic groups of animals, respectively. Teat diameter was measured by using vernier calliper at 2.5 cm above the tip of the teat in all buffaloes. The mean teat diameter was 2.462 ± 0.167 cm and 2.670 ± 0.144 cm, 2.580 ± 0.159 cm and 2.986 ± 0.187 cm, 3.234 ± 0.393 cm and 3.147 ± 0.444 cm in front and rear teats of dry, lactating and pathogenic groups of animals, respectively. Teat end shape was round in majority of the animals.

For evaluation of internal parameter of teat, ultrasound scans were taken. The teats were scanned in B-mode using a portable ultrasonography machine. Teats were dipped into plastic cup filled with water at room temperature for better visualization of the teat structures. The probe was placed in the wall of the plastic cup using ultrasound gel and held lateral to the teat. The ultrasound images obtained were recorded. The proper images were chosen for measurements and subsequently certain teat parameters were measured. Ultrasonography allows measurement of a wide range of teat tissue parameters, including canal length, teat end width, teat wall thickness and cistern diameter. Teat canal length was measured in millimeters as the distance between the distal and proximal end. Streak canal was observed as a hyperechogenic line at the tip of the teat. Teat canal length was measured 7.543 ± 1.159 mm and 8.170 ± 1.163 mm, 9.768 ± 1.039 mm and 9.150 ± 0.866 mm, 9.563 ± 1.557 mm and 11.243 ± 2.423 mm in front and rear teats of dry, lactating and pathogenic buffaloes, respectively. Teat end width was measured in millimeters as a perpendicular to the axis of the teat canal at its proximal end. Teat end width was measured 16.450 ± 0.938 mm and 17.900 ± 1.021 mm, 18.608 ± 0.801 mm and 19.841 ± 0.666 mm, 21.525 ± 3.437 mm and 21.750 ± 1.944 mm in front and rear teats of dry, lactating and pathogenic buffaloes respectively.

Teat wall thickness was measured in millimeters above the proximal end of the teat canal. Teat wall thickness was 7.651 ± 0.480 mm and 7.609 ± 0.413 mm, 9.064 ± 0.540 mm and 8.954 ± 0.510 mm, 9.906 ± 1.3868 mm and 9.097 ± 0.955 mm in front and rear teats of dry, lactating and pathogenic buffaloes respectively. Teat cistern width was measured in millimeters one cm above the proximal end of the teat canal perpendicular to the axis of the teat canal. Teat cistern width was 6.530 ± 0.975 mm and 7.619 ± 0.893 mm, 6.750 ± 0.495 mm and 6.630 ± 0.563 mm, 10.631 ± 1.738 mm and 10.319 ± 1.682 mm in front and rear teats of dry, lactating and pathogenic buffaloes respectively. The B-Mode ultrasonography technique as described in this study seems to be reliable for determining the normal and abnormal anatomic features of the teat parameters in buffaloes.

Research 29: Studies on common dental affection in dogs

The present study was conducted on a total of 128 dogs of different breeds and different age groups and incidence on various criteria was worked out. Out of these, 45 dogs were found to be suffering from periodontal affections. The Pomeranian breed of dogs showed the highest incidence of periodontal affections (14.06%) followed by German Shepherd (10.16%), Labrador Retriever (4.69%), Dachshund (0.78%), Rottweiler (0.78%), Non descript (3.20%) and Great Dane (60%). In the present study the overall incidence of periodontal affections was found to be 35.15% in 128 dogs examined, of which 66 were in 1-4 year age group, 20 in 5-8 year age group, 22 in 9-11 year age group and 20 in above 12 year age group with 4.54%, 60.00%, 63.63%, and 80.00% incidence of periodontal disease (POD), respectively. Incidence study of dental calculus and crown abrasion also followed the same trend; minimum or nil incidences in young dogs with increasing trend as the age advances and the severity of the problem too showed an increasing trend. The sex-wise incidence of periodontal disease revealed greater involvement of male dogs (62.22%) than female dogs (37.78%). On the basis of body wt. maximum incidence of POD was seen in dogs body wt. between 10-30 kg followed by < 10 kg and minimum in dogs

above 30 kg body wt. General body condition of chosen 45 dogs 22.22% dogs were poor, 31.11% was satisfactory and 46.67% were in good health condition. The study of incidence of dental affections according to Habitat of dogs revealed that 88.89% cases were as companion in indoor animal and 11.11% dogs were used as security dogs in outdoor. Of total 45 dogs 31.1% only were having exclusive dental and periodontal problem whereas 33.34%, 17.78%, 13.33% and 4.44% were having GIT, urinary, respiratory and cardiovascular health issue, respectively. The POD was present in 82.22% pets purchased from the breeder & 17.78% were bred in the house. Existing home dental care was practiced in 6.67% whereas 93.3% dogs suffering from POD did not have any dental care. In the present work incidence of POD in dogs maintained on pure vegetarian diet was much more in comparison to dogs maintained on non-vegetarian mixed diet.

In the same way 68.9% dogs were maintained on homemade food and only 20% of all 45 dogs were exclusively fed with commercial pet foods. Ignorance and lack of awareness of the pet owners for dental care can be seen by the result of incidence according to occurrence of problem and incidence according to duration of problem. In 86.67% problem was longstanding but ignored and 55.56% cases the duration ranged up to 6 months. In 42.22% cases the problem remained ignored and were treated in 26.67% by oral antiseptic and in 31.11% by oral antiseptic and some systemic antibiotic and anti-inflammatory medication. According to owners, instituted treatment was successful in 57.69% cases and 42.31% problem remained the same. The incidence of various dental affections on definitive examination in our study in 45 dogs was found to dental plaque, tartar, gingivitis, teeth mobility, tooth discoloration, caries, dental fistula, and crown abrasion as 55.55%, 80%, 68.89%, 8.89%, 26.67%, 6.67%, 2.22% and 11.1%, respectively. During treatment ultrasonic scaling was found superior to manual scaling as there were fewer incidences of inadvertent trauma and hemorrhage and time taken was markedly less. Keeping in view the owner's ignorance of dental problems in pets it is observed that regular precise and scientific examination of oral cavity should be a part of routine physical examination after 4 years of age, at least once or twice in a year to prevent major disease of teeth.

Research 30: Comparative evaluation of different serological tests for diagnosis of caprine brucellosis

In the present study *Brucella melitensis* was isolated from the (6) aborted goats. The isolates of *Brucella species* were maintained in serum dextrose agar and Brucella selective medium. Initially, *B. melitensis* were identified and confirmed on the basis cultural, morphological, biochemical characterization and dye tests. Dye test revealed isolates as *Brucella melitensis* biovar 3. For the confirmation Brucella genus was identified on the basis of 1412 bp 16SrRNA PCR product which were found in all the isolates. Brucella species was confirmed on the basis of 723bp Omp31PCR product and that was present in all the Brucella isolates. Different serological examination were performed for circulating antibodies in sera samples and also assessed by the serum PCR. In total 300 sera samples of goats were used for serological examination. The overall seroprevalence was found 11.33% (34) positive, 17.66% (53) doubtful in Serum Tube Agglutination Test (SAT), 42.66% (128) in Rose Bengal Plate Agglutination Test

(RBPT), 24.33% (73) in rOmp31 based Enzyme Linked Immunosorbent Assay (rOmp31 ELISA) and 17.33% (52) in dot-Enzyme Linked Immunosorbent Assay (dot-ELISA). rOmp31 ELISA positive 73 sera samples were used in serum PCR and 40 samples were found positive with the positivity of 54.80%. The serological tests used were studied in different combinations to evaluate their diagnostic potential. Results showed that out of 300 samples tested 180 samples were found negative in all the tests used in the study. Only 40 samples were tested positive in all the tests. Forty two samples were showed positive reaction in rOmp31 based ELISA and SAT both. Combination of rOmp31ELISA and RBPT showed 6 samples positive together. No sample was found positive in the combination of rOmp31 ELISA, SAT and RBPT. Combination of rOmp31 ELISA, SAT and d-ELISA showed 20 samples positive. In another combination of rOmp31 ELISA, RBPT and d-ELISA, 38 samples were positive. Only 50 samples were positive in combination of rOmp31 and d-ELISA. These serological tests were further studied for comparative sensitivity and specificity. Results showed that the sensitivity percentage of different tests varied in between 56.25 - 100%, whereas, specificity ranged in between 75- 100%. Omp31 PCR produced 100% specificity and sensitivity.

Research 31: Detection and Prevalence of Rotavirus Infection in Diarrhoeic Bovine Calves

The rotaviruses, member of genus *Rotavirus* within the family *Reoviridae*, are the leading cause of diarrhoea in cow and buffalo calves worldwide. To understand the epidemiology and types of BRVs circulating in this region present study was carried for the detection of rotavirus infection from faeces of diarrhoeic calves by RNA-PAGE and ELISA. One hundred faecal samples were collected from diarrhoeic cattle and buffalo calves from organized dairy farms in Mathura region. Ten percent faecal suspension was made in PBS, pH 7.2. After this, the extraction of viral RNA was done by phenol: chloroform or TRI reagent. The extracted RNA was subjected to RNA-PAGE and silver staining of the gel was carried out for visualization of the bands. Detection of rotavirus by antigenic ELISA Kit was also performed for bovine group A rotavirus antigen. RT-PCR and multiplex nested PCR was done for G and P genotyping. Twelve samples were positive for the Group A rotavirus in PAGE. These samples showed the 11 segments of the RNA genome of the virus in the pattern of 4:2:3:2 characteristic for the Group A rotavirus. Based on the migration of segment 10 and 11, all the positive samples were characterized as long electropherotypes. Differences in the migration pattern of class I segments was observed. In type 1 pattern all the four segments (1, 2, 3 and 4) migrated separately. In type 2 pattern segment 2 and 3 co-migrated. In all the samples class III segments (7, 8 and 9) moved as a single segment. One sample showed the presence of an additional band between gene segment 5 and 6. Multiple bands were present in two samples. All RNA-PAGE samples were found to be positive for Group A rotavirus antigen. Twelve percent prevalence of Group A bovine rotavirus was found in the present study in Mathura region. The maximum prevalence 14.08% was observed in ILFC, DUVASU, Mathura followed by 12.5% in Hasanand Gaushala, Vrindavan, Mathura and lowest of 4.7% in Mahavan Gaushala, Mathura. On detailed analysis of samples it was found that only samples were positive from cow calves and no buffalo calf sample was positive for rotavirus infection. Out of 12 positive samples nine were from female calves and three were from male calves. The samples were positive in the months of August-

November and below 1 month of age. Eleven out of twelve PAGE/ELISA positive samples produced the expected amplicon for Group A specific VP6 gene. One sample could not be amplified for Group A specific VP6 gene. On genotyping with G3, G6, G8 and G10 specific primers for VP7 gene and P [1] and P [11] specific primers for VP4 gene, G6 genotype was found in 3 samples followed by G10 in one sample. Mixed genotype of G6G10 was observed in three samples. Four samples remained untypeable for G-genotypes. In P typing only one isolate was found to be positive for P [1] and rest all of the samples remained untypeable. Overall, the results of present study indicate the G6 as a major G- genotype in this region and confirm bovine RVA circulating here.

V. EXTENSION

The extension activities of the University is carried out under Directorate of Extension with vital inputs from lone Krishi Vigyan Kendra, Mathura and Department of Veterinary and Animal Husbandry extension. Faculty members from different departments of the College of Veterinary Science and Animal Husbandry contribute through participation in Clinical camps, disease outbreak reporting and visits to the departments by farmers and other stake holders.

DIRECTORATE OF EXTENSION

Pashudhan Evam Kisan Mela

Directorate of Extension of the University alongwith U.P. Seed Grower's Association successfully organized two-days Pashudhan Evam Kisan Mela on 14th and 15th March, 2014. Theme of Kisan Mela was "Managing Livestock & Agricultural Production in Context of Food Security" and it was inaugurated by Chief Guest Prof. R.B. Singh in gracious presence of Hon'ble Vice Chancellor, Prof. A.C. Varshney. More than 1200 farmers of U.P., Rajasthan and Madhya Pradesh visited Kisan Mela. Sixty stalls had been put by the different departments of University, State animal husbandry department, KVKs, line departments and companies. The valedictory function of Kisan Mela-2014 was held on 15th March 2014 and it was graced by Chief Guest Dr. Dheeraj Singh, Director, National Mustard Research Centre, Bharatpur, Dr. S.K. Agarwal, Director, CIRG, Makhdoom and our Hon'ble Vice Chancellor, Prof. A.C. Varshney.



Phone-in Programme

Live Phone-in Programme/Radio Roopak on All India Radio, Vrindavan, Mathura were organized by the University on various animal husbandry and health aspects.

S.No.	Name of the Expert	Title	Date
1.	Dr. R.P. Pandey	Introduction of Kothari Hospital	02.04.2013
2.	Dr. Ashish Srivastava	Skin problems and treatment in animals	09.04.2013
3.	Dr. Sanjay Kumar Mishra	Problems of In-fertility and treatment	16.04.2013
4.	Dr. Dipesh	Problems and treatment of subluxation of patella	23.04.2013
5.	Dr. Rajneesh Sirohi	Summer management of Animals	07.05.2013

6.	Dr. Ajay Pratap Singh	Diagnosis and Treatment of FMD	14.05.2013
7.	Dr. Ram Sagar	Major diseases of pets during summer season and their treatment	21.05.2013
8.	Dr. Shanker Singh	Diagnosis and Treatment of H.S.	04.06.2013
9.	Dr. Vivek Malik	Diagnosis and Treatment of Fracture	11.06.2013
10.	Dr. Vinod Kumar	Importance of minerals in milk production and reproduction	18.06.2013
11.	Dr. Deep Narayan Singh	Management of animals during pregnancy	02.07.2013
12.	Dr. Rashmi Singh	Major viral diseases of animals and their prevention	09.07.2013
13.	Dr. Arvind Tripathi	Major infectious diseases of milch animals and their treatment	16.07.2013
14.	Dr. Anuj Kumar	Major reasons of Abortion and their treatment	23.07.2013
15.	Dr. Sanjay Purohit	Diagnosis and treatment of Hernia in animals	06.08.2013
16.	Dr. Atul Saxena	Problems and Treatments of Metritis in Animals	13.08.2013
17.	Dr. Yajuvendra Singh	Advantages and methods of clean milk production	20.08.2013
18.	Dr. Anuj	Problems and Treatment of torsions in Animals	03.09.2013
19.	Dr. Ashish Srivastava	Diagnosis and treatment of mastitis in animals	10.09.2013
20.	Dr. Vijay Singh	Problems and treatment of repeat breeding in Animals	17.09.2013

Radio Roopak

S.No.	Name of the Expert	Topic	Date of radiocast
1.	Dr. Ashish Srivastava Dr. Shanker Singh Dr. Amit Jaiswal	Importance of vaccines and dewormers in animals	30.04.2013
2.	Dr. Atul Saxena Dr. Sanjay Kumar Mishra Dr. Ashish Srivastava	Reasons and Remedy of Infertility in female animals.	28.05.2013
3.	Dr. Ashish Srivastava Dr. Shanker Singh Dr. Amit Jaiswal	Major diseases of animals due to external and internal parasites and their remedy	25.06.2013
4.	Dr. Pankaj Shukla Dr. Amitabh Bhattacharya Dr. Ashish Srivastava	Poultry farming: A Profitable business	30.07.2013
5.	Dr. Munendra Dr. Yajuvendra Singh Dr. Deep Narayan Singh	Pre-partum and post-partum management of dairy animals	27.08.2013
6.	Dr. Debashish Dr. Arvind Tripathi Dr. Shanker Singh	Diagnosis and treatment of metabolic diseases	24.09.2013

Trainings organized

S. No.	Title	Duration	Number of Participants	Beneficiaries
1.	लघु डेयरी फार्मिंग प्रशिक्षण	21-25 January, 2014	27	Retired Army Personnel and their close relatives from District Aligarh and Meerut
2.	पशुपालन एवं डेयरी फार्मिंग प्रशिक्षण	24-28 February, 2014	35	Farmers of District Bharatpur, Rajasthan

Training Manuals

- ❖ लघु डेयरी फार्मिंग प्रशिक्षण दिग्दर्शिका edited by Dr. Sarvajeet Yadav and Dr. Deep Narayan Singh
- ❖ पशुपालन एवं डेयरी फार्मिंग प्रशिक्षण दिग्दर्शिका edited by Dr. Deep Narayan Singh and Dr. Sarvajeet Yadav

KRISHI VIGYAN KENDRA, DUVASU, MATHURA

As per the Mandate, KVK, Mathura also conducted various activities during the period under report.

Trainings

A total of 233 'On-Campus' and 200 'Off-Campus' trainings were organized in which more than 5300 and 7900 Farmers/Farm Women were imparted trainings.

Type of training	No. of Courses	On Campus			No. of Courses	Off Campus		
		M	F	T		M	F	T
Farm & Farm women	150	2164	687	2853	159	3625	1137	4762
Rural Youth	49	457	226	682	6	81	9	90
Extension Functionaries	17	365	23	388	20	331	94	425
Sponsored	11	1012	275	1287	20	1840	508	2348
Vocational	6	106	15	121	15	267	37	304
Total	233	4104	1226	5331	200	6144	1785	7929

Frontline Demonstrations

To showcase the yield potential and other characteristics of latest varieties, 87 demonstrations on various crops and vegetables covering an area of 95 acres in Kharif were conducted in different adopted villages. Details of the demonstrations are given below.

S.No.	Name of the crop	Variety	Area (acre)	No. of demonstrations
1.	Paddy	Pusa Sugandhi-2	5.0	10
		Pusa Sugandhi-4	19.5	10
		Dhanya (Hybrid)	0.5	1
2.	Bajra	Pro-agro-9444	25.0	26
3.	Til	Shekhar	30.0	25
4.	Tomato	Pusa Rohini	5.0	5
5.	Okra	Arka Anamika	5.0	5
6.	Cabbage	Golden Acre	5.0	5
Total		-	95	87

Likewise, 50 demonstrations each on Cereals, Vegetable and Forage Crops covering an area of 57.50 acres were conducted in different adopted villages. The details of the demonstrations are given below:

S.No.	Name of the crop	Variety	Area (acre)	No. of demonstrations
1.	Barley	NB-2	12.5	15
2.	Wheat	HD-2733	25.0	25
3.	Vegetable	-	-	50
4.	Berseem	JB-1	10	50
5.	Wheat (Micronutrient)	HD-2733	10	10
6.	Mineral Mixture	-	-	30
7.	De-worming	-	-	16
Total		-	57.50	196

On Farm Testing

To identify location specificity solutions, problem based OFT's at different locations to showcase the important of Weed Management, New Varieties, Integrated Nutrient Management, Pest Management, Storage of Food Grain and Mineral Mixture were conducted. Two OFT's on Weed Management in Paddy and Wheat, One OFT each on productivity enhancement (Varietal evaluation of new Paddy varieties) Nutrient Management in Mustard, Micro Nutrient Management in Paddy and Cauliflower, Pest Management in Okra, Food Grain Storage and Feeding of Mineral Mixture were conducted during this year by the Scientists in various locations of the adopted villages.

Other Extension Activities

Gosthies: Scientists of KVK participated in Regional, District and Block level gosthies organized by various line departments like Agriculture, Horticulture, NGOs, and Banks etc.

Diagnostic visit: During the reporting period, 20 diagnostic visits to different villages were undertaken to inspect the ailing crops of farmers and remedial measures were suggested to concerned farmers

Farmers Visit to KVK: Farmers from different states of the country visited University KVK under exposure visit cum training. Farmers were provided training and shown the facilities available in the University.

Kisan Samman Diwas: On 23rd Dec., 2013 Kisan Samman Diwas was organized on the birth anniversary of Ch. Charan Singh at Mathura Block HQ in which scientists participated and stall was organized for demonstration of available techniques and facilities in KVK.

Extension Literature Developed

- ❖ Braj Main Kheti Evam Pashupalan.
- ❖ Leaflets on various topics of interest were developed and distributed to the farmers.

Soil Testing Laboratory: during the year 972 soil samples brought by 506 farmers from 71 villages were analyzed and recommendation on balanced use of fertilizers were given to the farmers.

Live Demonstration Units

Napier and Guinea Grasses: To meet out & promote the fodder requirement the Napier grass and Guinea grass under the demonstration unit on 2.5 acre of land has been put up at DDD Farm. The root stock of these grasses has also been sold out.

Vermi-compost: To improve the soil health a demonstration unit of Vermi-composting at DDD Farm has also been established where around 10 q. of vermi-compost produced annually and sold to the farmers and used in University farms.

NADEP compost: To demonstrate technology of making compost with roughages and other biodegradable material using very less dung, is also on show at KVK office.

Crop cafeteria: To showcase the potential of various high yielding varieties a crop cafeteria on crops, vegetables, flowers, fodders and nutritional kitchen gardening is also put up according to season.

Instructional Farm

KVK has an instructional farm of 42.50 acres located near Dairy Farm of DUVASU on Nalva Path Road where seed production of district specific major crops is being taken. The detail of the crops grown during the reporting period is given below:

Season	Crop	Variety	Area (acre)	Quantity (q.)	Amount (Rs.)
Zaid	Jawar (Fodder)	Desi (Poorvi)	21.50 (10 acre transferred to Dairy Farm)	-	61750.00
Kharif	Til	Shekhar	12.00	3.60	39000.00
Rabi	Wheat	PBW-550	32.50	370.00	518000.00
		Raj-3777	10.00	88.00	123200.00

DEPARTMENT OF VETERINARY AND ANIMAL HUSBANDRY EXTENSION

Training organized by the department:

S.No.	Name of Training Program	Period	No. of participants	Sponsored by
Resettlement Poultry Training Programme of Army Personnel's for Twelve Weeks				
1.	Poultry Management Training	01.07.2013 to 21.09.2013	40	Director General (Training)
2.	Poultry Management Training	04.11.2013 to 25.01.2014	40	Directorate of Resettlement West Block-IV, R.K. Puram New Delhi
3.	Poultry Management Training	06.01.2014 to 29.03.2014	37	
Exposure visit cum Training Programme				
4.	26.04.2013	Dr. Y.K. Dehria, Bilaspur with 11 livestock farmers Dr. A.K. Chaurasia, Takhatpur, Bilaspur with 10 livestock farmers		
5.	22.05.2013	Dr. K.K. Vashistha, Vamnideh, Champa with 11 livestock farmers Dr. K.L. Maitri, Champa, Chhattisgarh with 10 livestock farmers		
6.	28.05.2013	04 livestock farmers from Namaste, Kanpur		
7.	03.06.2013	Dr. Javed Siddiqui, Bilaspur, Chhattisgarh with 13 livestock farmers		
8.	05.06.2013	Indumani Tripathi & Amrendra Pratap Singh, Livestock farmers.		

9.	07.06.2013	Dr. A.R. Jagade, Makhroda, Chhattisgarh with 02 livestock farmers.
10.	09.09.2013	Dr. Lokesh Goyal, Morena with 20 livestock farmers
11.	18.09.2013	Dr. Rampal Tandon, Chhuikhadan, Chhattisgarh with 11 livestock farmers
12.	23.10.2013.	Ganna Kisan Sansthan, Shahjahanpur with 36 livestock farmers
13.	19.11.2013	Ganna Kisan Sansthan, Gonda with 30 livestock farmers
14.	10.01.2014	Dr. S.S. Jagat, Champa, C.G. with 10 livestock farmers
15.	22.02.2014	40 livestock farmers sponsored by Ganna Kisan Sansthan, Gorakhpur
16.	26.02.2014	10 livestock farmers from Surajpur, Chhattisgarh
17.	01.03.2014	Dr. Dilip Gupta with 15 livestock farmers from Datia, Chhattisgarh and 30 livestock farmers from Durg, Chhattisgarh
Kisan Mela at DUVASU, Mathura		
18.	14-15 March 2014	Animal owners and farmers from various regions of Mathura district and adjoining areas

Training Manual

A manual entitled 'Training on Poultry Management' was prepared by the Department of Veterinary and Animal Husbandry Extension edited by Dr. Sanjeev Kumar Singh, Dr. Rajneesh Sirohi, Dr. Amitabh Bhattacharya, Dr. Deepak Sharma for training of former Army personnel.

PARTICIPATION OF OTHER DEPARTMENTS IN EXTENSION ACTIVITIES

Faculty members from different departments of University were involved as resource persons for enhancing the quality deliverance to farmers/ army personnel during trainings and other activities. The departments involved were Veterinary Clinical Medicine, Veterinary Surgery and Radiology, Veterinary Gynaecology and Obstetrics, Poultry Science, Veterinary Public Health, Veterinary Parasitology, Veterinary Microbiology and Veterinary Pharmacology and Toxicology.

Faculty members Veterinary Clinical Medicine, Veterinary Surgery and Radiology, Veterinary Gynaecology and Obstetrics, Veterinary Parasitology and Veterinary Microbiology actively participated in 19 clinical camps organized in different villages of Mathura district and also in adjoining districts. Faculty members attended 18 disease outbreaks in districts Agra, Bulandshahar, Chandauli, Etawah, Fatehpur, Ghaziabad, Mainpuri, Meerut, Muzaffarnagar, Saharanpur, Amroha and Mathura to assist the state AH department of UP.

S.No.	Date of Visit	Name of Village/ Block/ Farm	District	Name of Scientist
1.	10.06.2013	Arua Khas	Agra	Dr. Ajay Pratap
2.	07.09.2013	Samarpan Goshala Goverdhan	Mathura	Dr. Shanker Singh Dr. Amit Kr. Verma and Dr. Ruchi Tiwari
3.	08.09.2013	Jawa	Bulandsahar	Dr. Ajay Pratap and Dr. Arvind Tripathi
4.	12.09.2013	Jawa, Nekpur	Bulandsahar	Dr. Rashmi Singh and Dr. Ajay Pratap
5.	21.09.2013	Daina, Bhasod	Chandauli	Dr. Amit Kr. Verma and Dr. Shanker Singh
6.	22.09.2013	Chaubepur	Etawah	Dr. Amit Kr. Verma and Dr. Shanker Singh

7.	23.09.2013 to 25.09.2013	Chioli	Fatehpur	Jitendra Kumar (SRF)
8.	28.10.2013	Dasna	Ghaziabad	Dr. Rashmi Singh
9.	08.11.2013	PD, Cattle	Meerut	Dr. Rashmi Singh
10.	24.11.2013	Ghiror, Kurawali	Mainpuri	Dr. Rashmi Singh Dr. Amit Kr. Verma and Dr. Arvind Kr. Tripathi
11.	28.11.2013	Kurawali	Mainpuri	Dr. Amit Kr. Verma and Dr. Arvind Kr. Tripathi
12.	29.11.2013	Dungar, Sarnawali, Sunna	Muzaffarnagar	Dr. Rashmi Singh and Dr. Ashish Srivastava
13.	10.12.2013	Kanpur Zoo	Kanpur	Dr. Udit Jain and Sh. Janardan (SRF)
14.	11.12.2013	Bhadawri Farm	Etawah	Dr. Udit Jain and Sh. Janardan (SRF)
15.	11.12.2013	Mirpur kalri and Chaura Mandi	Saharanpur	Dr. Rashmi Singh and Dr. Arvind Tripathi
16.	22.01.2014	Atrasi	Amroha	Dr. Asish Srivastava Dr. Udit Jain and Dr. Amit Kumar
17.	07.02.2014	Bati, Chatikara	Mathura	Dr. Rashmi Singh and Dr. S.K. Singh
18.	19.02.2014	Naujheel	Mathura	Dr. Arvind Tripathi and Dr. Amit Kumar Verma

Exposure Visits of Farmers to Department of Poultry Science and associated farm

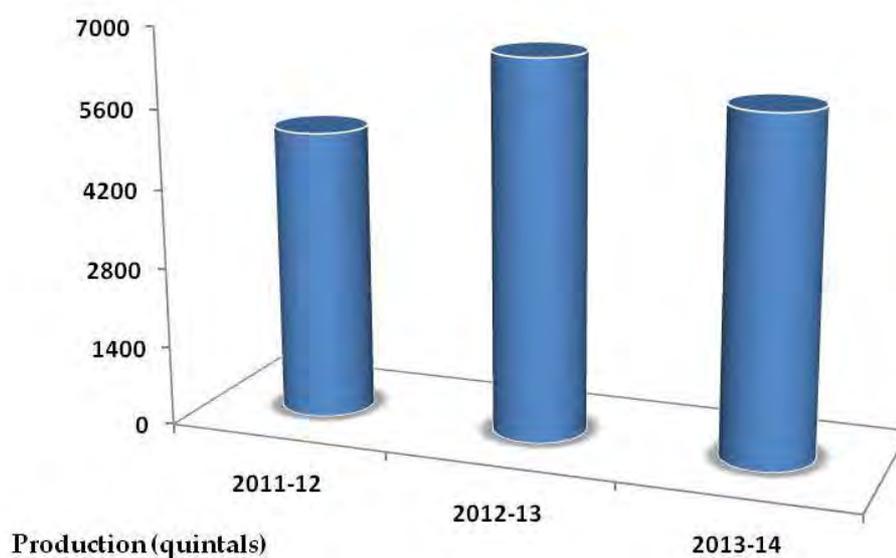
S.No.	Date	Beneficiaries
1.	18.04.2013	10 farmers from District Janjgir Champa, Chhattisgarh
2.	26.04.2013	21 farmers from District Bilaspur, Chhattisgarh
3.	22.05.2013	23 farmers from District Janjgir Champa, Chhattisgarh
4.	05.06.2013	2 farmers from Pratapgarh, UP
5.	07.06.2013	20 farmers from District Janjgir Champa, Chhattisgarh
6.	23.07.2013	Two farmers from village Bandpura, Mathura
7.	18.09.2013	10 farmers from Rajnandgou, Chhattisgarh
8.	19.11.2013	10 Farmers from Gonda, UP
9.	30.12.2013	10 farmers along Dist. Janjgir Champa, Chhattisgarh
10.	13.02.2014	22 farmers from Dist. Korea, Chhattisgarh
11.	27.02.2014	35 farmers from Bharatpur, Rajasthan
12.	01.03.2014	30 farmers from Dist. Durg, Chhattisgarh
13.	05.03.2014	21 farmers from Dist Shivpur, M.P.
14.	06.03.2014	10 farmers from Dist Bilaspur, Chhattisgarh
15.	08.03.2014	21 farmers from Dist Bilaspur, M.P.

VI. UNIVERSITY FARMS

MADHURI KUND FARM

Madhuri Kund Farm has about 1396 acre of land which is located about 25km from main Campus. Out of this, 788 acre of land is under cultivation. During the year, 2013-14 following crops were cultivated.

S.No.	Season	Crop	Production (Quintal)
1.	Kharif	Paddy (Sugandha-2)	590.65
		Til	27.60
		Dhencha	Converted to green manure
2.	Rabi	Sarson	134.67
		Wheat	2462.9
		Oats	337.95
		Barley	2445.9
		Barseem (Raw Seed)	1
Total			6000.67

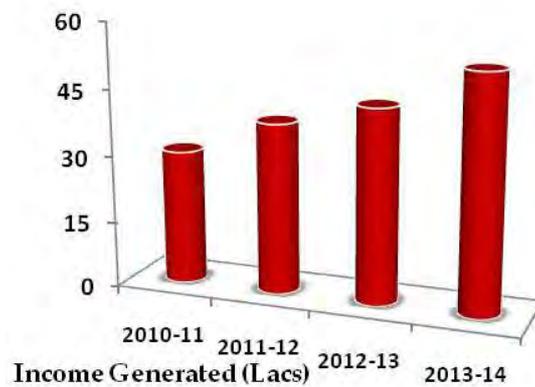
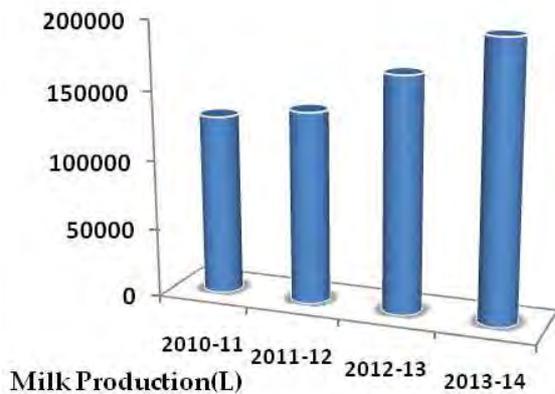


During the year a total of 6000.67 Quintal farms produce was produced and an income of approximately 1.1 crore. The farm procured a new machine for storing wheat bhusa and a new brick pavement was constructed for Seed Processing Plant. Continuous efforts are being made to increase production and efficiency of farm.

INSTRUCTIONAL LIVESTOCK FARM COMPLEX (ILFC)

The dairy Farm at ILFC, is maintaining 410 Hariana, Sahiwal, Cross Bred cattle and Murrah Buffaloes and produced 1,98,469 L of milk, giving average yield of 543.75 L per day. The peak yield recorded was 708 L. In addition, ILFC produced 13725 Q Green Fodder, 306.9 Q Bhusa, 401.9 Q Jau, 92.6 Q Jae and 1.5 Q Barseem which was utilized within ILFC or transferred to other units of university for feeding animals.

	2010-11	2011-12	2012-13	2013-14
Milk Production (L)	1,30,499	1,38,866	1,69,751.00	1,98,469
Income Generated (Lacs)	30.50	38.66	43.86	53.06



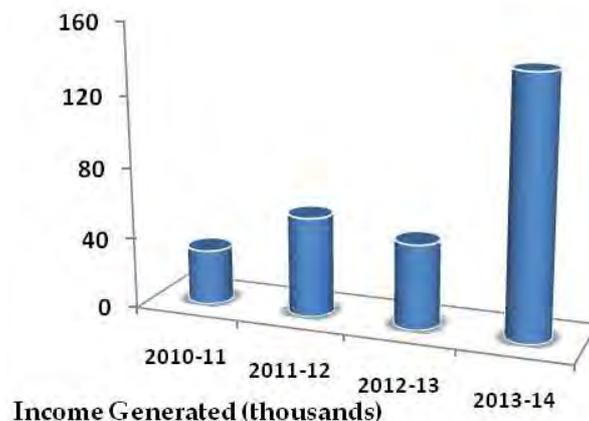
During the last, year one submersible pump of 10 Hp and two submersible pumps of 15 HP were procured and put to use for supply of fresh water to animals.

POULTRY FARM

The farm is presently maintaining a variety of species and breeds including Layers, Chabro, Aseel Peela, Kadaknath, Naked neck, Japanese Quail, Turkey, Guinea fowl, Emu, Black Rock, White Rock, Chandigarh Broiler, Red Cornish, Dahlem Red, Barred Rock, PB Broiler, PB-1 Layer, Punjab Brown and Chandigarh Black in different numbers for teaching and demonstration purposes. During the period under report the farm was able to earn a revenue of 189796.00 through selling off eggs, chicks and birds.



U.G. students performing candling of fertile eggs



FISH SEED PRODUCTION UNIT

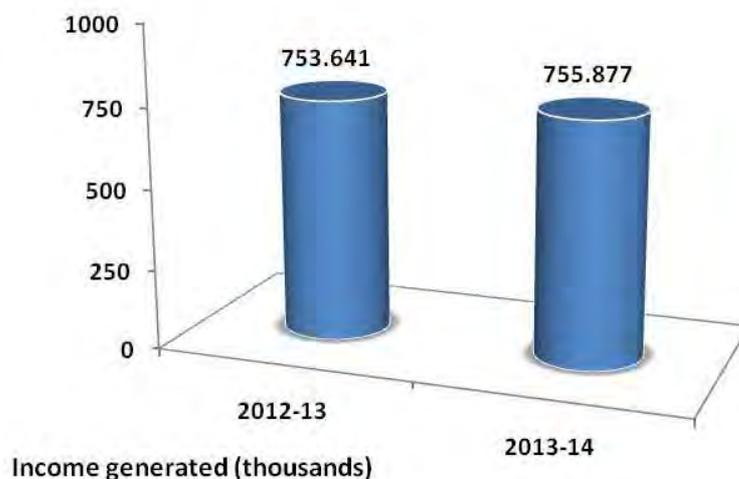
The fish seed production unit of the University undertook breeding of carp species. During previous year, 6,77,141 Common carp seed, 4,24,759 Rohu seed and 2,66,666 Catla seed was made available to fish farmers of Mathura and adjoining areas at nominal rates and the revenue generated from fish seed sale was Rs. One lakh forty three thousand six hundred ninety seven only (Rs. 1,43,697.00).



PASTURE FARM

During 2013-14, Pasture unit of the University produced following crops:

S.No.	Season	Crop	Production	Income
			6 acre fodder auctioned	40500.00
1.	Zaid and Kharif	Jowar (desi)	7 acre fodder transferred to ILFC farm @ 100.00 per quintal	53638.00
2.	Rabi	Barley	440.60 quintal auctioned	5,39,565.00
			96.20 quintal transferred to ILFC	1,22,174.00
Total				56,11,962.00



VII. HUMAN RESOURCE DEVELOPMENT

MOU signed with NRC on Meat

Dr. V.V. Kulkarni, Director NRC on meat (ICAR) Hyderabad visited DUVASU, Mathura on 24th November, 2013. He keenly observed various teaching, research and extension activities of the Department of Livestock Products Technology. He signed MOU with this university for taking up joint research and extension activities benefitting both the institutes. Hon'ble Vice Chancellor, Prof. A.C Varshney signed MOU on behalf of DUVASU, Mathura in the presence of Dean CVSc & AH, Registrar, Director Research, Director Extension, and Scientific & Technical Advisor to the Vice Chancellor, Dr. Vikas Pathak, HOD L.P.T. exuded confidence that this MOU will facilitate University to undertake quality research in the area of meat science and will go a long way to boost human resource for state as well as for country.



Annual Review Meet of ICAR Outreach Programmes

Annual Review Meets of the ICAR funded projects on "Outreach programme on Zoonotic Diseases and Ethnoveterinary medicine running in the Department of Veterinary Public Health and Department of Pharmacology and Toxicology, respectively, were successfully organized by College of Veterinary Science and Animal Husbandry, DUVASU, Mathura on August 24, 2013. Under outreach programme on Zoonotic Diseases, 13 centers participated from



different Veterinary Colleges, Universities, ICAR and ICMR institutes of India. The center at DUVASU received grade "A" for Annual Progress report of year 2012-13. Under outreach Programme on "Ethnoveterinary medicine", 11 centers from the different parts of India (Aizwal, Ananad, Pookot, Palampur, Guwahati, IVRI, Jabalpur, Durg, TANUVAS and Mathura) participated. Dr. Gaya Prasad ADG (Animal Health), ICAR; P.I. of projects from different centers and DUVASU, Mathura were present in the meet to review the progress of projects.

State level Seminar on "Challenges and Strategies for Conservation of Small Ruminants in India" and a Poster Presentation Competition on "Conservation of threatened breeds of livestock in India"

A two- days State level Seminar on "Challenges and Strategies for Conservation of Small Ruminants in India" and a Poster Presentation Competition on "Conservation of threatened breeds of livestock in India" was organized under the project "Conservation and genetic improvement of Muzaffarnagari sheep for multiplication of superior germplasm" on 9-10th

October, 2013 by Department of Animal Genetics and Breeding, CVSc & AH, DUVASU, Mathura. Shri Sanjay Bhoosreddy, Joint Secretary, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Government of India was the Chief Guest, Dr. A. Batobayal, Former Joint Commissioner, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Government of India was the Guest of Honour and Hon'ble Vice



Chancellor of DUVASU, Mathura Prof. A.C. Varshney presided over inaugural function of the seminar. Dean, College of Veterinary Science & AH delivered his welcome address and also highlighted the objectives and theme of seminar. Dr. A. Batobayal emphasized on the conservation and importance of indigenous breeds in present scenario. In his presidential address, Hon'ble Vice Chancellor stressed on taking up the conservation of threatened indigenous breeds on regular basis as human welfare is possible only through animal welfare. In his inaugural address, Shri Sanjay Bhoosreddy took quotes from Charaka Samhita and said that environment is changing due to indiscriminate development by human being that has resulted in extinction of numerous species of plants and animals and there is an utmost need to conserve indigenous breeds of country. During the function, few of the retired faculty members of department were also felicitated for their immense contributions. 40 Veterinary Officers of different districts of Uttar Pradesh and 21 postgraduate students of the university enthusiastically participated in the seminar. There were four technical sessions in which seven eminent scientists from CIRG, Makhdoom; CSWRI, Avikanagar; NBAGR, Karnal and IVRI, Izatnagar interacted and recommendations for efficient conservation of indigenous breeds were finalized. The postgraduate students presented their posters. The competition was judged by Dr. H.N. Singh, Retd. Professor, Department of Animal Genetics and Breeding and Former Dean, CVSc & AH, DUVASU, Mathura; Dr. P.K. Singh, Principal Scientist, Animal Genetics & Breeding, National Bureau of Animal Genetic Resources, Karnal, Haryana and Dr. Atul Saxena, Director, Research, DUVASU, Mathura. Hon'ble Vice Chancellor of DUVASU, Mathura Prof. A.C. Varshney was the chief guest at valedictory and prize distribution function on 10th Oct, 2013. All the participants were presented with a certificate. Winners and other participants of poster presentation competition were awarded prizes.

XXII Annual Conference of Society of Animal Physiologists of India and National Symposium on "Physiological and Nutri-genomic Interventions to Augment Food Security and Animal Welfare"

Department of Veterinary Physiology organized three days "XXII Annual Conference of Society of Animal Physiologists of India and National Symposium on "Physiological and Nutri-genomic Interventions to Augment Food Security and Animal Welfare" from Nov. 19-21, 2013. Special feature of the conference was that the stalwarts of physiology from all corners of the country attended the conference. Prof. K.M.L. Pathak, DDG, Animal Science, ICAR, New Delhi, Prof. M.L. Madan, Former VC, DUVASU, Prof. A.K. Mishra, VC, MAFSU, Prof. U.K. Mishra,

VC, KVU, Durg, Prof. A.C. Varshney, Vice Chancellor, DUVASU, Mathura graced the inaugural function. Delegates were blessed by the eminent physiologists who included Prof. M.L. Madan, Dr. D.C. Shukla, Dr. M.D. Pandey and many more. Apart from National Symposium, nine Oral Sessions, two poster sessions and one plenary session was held during the conference. For the conference, 32 lead papers were invited and 224 abstracts were accepted. There were 148 registered delegates from almost every and nook and corner of the country and it was possibly one of the largest attended conferences in the history of SAPI. The key note address was delivered by Professor M.L. Madan on the topic "Physiological Intervention, Productivity and Animal Welfare Animals have provided people with food, energy, wealth, companionship, prestige, livelihood and sustainability. National Physiology Quiz for UG students was also organized in which Team from College of Veterinary Sciences, Anjora, Durg under the leadership of Dr. J.R. Khan won. Organizing Committee was highly lauded by the august members for organising a well managed conference. The closing function and valedictory was chaired by Dr. M.D. Pandey as the Chief Guest and Dr. J.S. Bhatia, Former ADG (ICAR) as the Guest of honour.



XXXIII Annual Conference of Society of Toxicology (India)

XXXIII Annual Conference of Society of Toxicology (India) for "Synergy of Toxicology Research in SAARC Countries" and National Symposia on "Toxico-genomic technologies in predictive toxicology", "Alternatives to use of animals for modern toxicity testing" and "Phyto-remedial approaches against environmental pollutants for human and animal health" was organized by Department of Pharmacology and Toxicology on October 23-25, 2013. Maj. Gen. Srikant, SM, VSM (Retired), and Hon'ble Vice Chancellor Lala Lajpat Rai University of Veterinary and Animal Sciences, Hisar was the Chief Guest and Prof A. Ahmad, Former Vice Chancellor SKUAST (J&K) and Jamia Hamdard University, New Delhi and Former DDG (Education), ICAR was the Guest of Honour. More than 150 delegates from different academic, agricultural and veterinary Universities, DRDO, CSIR-IITR, AIIMS, NIPER, CDRI, DBT, IVRI, various industries, private colleges and universities and even from CROs attended the Conference. During inaugural function, "Life-time Achievement Award" and Fellowships of the Society were conferred upon the distinguished toxicologists. In addition, retired Professors of Pharmacology and Toxicology were honoured. Technical programme included "KEYNOTE

address by Prof Y.K. Gupta, Former Director CSIR-IITR Lucknow, three symposia, two poster sessions and four technical sessions.



2nd Annual Meeting of Society of Veterinary Science and Biotechnology and National Seminar

The second annual meeting of Society of Veterinary Science and Biotechnology and National Seminar was organized by the Department of Veterinary Biochemistry, College of Veterinary Science & Animal Husbandry Mathura on the topic "Biotechnological Approaches to Challenges in Animal Health and Production" from March 06-07, 2014. Dr. K.K. Katoch, Vice Chancellor, CSK Himachal Pradesh Krishi Vishvavidyalya, Palampur inaugurated the conference alongwith Dr. Nagendra Sharma, Former Vice Chancellor, Sher-e-Kashmir University of Agriculture Sciences and Technology-J as the Guest of Honour, Honorable Vice-Chancellor and Chief Patron Prof. A.C. Varshney, presided over the function. Around hundred scientists participated in the conference and presented their research papers in the four technical sessions which were compiled in a compendium released during the inaugural function. Four invited lectures, 21 lead papers and 18 research papers were presented by the distinguished speakers and delegates in various technical sessions. Scientists interacted on the need of new generation thermostable vaccines, cost effective animal side spot tests for early diagnosis of important animal diseases at field level. Researchers also stressed upon need of strengthening of regional laboratories of State Animal Husbandry department/agencies for best use of the molecular diagnostic techniques and effective implementation and monitoring of animal disease, reporting system and national e-governance plan on livestock management initiated by government of India. Scientists emphasized on genomics and proteomics based research to develop molecular markers for selection of superior animals and production of quality animal products. Dr. B.D. Lakhchaura, Former Professor and an Eminent Scientist, GBPUAT, Pantnagar was the Chief Guest on valedictory function.



PARTICIPATION OF FACULTY MEMBERS IN TRAININGS/ WORKSHOPS

S.No.	Name of Faculty Member	Title of Event and Place	Date
1.	Dr. Ambika Sharma	Training on "Recent advances in proteomics for biomarker discovery" held at Animal Biotechnology Center, NDRI, Karnal.	July 08-17, 2013
2.	Dr. Y.K. Sharma	Summer school on Decision Support System in Agriculture on using Quantitative Techniques organized at NCAP, IASRI, New Delhi.	August 02-22, 2013
3.	Dr. Vivek Malik	26 th Advanced training course on "Cutting edge technologies in diagnostics and surgical procedures for veterinary patients" at Center of Advanced Faculty Training (CAFT, Department of Veterinary Surgery and Radiology, CVSc, GADVASU, Ludhiana	September 5-25, 2013
4.	Dr. Meena Goswami	Training course on "Advances in Production, Functional, Rheological and Quality Aspects of Traditional Indian dairy Products", held at Division of LPT, IVRI, Izatnagar, Bareilly	October 08-28, 2013
5.	Dr. Shanker Kr. Singh	National Training Program on "Advances in Diagnosis, Therapy and Prevention of Emerging and Re-emerging Diseases of Livestock" organized by Department of Veterinary Medicine, GADVASU, Ludhiana	October 08-28, 2013
6.	Dr. Y.K. Sharma	Mid Term Review Workshop organized at Zonal Project Directorate of ICAR, Kanpur	October 18-19, 2013
7.	Dr. Muneendra Kumar	Winter school on "Climate change and abiotic stress management in livestock basic concepts and amelioration measures", NIANP, Aduodi, Bangluru, Karnataka	November 05-25, 2013
8.	Dr. Udit Jain	Winter school on "Expression of immunogenic genes in heterologous systems and its usage in animal disease diagnosis and vaccines." held at Division of Veterinary Biotechnology, IVRI, Izatnagar, Bareilly (UP)	November 07-27, 2013
9.	Dr. Amit K. Jaiswal	Molecular Biological Approaches for Diagnosis and Control of Parasitic Diseases organized by Division of Parasitology, IVRI, Izatnagar, Bareilly (UP).	December 02 -22, 2013
10.	Dr. S.K. Mishra	Annual National Workshop of KVKs held at Bangalore, Karnataka.	December 07-09, 2013
11.	Dr. Vikas Pathak Dr. Amitav Bhattacharyya	Workshop on "Formulation of Winning Competitive Grant Proposals" held at UPCAR, Lucknow (UP).	December 10-13, 2013
12.	Dr. S.K. Bharti Dr. V.P. Singh	Workshop on Food Safety & Quality", MOFPI - NIFTEM, Sonipat, Haryana.	January 11, 2014

PARTICIPATION IN NATIONAL CONFERENCES/ SYMPOSIA/ SEMINARS BY FACULTY MEMBERS

S.No.	Name of Faculty Member	Title of event and Place	Date
1.	Dr. Vijay Kumar	Installation cum training workshop for NAIP consortium strengthening statistical computing for HAS held at IASRI, New Delhi	September 17-18, 2013
2.	Dr. Vinod Kumar Dr. Muneendra Kumar Dr. Vijay Pandey	2 nd National Conference of Indian Academy of Veterinary Nutrition and Animal Welfare on "Nutrition-health interactions for optimum livestock production & human welfare" held at FVSc & AH, SKUAST-J, Jammu (J&K)	September 19-21, 2013
3.	Dr. V.P. Singh Dr. Prabhakar Kumar Dr. Varsha Gupta Dr. Jitendra Tiwari	State level seminar on "Challenges and strategies for conservation of small ruminants in India" and Poster presentation competition on "Conservation of threatened breeds of livestock in India" Department of Animal Genetics & Breeding, CVSc & AH, DUVASU, Mathura	October 09-10, 2013
4.	Dr. Satish K. Garg Dr. Rajesh Mandil Dr. Anu Rahal Dr. Atul Prakash Dr. S. Choudhary Dr. R.K. Yadav Dr. Neeraj Kr. Gangwar	33 rd Annual Conference of Society of Toxicology (STOX), India & National Symposia on "Toxicogenomic technologies in predictive toxicology", "Alternatives to use of animals and <i>in vitro</i> models for modern toxicity testing" and "Phyto-remedial approaches against environmental pollutants for human and animal health" held by Department of Pharmacology and Toxicology, CVSc & AH, DUVASU, Mathura	October 23-25, 2013
5.	Dr. Jitendra Kumar Dr. A.K. Madan Dr. Vinod Kumar Dr. Brijesh Yadav Dr. Mukul Anand Dr. Dilip Kr. Swain Dr. Amitav Bhattacharyya Dr. Debashis Roy	XXII Annual Conference of Society of Animal Physiologists of India and National Symposium on 'Physiological and nutria-genomic interventions to augment food security and animal welfare' and 22 nd Annual conference of SAPI 2013 held by Department of Vety. Physiology, CVSc & AH, DUVASU, Mathura	November 19-21, 2013
6.	Dr. Satish K. Garg	XIII Annual Conference of ISVPT and National Symposia on "Biopharmaceuticals and nanotechnology in therapeutic and development of anticancer drugs from botanicals" at Division of Pharmacology and Toxicology, FVSc & AH, SKUAST-Jammu	November 20-22, 2013
7.	Dr. Amitav Bhattacharyya	XXX conference of Indian Poultry Science Association held at CARI, Izatnagar, Bareilly	November 22-23, 2013
8.	Dr. Rajesh Nigam	82 nd Annual Meeting of Society of Biological Chemists, India held at School of Life Sciences, University of Hyderabad, Hyderabad (AP)	December 02-05, 2013
9.	Dr. Amit Kumar Dr. Amit Kr Verma	National Symposium and XVII Annual Convention of IAVMI on Productivity enhancement through improved animal health and nutrition. IAVMI, Department of Animal Husbandry, Lucknow (UP)	December 13-15, 2013

10.	Dr. Vikas Pathak	7 th International Food Convention (IFCON 2013) on NSURE-Healthy Foods held at CSIR-CFTRI, Mysore	December 18-21, 2013
11.	Dr. Ajay Prakash Dr. Archana Pathak Dr. S.P. Singh	XXVIII Annual Convention of Indian Association of Veterinary Anatomists and National Symposium on "Veterinary Anatomy Vision 2050- Improvement, Challenges and opportunities in relation to animal as well as human health and biodiversity" at RAJUVAS, Bikaner.	January 08-10, 2014
12.	Dr. Vijay Singh	National symposium on "Frontier Reproductive Biotechnologies for enhancing Animal Fertility and Fecundity: Global Perspective" held at Department of Animal Reproduction, Gynaecology & Obstetrics, Nagpur Veterinary College, MAFSU, Nagpur.	January 08-10, 2014
13.	Dr. S.K. Bharti Dr. V.P. Singh	International Conference on "Emerging Food Safety Risks: Challenges for developing Countries", MOFPI - NIFTEM, Sonipat, Haryana	January 09-10, 2014
14.	Dr. D.N. Singh Dr. Rajneesh Sirohi	National Seminar of ISAPM on "New Dimensional Approaches for Livestock Productivity & Profitability Enhancement under Era of Climate Change" held at College of Vety. Sci., Anand Agricultural Univ., Anand (Gujarat)	January 28-30, 2014
15.	Dr. Vijay Kumar	XI National Symposium on "Harmonizing phenomics and genomics for sustainable management of livestock for upliftment of rural masses" organized by SOCDAB at NBAGR, Karnal.	February 06-07, 2014
16.	Dr. S.P. Singh	Reproductive Health: Issues and Strategies under Changing Climate Scenario" and 24 th Annual meeting of Indian Society for Study of Reproduction and Fertility (ISSRF)" jointly organized by the ISSRF and the Division of Physiology & Climatology, IVRI, Izatnagar, Bareilly (UP)	February 06-08, 2014
17.	Dr. Amit Kumar Dr. Vijay Singh	National Conference on Emerging Problems and Recent Advances in applied Sciences: Basic to Molecular Approaches (EPRAAS-2014) held at Department of Biotechnology, Ch. Charan Singh University, Meerut (UP).	February 08-09, 2014
18.	Dr. Vikas Pathak Dr. Rashmi Singh Dr. Pawanjit Singh Dr. Udit Jain Dr. Brijesh Yadav Dr. Vijay Pandey Dr. Madhu Tiwari Dr. Dilip Kr. Swain Dr. Jitendra Tiwari Dr. Yajuvendra Singh Dr. D.N. Singh Dr. Ruchi Tiwari	2 nd Annual Meeting of Society of Veterinary Science and Biotechnology (SVSBT) and National Seminar on "Biotechnological approaches to challenges in animal health and production" organized by Department of Vety. Biochemistry, CVSc & AH, DUVASU, Mathura	March 06-07, 2014

VIII. DIGNITARIES VISITED

- ❖ Dr. S. Rathour, Former Vice Chancellor, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur
- ❖ Lt. General N.S. Kanwar, Director General, RVS, New Delhi
- ❖ Dr. Gaya Prasad, ADG (Animal Science), ICAR, New Delhi
- ❖ Shri Sanjay Bhoosreddy, Joint Secretary, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Government of India
- ❖ Prof. A. Ahmed, Former DDG (Education), ICAR, New Delhi, Former Vice Chancellor, SKUAST-K, Srinagar and Former Vice Chancellor, Jamia Humdard University, New Delhi
- ❖ Major General Srikant Sharma, Vice Chancellor, LLRUVAS, Hisar
- ❖ Dr. K.M.L. Pathak, DDG (Animal Science), ICAR, New Delhi
- ❖ Dr. A.K. Mishra, Vice Chancellor, MAFSU, Nagpur
- ❖ Dr. U.K. Mishra, Vice Chancellor, KVU, Durg
- ❖ Dr. M.L. Madan, Former DDG (Animal Science), ICAR, New Delhi and Former Vice Chancellor, DUVASU, Mathura
- ❖ Dr. V.V. Kulkarni, Director NRC on Meat, Hyderabad
- ❖ Shri Alok Kumar Jain, Vice Chancellor, G.B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand
- ❖ Dr. S. Ayyappan, Secretary DARE and Director General ICAR, New Delhi
- ❖ Prof. Prathees Nag, Vice Chancellor, Indira Gandhi University, Gorakhpur
- ❖ Prof. S.K. Agrawal, Director, CIRG, Makhdoom
- ❖ Dr. Dheeraj Kumar, Director, Mustard Research Centre, Bharatpur
- ❖ Dr. R.K. Singh, Director, IVRI, Izatnagar
- ❖ Dr. K.K. Katoch, Vice Chancellor, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur
- ❖ Dr. Nagendra Sharma, Former Vice Chancellor, SKUAST-J, Jammu
- ❖ Padam Vibhushan Prof. R.B. Singh, Chancellor of Central University
- ❖ Maj. Gen Sir Elynm, Trustee; Paul Elphik, Chief Executive; Ms. Petra Ingram and Mr. Shailesh Patel, Director of Finance and Information: Team of Brooke U.K.
- ❖ Dr. S.A.H. Abidi, Ex- Member, ASRB, New Delhi
- ❖ Dr. Gaj Raj Singh, Former Dean, Veterinary College, CAU, Aizwal
- ❖ Dr. S. M. Usturge, Dean, Veterinary College, KVAFSU, Bidar
- ❖ Dr. K.P. Tripathi, Principal Scientist (EQR), ICAR, New Delhi

IX. STUDENTS' WELFARE

EDUCATIONAL TOURS

To enrich the academic and professional knowledge and improve their technical skills, educational tours were organized for 5th year and 4th year students of BVSc & AH.

Name of tour	Class	Duration	Tour Leader	Institutes/ Universities visited
South India Educational Tour	5 th year	Feb. 07- 16, 2014	Dr. Brijesh Yadav Dr. Dilip Kumar Swain	Bombay Veterinary College, Veterinary College Bangalore, Veterinary College Hyderabad and Fisheries Institute, Goa.
North India Educational Tour	4 th year	March 24-30, 2014	Dr. Munnendra Kumar Dr. Vijay Kumar	Veterinary College, Amritsar; Ludhiana and Hisar and National Dairy Research Institute, Karnal.



NATIONAL CADET CORPS

During the year, thirty four students of the College appeared for 'C' certificate exam and all of them qualified the exam. Mrinalini Saini got 'Aye' grade and thirty one others got 'Bee' grade while two cadets scored "Cee" grade. Besides these, students also actively participated in various activities of NCC including equestrian training, piloting the Hon'ble Vice Chancellor on horseback during celebration of national festivals. NCC Cadets of the University led by Lt. Rajneesh Sirohi, ANO, 1UP R&V SQN, NCC, Mathura presented the convocation Guard of Honour to Dr. S. Ayyappan, Hon'ble DG, ICAR New Delhi on the occasion of 3rd Convocation of University on 20th Feb 2014.



ANNUAL SPORT MEET -2014

Sports meet 2014 of the University was inaugurated by Prof. A.C. Varshney, Hon'ble Vice Chancellor of the University on 11th March 2014. The meet was declared open by Hon'ble Vice Chancellor after the march-past, salutation and sports oath. Dr. Daya Shankar, President, Games and Sports, welcomed the Chief Guest, teachers and students to the meet. Almost all the inter-class competitions of in-door and out-door games and sports including some athletic events were completed before the sports day. Athletic events like 100 m race were completed on 11-12 March, 2014. Mr. Gaurav Bhoiya of 4th year BVSc&AH and Miss Deepanka of 4th year BVSc&AH students were adjudged the best male and female athletes of the year. Slow cycling, musical chair for ladies and "Tug-of-War" between teachers and students were special attraction of the afternoon. Closing ceremony was held on 12th March 2014 where Dr. S.K. Agrawal, Director, CIRG, Mathura was the Chief Guest. The closing ceremony was presided over by Prof A.C. Varshney, Hon'ble Vice Chancellor, DUVASU, Mathura. The winners were awarded with medals and trophies for their hard work. Speaking on the occasion, Dr. Agrawal emphasized that every day is a challenge and games and sports inculcate the spirit of competitiveness.



EXTRACURRICULAR AND CULTURAL ACTIVITIES

As a part of University foundation day celebration, Annual Cultural programme "Jhankar" was organized on 27.10.2013. Cultural events, namely, Saraswati Vandana, Solo song, Duet song, Solo Folk Song, Poem Recitation, Solo Dance, Group Song, Skit, Group Song, Duet Song, Mime Act, Mime Dance, Rangoli and Mono Acting were organized. Faculty, staff and students were present in large number. Hon'ble Vice Chancellor Prof. A.C. Varshney was the chief guest on the occasion.



FRESHER'S DAY

Fresher's Day was celebrated on 31.08.2013 in Kisan Bhawan. Events like Saraswati Vandana, Solo Song, Poem recitation, Jokes, Group Song, Group Dance, Skit and Mime were presented by the first year Students. Hon'ble Vice Chancellor Prof. A.C. Varshney was the Chief Guest on the occasion and Dean, Prof. Satish Kumar Garg welcomed the students to Veterinary fraternity. He also exhorted them to study hard and develop their innate qualities not only as a student of Veterinary Science but as a good human being too.



HINDI PAKHWARA

Hindi Pakhwara was celebrated through organization of a debate competition on 21.09.2013 on the topic "तकनीकी शिक्षा के विकास के लिए हिन्दी आवश्यक हैं". Dr. Brijesh Yadav, Asstt. Incharge, Student Welfare coordinated the event. Dr. Jitender Kumar, Associate Professor, Dr. Archana Pathak, Associate Professor and Dr. Gulshan Kumar, Asstt. Professor were the judges. Mr. Sandeep Kumar Mishra and Ms. Prabha Sharma were adjudged 1st 'against the motion' and 'for the motion', respectively. Prof. Satish K. Garg, Dean, CVSc & AH was the Chief Guest and gave away the prizes.

DEBATE COMPETITION ORGANIZED BY INDIAN VETERINARY RESEARCH INSTITUTE, IZATNAGAR

Three students of College of Veterinary Science & AH participated in debate competition organized by IVRI, Izatnagar on 25th Feb. 2014 on occasion of Kisan Mela organized by IVRI on the occasion of National Science Day. The topic for debate competition for UG Category was "Use of Social media boon/curse" and "Organic Vs Conventional Livestock Farming". Shri Jai Prakash 3rd Year BVSc & AH, Shri Sandeep Mishra 2nd Year BVSc & AH, Miss Deepanka 4th Year BVSc & AH were the participant under leadership of Dr. Vinod Kumar, Asstt. Professor, Department of Animal Nutrition, CVSc & AH, DUVASU, Mathura.

6TH ALL INDIA ZYDUS DRAWING AND PAINTING COMPETITION-2013

Zydus All India Drawing Competition was organized on the topic "Indian breeds of cattle or buffalo or dog" in Department of Physiology, CVSc & AH. Dr. Brijesh Yadav, Asstt. Incharge, Student Welfare coordinated the event. Mr. Anand Kushwaha, BVSc & AH, 4th Year, Mr. Rakesh Kumar, BVSc & AH, 2nd Year and Miss Deepanka, BVSc & AH, 4th Year stood first, second and third, respectively on evaluation by the panel of judge's. Prize money and certificates were distributed by Hon'ble Vice Chancellor Prof. A.C. Varshney on the 26th January 2014.

FELLOWSHIP

DSW section facilitated award of fellowship to four BVSc & AH and 16 MVSc students for their academic performance from University Sources.

One Student of Doctor of Philosophy, 21 students of Master of Veterinary Science, 03 students of Master of Science (Biotechnology), 171 students of Bachelor of Veterinary Science and Animal Husbandry and 49 students of diploma in Veterinary Pharmacist/ Livestock Extension Officer were provided Post Matric Scholarship granted by Government of Uttar Pradesh.

X. OTHER HIGHLIGHTS AND ACTIVITIES

AMBEDKAR JAYANTI

In the remembrance of Dr. Babasaheb Ambedkar, the university celebrated Ambedkar Jayanti on 14th of April 2013. Honorable Vice-Chancellor, Professor A.C. Varshney, addressed the gathering regarding the importance of this day and paid homage to Babasaheb's portrait by garlanding along with other officials of the university which was followed by floral tributes by the staff and students to commemorate his memory.

OATH TAKING CEREMONY

Oath taking ceremony of veterinary graduates of batch 2008 was organized on 8th July 2013 in the auditorium of Kisan Bhawan, DUVASU, Mathura. Lt. General N.S. Kanwar, DG RVS, New Delhi was the chief guest of the ceremony. Hon'ble Vice Chancellor Dr. A.C. Varshney has presided over the function. 46 graduates administered the veterinary oath. The oath was given by Dean, College of Veterinary Science and Animal Husbandry, Dr. Satish Kr. Garg. The students who secured first and second position in the class were honoured by INTAS and also received Ch. Charan Singh Rashtriya Pratibha Puruskar. The 29 students who qualified Junior Research Fellowship examination of ICAR, received certificate of appreciation. Lt. General addressed the students and gathering and briefed the importance of RVC and encouraged the students to come forward and join RVC for the country.



PRE VETERINARY TEST -2013

Pre Veterinary Test (PVT-2013) was conducted by office of Controller of Examination. It was conducted in two phases viz., preliminary examination and mains examination. The preliminary examination was conducted in five cities-Kanpur, Allahabad, Bareilly, Lucknow and Mathura on 12-05-2013 in which 2508 students appeared. Out of these, 343 students qualified for mains examination. Main examination was held at BSA College Mathura on 02-06-2013, in which 324 students appeared. Out of which, 319 students qualified the second phase examination. Finally the students were admitted to BVSc & AH programme on the basis of merit in competitive examination under various categories.

INDEPENDENCE DAY CELEBRATED

The 67th Independence Day was celebrated on August 15, 2013 with great zeal. Professor A.C. Varshney, Hon'ble Vice Chancellor, DUVASU, Mathura as the Chief Guest of the occasion unfurled the National Flag and paid floral tribute to the portrait of Gandhiji, the Father of Nation. The event was witnessed by the participation of senior officers, faculty members, staff and students of the university. Students, faculty and staff also participated in the speech, patriotic songs and poem recitation competition. Hon'ble Vice Chancellor addressed the gathering and cited the sacrifices of the national martyrs and stressed upon the sincere devotion, honesty and integrity to serve the university and nation as a whole. To promote awareness of nature conservation, tree plantation was performed in front of the lawn of Main Building, CVSc & AH.



GANDHI JAYANTI CELEBRATION

Gandhi Jayanti was celebrated on 2nd October, 2013. Hon'ble Vice Chancellor and Officers of the university paid floral tributes to the Father of the Nation. Prof. A.C. Varshney, Hon'ble Vice Chancellor addressed the gathering of faculty, non-teaching staff and students of the university and remembered the contributions and devotions of Gandhiji for the nation.

REPUBLIC DAY CELEBRATED

On 26th January 2014, 65th Republic Day was celebrated at DUVASU, Mathura where Professor A.C. Varshney, Hon'ble Vice-Chancellor hoisted the National Flag at the Main Building of the campus and addressed the gathering. Hon'ble Vice-Chancellor and the senior officials of the University garlanded the portrait of Mahatma Gandhi and paid him floral tribute. The celebration also included guard of honour by the NCC cadets, patriotic songs, recitation of poems and speeches by the students, teaching and non-teaching staff of DUVASU with full enthusiasm and the salutation and remembrance of other national martyrs. The ceremony ended with plantation of trees as an environmental replete.



BASANT PANCHMI CELEBRATED

Basant Panchmi, a festival of Saraswati Puja, highlighting the coming of spring was celebrated at DUVASU-Mathura on 4th February 2014. Hon'ble Vice-Chancellor, senior officials of the University, faculty members, non-teaching staff and students collectively worshipped Goddess Saraswati, the Goddess of knowledge, music, art and culture.

XI. AWARDS AND RECOGNITIONS

PROFESSOR A.C. VARSHNEY HONOURED

Professor A.C. Varshney Hon'ble Vice Chancellor of U.P. Pandit Deen Dayal Upadhyaya Veterinary University Mathura has been awarded the coveted Dr. Ratan Singh Memorial Award-2013 by the Indian Society for Veterinary Surgery (ISVS) at its Annual Convention held at Kerala Veterinary and Animal Science University in its glittering function, which was attended by great luminaries in the field of Veterinary Science and Veterinary Surgery. The award was given to Dr. Varshney for his overall excellence in his research and major contribution in the field of Veterinary Surgery, apart from development of clinical facilities at Veterinary Colleges of Palampur (H.P), and Aizwal (Mizoram). The extraordinary flair of Dr. A.C. Varshney is evident at Palampur, where he served for more than 20 years and guided the destiny of Surgery Department in particular & Veterinary College and the University in general. University takes pride in congratulating and complimenting Prof. Varshney.

PROF. SATISH K. GARG ELECTED AS PRESIDENT OF STOX

Prof. Satish K. Garg, Dean College of Veterinary Science & Animal Husbandry, DUVASU, Mathura has been selected as President of Society of Toxicology (India) for a period of two years. It is one of the prestigious professional society having more than 1000 life members and is the founder member of International Union of Toxicology (IUTOX). We congratulate and compliment Prof. Garg for his professional recognition and attainment.

ACHIEVEMENTS OF FACULTY MEMBERS

1. Dr. P.K. Shukla, Professor and Head, Poultry Science received the 'Lifetime Achievement Award' for significant contribution in the field of Poultry Production from Sri. Sanjay Bhoosareddy, I.A.S., Joint Secretary, Govt. of India on 13 Oct., 2013 at CPDO, Chandigarh.
2. Dr. Vikas Pathak, Professor & Head, Department of Livestock Products Technology was conferred Fellow of Indian Association of Agricultural Biochemists.
3. Dr. Amitav Bhattacharyya received the Ayurved IPISA Best Research Paper Award 2012 from Sri. Arvind R. Kaushal, Additional Secretary (DARE) and Secretary (ICAR) during XXX conference of Indian Poultry Science Association on 22nd November, 2013 at CARI, Izatnagar, Bareilly.
4. Drs. Vinod Kumar and Muneendra Kumar, Assistant Professors, received Best Paper presentation Award in 2nd National Conference of Indian Academy of Veterinary Nutrition and Animal Welfare on "Nutrition-health interactions for optimum livestock production & human welfare" held at SKUAST, Jammu from 19-21 Sep., 2013
5. Dr. Amit Kumar Verma, Assistant Professor received Best Poster Presentation award in National symposium on Productivity Enhancement through improved Animal Health and Nutrition held at Department of Animal Husbandry, Lucknow, UP.
6. Dr. Brijesh Yadav was awarded with the prestigious Kamala Madan Young Scientist award in SAPI 2012 and felicitated in the SAPI, Mathura-2013. It is a matter of glory to the department as well as to the University.

7. Dr. Vijay Kumar, Assistant Professor, received First prize in Best Poster Award at XI National Symposium on "Harmonizing phenomics and genomics for sustainable management of livestock for upliftment of rural masses" organized by SOCDAB at NBAGR, Karnal, February 06-07, 2014.
8. Dr. Vijay Pandey, Assistant Professor, received Best Poster Award at 2nd Annual Meeting of Society of Veterinary Science and Biotechnology (SVSBT) and National Seminar on Biotechnological approaches to challenges in animal health and production held at College of Veterinary Science and Animal Husbandry, DUVASU, Mathura, March 06-07, 2014.
9. Dr. D.N. Singh, Assistant Professor, received 2nd prize for Best Poster Presentation in National Seminar of ISAPM on "New Dimensional Approaches for Livestock Productivity & Profitability Enhancement Under Era of Climate Change", College of Vety. Sci., Anand Agricultural Univ., Anand (Gujarat), January 28-30, 2014.
10. Dr. Rashmi Singh, Associate Professor, received Best Poster presentation award in 2nd Annual Meeting of Society of Veterinary Science and Biotechnology and National Seminar on "Biotechnological Approaches to Challenges in Animal Health and Production", Department of Veterinary Biochemistry, DUVASU, Mathura, March 6-7, 2014.
11. Dr. Amit Kumar, Assistant Professor, delivered Lead Paper and received Best poster presentation award at National Conference on Emerging Problems and Recent Advances in applied Sciences: Basic to Molecular Approaches (EPRAAS-2014). Meerut. UP, February 8-9th, 2014 and received Best poster presentation award at National Symposium and XVII Annual Convention of IAVMI on Productivity enhancement through improved animal health and nutrition. IAVMI, Lucknow, UP, December 13-15th, 2013.
12. Dr. Ruchi Tiwari, Assistant Professor, received Best oral presentation award at 2nd Annual Meeting of Society of Veterinary Science and Biotechnology and National Seminar on "Biotechnological Approaches to Challenges in Animal Health and Production", Department of Veterinary Biochemistry, DUVASU, Mathura, March 6-7, 2014.
13. Dr. Brijesh Yadav, Assistant Professor, received Best Poster Award and Dr. Dilip Kr. Swain, Assistant Professor, received Best Paper Award for oral presentation in National symposium and 2nd conference of SVSBT-2014, March 6-7, 2014.
14. Dr. Amitav Bhattacharyya, Assistant Professor, received Ayurved IPSA Best Research Paper Award 2012 at XXX conference of Indian Poultry Science Association held at CARI, Izatnagar, Bareilly, UP, November 22-23, 2013.
15. Dr. Amit Kumar Verma, Assistant Professor, received Best Review Paper Award for review paper in Journal of Experimental Biology and Agriculture Sciences.
16. Dr. Udairaj P. Nakade, MVSc student of Prof. Satish K. Garg, Department of Pharmacology and Toxicology received Prof. Natarajan Young Scientist Award for his research paper on "Pharmacodynamic Studies on buffalo uterus during 13th Annual Conference of Indian Society of Vety. Pharmacology and Toxicology held at Faculty of Veterinary Science & AH, RS Pura, SKUAST- J on Nov. 20-22, 2013.

XII. RESEARCH PUBLICATIONS

- Anita, Kumar, A., Verma, A.K., Gupta, M.K. and Rahal, A. (2014). Multi drug-resistant pathogenic *Escherichia coli* in water sources and Yamuna River in and around Mathura, India. *Pakistan Journal of Biological Science*, **17(4)**: 540-544.
- Bansal, S., Malik, V., Pandey, R.P. and Singh, B. (2013). Radiographic morphometry of distal bones in buffaloes of different age groups. *Indian Journal of Veterinary Surgery*, **34(2)**: 121-126.
- Bhattacharyya, A., Garg, S. K., Kumar, V., Roy, D., Ravikant, K. and Maini, S. (2013). Effects of Superliv concentrate on the growth, immunocompetance traits and nutrient retention of commercial broilers during extreme winter. *International Journal of Poultry Science*, **12(1)**: 51-54.
- Dixit, S., Pandey, V., Swain, D. K., Sharma, D., Sharma, A. and S. Atul. (2013). Sperm apoptotic index in fresh and freeze-thaw semen of cattle and buffalo. *Veterinary Practitioner*, **14(1)**: 108-109.
- Farooqui, M.M., Chandrapal, Pathak, A., Prakash, A. and Kumar, P. (2013). Prenatal development of vas deferens in goats (*Capra hircus*). *Indian Journal of Veterinary Anatomy*, **25(1)**: 12-15.
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XIII. FINANCE AND BUDGET

(INR in lacs)

State Government			Indian Council of Agricultural Research	RKVY
Plan	Non-Plan	Total		
100.00	200.00	300.00	Strengthening and Development: 470.00 Library Support: 75.00	92.00

XIV. RIGHT TO INFORMATION ACT

In compliance of the order of Govt. of Uttar Pradesh and provision of RTI Act, 2005, PIO is working in the university. During the period, PIO received 112 applications out of which 98 applications were cleared.

XV. RENOVATION AND REPAIRS OF UNIVERSITY BUILDINGS AND INFRASTRUCTURE

With a funding of Rs. 225 lakhs from ICAR, New Delhi during 2013-14 the University has been able to renovate and repair following buildings:

- ❖ Partial roof replacement and renovation of S.N. Hostel and Gautam Hostel.
- ❖ Large Animal Operation theatre and X-ray room of Teaching Veterinary Clinical Complex has been renovated.
- ❖ Roof replacement of lecture hall situated in the Main building of College of Veterinary Science and Animal Husbandry.
- ❖ Laboratories of the departments of Microbiology, Pathology, Physiology, Extension, Animal Genetics and Breeding, Livestock Production and Management and Poultry Science have been repaired and renovated.
- ❖ Four paddocks at Instructional Livestock farm complex have been renovated.

UNIVERSITY ACHIEVEMENTS

