

ANNUAL REPORT

2007



**GURU ANGAD DEV
VETERINARY & ANIMAL SCIENCES UNIVERSITY
LUDHIANA (PUNJAB) INDIA**

Annual Report
2007

Guru Angad Dev Veterinary and Animal Sciences University Ludhiana

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PREFACE



Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana has made significant progress in teaching, research and extension in a short span of two years. First phase of renovation of teaching and research laboratories and lecture halls has been completed. A Centralized Diagnostic Laboratory has been made functional in Veterinary Clinical Service Complex. There has been a tremendous increase in the clinical cases in 2007 as compared to previous years. Emergency services at Veterinary Clinics are now available for 24 hours. A new Department of Animal Biotechnology has been established under Post Graduate Institute of Veterinary Education and Research and the Postgraduate Programme in Animal Biotechnology is being initiated during academic year 2008-09.

A total of 61 research proposals were submitted to various funding agencies; of these 31 project proposals have been sanctioned for implementation. Approval for other projects is awaited. In addition, two proposals have in principle been approved under National Agriculture Innovative Project of ICAR- one as lead institute and the other as participating institute. These are “Sustainable Livestock based Farming System for Livelihood Security in Hoshiarpur District of Punjab” and “Rumen Microbial Diversity in Domesticated and Wild Ruminants and Developing Microbial Consortia for Improving Energy Efficiency of Poor Quality Feeds”. Department of Animal Husbandry, Dairy & Fisheries, Govt. of India has sanctioned a project on “Conservation and Proliferation of Beetal goats - an endangered goat breed”.



Significant improvements were made both in production and productivity at livestock, poultry and fodder farm. Milk production increased from 4,51,058 kg in 2006 to 4,67,924 kg in 2007. Wet average in crossbreds increased from 12.71 kg to 13.79 kg. Quantity of silage prepared increased from 3543 qtls in to 7616 qtls. Machine milking has been introduced in buffaloes. A new strain of quail named “Punjab White” was released for commercial use. A large Gobar Gas plant to meet the energy needs of the farm is being added. A document on “Fisheries Development in Punjab - A Road Map” has been published.

Besides teaching and research, the extension education services received a major boost during the year. An animal welfare centre has been established at village ‘Gureh’ to provide services and dissemination of technologies to livestock owners.

A new Library and Computer Centre has been established. Excellent computer facilities with internet connectivity are available to both faculty and students. The faculty has won many awards and published their research findings in journals of national and international repute. A number of dignitaries visited the university.

With dedicated efforts of the faculty and other staff, I hope the university will emerge as a major centre of learning in Veterinary, Dairy and Fishery Sciences.



(V. K. TANEJA)

VICE-CHANCELLOR



EXECUTIVE SUMMARY

Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) was established at Ludhiana on August 9, 2005 and started functioning w.e.f. April 21, 2006 with objectives of promoting livestock production, health and prevention of the diseases through integrated teaching, research and extension. The GADVASU has made significant progress in teaching, research and extension in a short span of two years. The financial position of GADVASU has greatly improved. A number of research and developmental grants became available during the year. In addition to College of Veterinary Science, a College of Dairy Science & Technology and a College of Fisheries have been established. A new Department of Animal Biotechnology has been established under Post Graduate Institute of Veterinary Education and Research (PGIVER). Three Regional research-cum-demonstration Centres, one each at Talwara, Padari Kalan, and Kaljharani are being established.

Teaching

- The total number of students admitted for the session 2007-2008 was 114 which included 67 in B.V.Sc. and A.H., 40 in M.V.Sc. (including 26 ICAR nominations) and 7 in Ph.D programme.
- A total of 65 students (45 –B.V.Sc.&A.H., 13-M.V.Sc. and 7 Ph. D) successfully completed their degrees in different disciplines.
- Sixty one undergraduate and 24 postgraduate students received University Merit Scholarship. Three undergraduate students admitted through all India entrance examination were awarded National Talent Scholarship. Junior Research Fellowship of ICAR was awarded to eight postgraduate students.
- 1st Annual Athletic Meet was successfully organized during February 2007. The students of GADVASU participated in All India Inter Agricultural Universities Sports and Games Meet, All India Inter-Veterinary Colleges Badminton and Table Tennis (M and W) Tournaments, and the North Zone Inter Varsity Tournament and won medals in different events.
- GADVASU team participated in All India Inter Agricultural Youth Festival and won medals. First Cultural Night was successfully organized during April, 2007
- Six students attended Republic Day Camp and Prime-Minister Rally. During one month long equestrian competition, cadets won two gold, three silver, one bronze medals and two trophies. Cadets of College of Veterinary Science attended Combined Annual Training Camp and Army Attachment Camp.



- The library purchased 582 books for different disciplines and subscribed to 43 foreign and 14 Indian Journals during this period. The online access to foreign journals was also provided. The resources available in the library are being digitized. Steps have been taken to develop local area network for the university library. A lease line of 2 Mbps was installed for providing network connectivity to the College of Veterinary Science. Two robust servers IBM X 3800 series were purchased for developing centralized networking system.
- Faculty participated in international and national conferences, symposia and workshops and presented research papers. The faculty has won several awards and honours. A total of 13 manuals, 4 technical bulletins and 2 compendium were published by various departments.
- A Mongolian student Ms. Ayushjav Otgonjargal received training in Department of Animal Nutrition from Sept. to Oct. 2007. Trainings were also conducted under Centre of Advanced Studies in the departments of Animal Reproduction, Gynaecology and Obstetrics (3) and Veterinary Surgery and Radiology (1). Three trainings were conducted in different disciplines for the Veterinary Officers of the Punjab State.
- The XXIV Annual Conference of Indian Poultry Science Association and National Symposium on 'Poultry production for rural employment and nutritional security' was organized by the Department of Animal Nutrition at GADVASU from April 25-27, 2007.
- Following laboratories/ infrastructure were established/ upgraded in the College of Veterinary Science:
 1. Toxicology Laboratory in the Department of Veterinary Pharmacology and Toxicology
 2. Immunopathology Laboratory in the Department of Veterinary Pathology
 3. Molecular Laboratory in the Department of Veterinary Microbiology
 4. A Multimedia Laboratory with equipments like DTP work station, Audio work station, Video work station, Scanner A3 size, Printer, Video camera and Digital camera
 5. Centralized Diagnostic Laboratory in the Veterinary Clinical Service Complex.
 6. New fish ponds and upgradation of laboratories in Fisheries Unit.
 7. Multimedia facilities in lecture halls.



Research

- A total of 61 new project proposals were submitted. Out of these, 31 proposals have so far been approved for funding. A total of 89 schemes were operational during 2007-08.
- The crossbreeding project for the genetic improvement of cattle and buffalo showed an improvement in all milk production parameters. Four crossbred cow bulls in the 8th set were selected for ICAR field progeny testing programme. A total of 6 buffalo breeding bulls were contributed for 10th set in the ICAR network project.
- A white strain of quails under the name “PUNJAB WHITE QUAIL” was released after approval by the State Variety Release Committee for commercial farming. White quails attained a weight of 210 g at 5 weeks.
- Bypass fat feeding in adult buffaloes and high yielding dairy cows indicated improved ether extract (EE) digestibility and increased milk yield (20%) in early lactation with improved reproductive performance. It was concluded that supplemental bypass fat in the form of Ca-low chain fatty acids (LCFA) could be included at 2-3% of the total dry matter intake.
- Melatonin implant treatment induced ovarian cyclicity in anestrus buffaloes with a very high success rate. Melatonin implant treatment per anestrus animal was found to be very cost-effective (Rs 35/-), compared to other hormonal treatments.
- Hormonal and nutritional intervention improved reproductive performance in buffaloes. Injecting Human Chorionic Gonadotropin (hCG) 3000 I.U. 5th day post A.I. in buffaloes enhanced conception rate.
- Analysis of somatic cell count (SCC) by DeLaval cell counter (DCC) and microscope methods of milk in relation to udder health in buffaloes indicated that buffaloes unlike cows have low number of quarter infections, and DCC may be effectively employed for expressing milk SCC in this species.
- An epidemiological surveillance of brucellosis and Johne’s disease (JD) in animals revealed 21% (573/2642) animals positive for brucellosis and 14% (7/49) for JD. Outbreaks of Hemorrhagic Septicemia (6), Foot and Mouth Disease (1) and Nitrate/Nitrite toxicity (3) in dairy animals were attended and managed.
- The incidence of human brucellosis was found to be 25.13% (46 out of 183 samples) among dairy farmers and veterinarians. Treatment recommended by WHO (Doxycycline 100-mg bid and Rifampicin 20 mg/kg/day for 6 weeks) was found to be effective in controlling human brucellosis.



- The techniques for the manufacturing of value added milk and meat products e.g. quail egg pickle, low- fat buffalo meat patties, sweetened curd etc. were standardized.
- Ultrasound-guided biopsy (USGB) with biopsy gun using free hand technique was found to be easy, safe, accurate and helpful in differentiating degenerative, infectious/inflammatory and cirrhotic conditions of liver, acute and chronic renal damage, diagnosis of neoplastic and non-neoplastic conditions of splenic and abdominal masses, and various affections of prostate.
- *Azolla* and *Spirodella* could be incorporated in carp diet @ 20 % for low cost feed formulation. *Azolla* could also be used as a bio-fertilizer for boosting the fish production.
- A total of 170 research papers were published in national and international journals of repute.

Extension

- In order to transfer new technologies evolved by university, training courses were organized for the farmers (5), field veterinarians (7) and scientists (1) from other universities. Around 120 extension articles were published in different magazines, journals and News papers.
- Twelve animal welfare camps were organized in the rural areas of Punjab for treatment of animals. Farmers and field functionaries were advised/made aware of the recommended animal health practices.
- The faculty delivered extension lectures to the farmers in collaboration with other animal welfare agencies of the State. On these occasions, demonstrations regarding the collection, dispatch and transport of clinical material like blood, mucous discharge and faeces from animals, ideal methods of milking, teat dip, computation of ration, silage making, acaricide drug application and heat detection were carried out.
- Two Pashu Palan Mela were organized, each in the months of March and September. Various departments of the university exhibited new technologies/innovations for use in livestock and poultry farming. On this occasion, about 40-50 other Govt. and private agencies involved in animal welfare work also displayed their exhibits of importance to the farming.
- Regular monthly meeting of Progressive Dairy Farmers were organized. About 250 farmers took part in each meeting. Meetings of Fish, Piggery and Goat Farmers were also held every second month.
- An animal welfare centre was established by the University at 'Gureh' village for livestock development. Two animal welfare camps were organized at the centre. Animal Welfare centre provided technical interventions/guidance for managerial practices to increase dairy productivity and profit.



ਪ੍ਰਬੰਧਕੀ ਸੰਖੇਪ

‘ਗੁਰੂ ਅੰਗਦ ਦੇਵ ਵੈਟਨਰੀ ਐਂਡ ਐਨੀਮਲ ਸਾਇੰਸਿਜ਼ ਯੂਨੀਵਰਸਿਟੀ’ (‘ਗਡਵਾਸੂ’) ਲੁਧਿਆਣਾ ਵਿਖੇ ਮਿਤੀ 9 ਅਗਸਤ 2005 ਨੂੰ ਸਥਾਪਿਤ ਕੀਤੀ ਗਈ, ਜਿਸ ਨੇ ਮਿਤੀ 21 ਅਪ੍ਰੈਲ 2006 ਤੋਂ ਕਾਰਜ ਕਰਨਾ ਸ਼ੁਰੂ ਕੀਤਾ। ਇਸ ਯੂਨੀਵਰਸਿਟੀ ਦਾ ਟੀਚਾ ਸਿੱਖਿਆ, ਖੋਜ ਅਤੇ ਵਿਸਤਾਰ ਦੇ ਏਕੀ-ਕਰਨ ਰਾਹੀਂ ਪਸ਼ੂ-ਧਨ ਦੀ ਉਤਪੱਤੀ, ਸੇਹਤ ਅਤੇ ਬਿਮਾਰੀਆਂ ਦੀ ਰੋਕਥਾਮ ਦੇ ਉਪਰਾਲਿਆਂ ਨੂੰ ਵਧਾਉਣਾ ਹੈ। ਦੋ ਸਾਲ ਦੇ ਛੋਟੇ ਜਿਹੇ ਅੰਤਰਾਲ ਵਿੱਚ ਹੀ ‘ਗਡਵਾਸੂ’ ਨੇ ਸਿੱਖਿਆ ਖੋਜ ਅਤੇ ਵਿਸਤਾਰ ਦੇ ਖੇਤਰ ਵਿੱਚ ਵਿਸ਼ੇਸ਼ ਤਰੱਕੀ ਕੀਤੀ ਹੈ। ‘ਗਡਵਾਸੂ’ ਦੀ ਮਾਲੀ (ਆਰਥਿਕ) ਹਾਲਤ ਵਿੱਚ ਅਤਿ-ਅਧਿਕ ਸੁਧਾਰ ਹੋਇਆ ਹੈ। ਇਸ ਸਾਲ ਦੌਰਾਨ ਕਈ ਖੋਜ ਅਤੇ ਵਿਕਾਸ ਸੰਬੰਧੀ ਅਨੁਦਾਨ (ਗਰਾਂਟਸ) ਸਰਕਾਰ ਵਲੋਂ ਮਨਜ਼ੂਰ ਕੀਤੇ ਗਏ ਹਨ। ‘ਵੈਟਨਰੀ ਸਾਇੰਸ ਕਾਲਜ’ ਦੇ ਨਾਲ-ਨਾਲ, ਇੱਕ ‘ਡੇਅਰੀ ਸਾਇੰਸ ਐਂਡ ਟੈਕਨਾਲੋਜੀ ਕਾਲਜ’ ਅਤੇ ਇੱਕ ‘ਫਿਸ਼ਰੀਜ਼ ਕਾਲਜ’ ਵੀ ਸਥਾਪਿਤ ਕੀਤਾ ਗਿਆ ਹੈ। ‘ਪੋਸਟ-ਗਰੈਜੂਏਟ ਇੰਸਟੀਚਿਊਟ ਆਫ ਵੈਟਨਰੀ ਐਜੂਕੇਸ਼ਨ ਐਂਡ ਰਿਸਰਚ’ (PGIVER) ਦੇ ਅਧੀਨ ਇੱਕ ਨਵਾਂ ‘ਐਨੀਮਲ ਬਾਇਓਟੈਕਨਾਲੋਜੀ ਵਿਭਾਗ’ ਵੀ ਸਥਾਪਿਤ ਕੀਤਾ ਗਿਆ ਹੈ। ਤਲਵਾੜਾ (ਹੁਸ਼ਿਆਰਪੁਰ), ‘ਪਦਰੀ ਕਲਾਂ’ (ਤਰਨਤਾਰਨ) ਅਤੇ ‘ਕਾਲਝਰਾਅਨੀ’ (ਬਠਿੰਡਾ) ਵਿਖੇ ਇੱਕ-ਇੱਕ ‘ਰੀਜਨਲ ਰਿਸਰਚ-ਕਮ-ਡੈਮੋਸਟ੍ਰੇਸ਼ਨ ਸੈਂਟਰ’ ਸਥਾਪਿਤ ਕੀਤਾ ਜਾ ਰਿਹਾ ਹੈ।

ਸਿੱਖਿਆ

- ਸਿੱਖਿਆ-ਕਾਲ 2007-2008 ਦੌਰਾਨ ਦਾਖਲ ਕੀਤੇ ਵਿਦਿਆਰਥੀਆਂ ਦੀ ਕੁਲ ਗਿਣਤੀ 114 ਸੀ, ਜਿਨ੍ਹਾਂ ਵਿੱਚ 67 B.V.Sc. & A.H., 40 M.V. Sc. (26 I.C.A.R ਤੋਂ ਨਾਮਜ਼ਦ) ਅਤੇ 7 Ph.D. ਪ੍ਰੋਗਰਾਮ ਵਾਲੇ ਸਨ। ਕੁਲ 65 ਵਿਦਿਆਰਥੀਆਂ (45 B. V. Sc & A.H, 13 M.V. Sc. ਅਤੇ 7 Ph.D.) ਨੇ ਵੱਖ-ਵੱਖ ਵਿਸ਼ਿਆਂ ਵਿੱਚ ਸਫਲਤਾ ਸਹਿਤ ਡਿਗਰੀ ਪ੍ਰਾਪਤ ਕੀਤੀ।
- ਐਂਡਰ-ਗਰੈਜੂਏਟ ਦੇ 61 ਅਤੇ ਪੋਸਟ-ਗਰੈਜੂਏਟ ਦੇ 24 ਵਿਦਿਆਰਥੀਆਂ ਨੇ ‘ਯੂਨੀਵਰਸਿਟੀ ਮੈਰਿਟ ਸਕਾਲਰਸ਼ਿਪ’ ਪ੍ਰਾਪਤ ਕੀਤਾ। ‘ਆਲ-ਇੰਡੀਆ ਐਨਟ੍ਰੈਂਸ ਐਗਜ਼ਾਮੀਨੇਸ਼ਨ’ ਰਾਹੀਂ ਦਾਖਲ ਹੋਏ 3 ਐਂਡਰ-ਗਰੈਜੂਏਟ ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ ‘ਨੈਸ਼ਨਲ ਟੈਲੇਂਟ ਸਕਾਲਰਸ਼ਿਪ’ ਪ੍ਰਦਾਨ ਕੀਤਾ ਗਿਆ। ਪੋਸਟ-ਗਰੈਜੂਏਟ ਦੇ 8 ਵਿਦਿਆਰਥੀਆਂ ਨੂੰ I.C.A.R. ਵਲੋਂ ‘ਯੂਨੀਅਰ ਰਿਸਰਚ ਫੈਲੋਸ਼ਿਪ’ ਪ੍ਰਦਾਨ ਕੀਤਾ ਗਿਆ।
- ਫਰਵਰੀ 2007 ਵਿੱਚ ‘ਪਹਿਲੀ ਸਾਲਾਨਾ ਐਥਲੈਟਿਕ ਮੀਟ (ਪ੍ਰਤਿਯੋਗਤਾ)’ ਦਾ ਪ੍ਰਬੰਧ ਕੀਤਾ ਗਿਆ। ‘ਗਡਵਾਸੂ’ ਦੇ ਵਿਦਿਆਰਥੀਆਂ ਨੇ ‘ਆਲ-ਇੰਡੀਆ ਇੰਟਰ-ਐਗਰੀਕਲਚਰਲ ਯੂਨੀਵਰਸਿਟੀਜ਼ ਸਪੋਰਟਸ ਐਂਡ ਗੇਮਜ਼ ਮੀਟ’ ‘ਆਲ-ਇੰਡੀਆ ਇੰਟਰ-ਵੈਟਨਰੀ ਕਾਲਜਿਜ਼ ਬੈਡ-ਮਿੰਟਨ ਐਂਡ ਟੇਬਲ-ਟੈਨਿਸ’ (ਪੁਰਸ਼ ਅਤੇ ਇਸਤਰੀ) ਟੂਰਨਾਮੈਂਟਸ ਅਤੇ ‘ਨੌਰਥ-ਜ਼ੋਨ ਇੰਟਰ-ਵਰਸਿਟੀ ਟੂਰਨਾਮੈਂਟ’ ਵਿੱਚ ਭਾਗ ਲਿਆ ਅਤੇ ਵੱਖ-ਵੱਖ ਪ੍ਰਤਿਯੋਗਤਾਵਾਂ ਵਿੱਚ ਮੈਡਲ ਜਿੱਤੇ।



- ਗਡਵਾਸੂ ਦੀ ਟੀਮ ਨੇ 'ਆਲ-ਇੰਡਿਆ ਇੰਟਰ-ਐਗਰੀਕਲਚਰਲ ਯੂਥ ਫੈਸਟਿਵਲ' ਵਿੱਚ ਭਾਗ ਲਿਆ ਅਤੇ ਮੈਡਲ ਜਿੱਤੇ। ਅਪ੍ਰੈਲ 2007 ਵਿੱਚ ਪਹਿਲੀ 'ਕਲਚਰਲ ਨਾਇਟ' ਦਾ ਸਫਲਤਾ-ਪੂਰਵਕ ਪ੍ਰਬੰਧ ਕੀਤਾ ਗਿਆ।
- ਛੇ ਵਿਦਿਆਰਥੀਆਂ ਨੇ 'ਗਣਤੰਤਰ ਦਿਵਸ ਕੈਂਪ ਅਤੇ ਪ੍ਰਧਾਨ-ਮੰਤਰੀ ਰੈਲੀ' ਵਿੱਚ ਭਾਗ ਲਿਆ। ਇੱਕ ਮਹੀਨੇ ਦੇ ਲੰਬੇ 'ਘੋੜ-ਸਵਾਰੀ ਸੰਬੰਧੀ ਮੁਕਾਬਲੇ' ਦੌਰਾਨ ਕੈਡਿਟਾਂ ਨੇ 2 ਸੋਨੇ ਦੇ, 3 ਚਾਂਦੀ ਦੇ ਅਤੇ ਇੱਕ ਕਾਂਸੇ ਦਾ ਮੈਡਲ ਅਤੇ 2 ਟਰਾਫਿਆਂ ਜਿੱਤੀਆਂ। 'ਵੈਟਨਰੀ ਸਾਇੰਸ ਕਾਲਜ' ਦੇ ਕੈਡਿਟਾਂ ਨੇ 'ਕੰਬਾਇਡ ਸਾਲਾਨਾ ਟ੍ਰੇਨਿੰਗ ਕੈਂਪ' ਅਤੇ 'ਆਰਮੀ-ਅਟੈਚਮੈਂਟ ਕੈਂਪ' ਵਿੱਚ ਭਾਗ ਲਿਆ।
- ਇਸ ਕਾਲ ਦੌਰਾਨ ਲਾਇਬ੍ਰੇਰੀ ਨੇ ਵੱਖ-ਵੱਖ ਵਿਸ਼ਿਆਂ ਲਈ 582 ਕਿਤਾਬਾਂ ਖਰੀਦੀਆਂ ਅਤੇ 43 ਵਿਦੇਸ਼ੀ ਅਤੇ 14 ਭਾਰਤੀ ਰਸਾਲਿਆਂ (ਜਰਨਲਜ਼) ਲਗਵਾਏ। ਵਿਦੇਸ਼ੀ ਰਸਾਲਿਆਂ (ਜਰਨਲਜ਼) ਦੀ 'ਇਨਟਰਨੈਟ' ਰਾਹੀਂ 'ਆਨ-ਲਾਈਨ' (On-line) ਪਹੁੰਚ ਵੀ ਪ੍ਰਦਾਨ ਕੀਤੀ ਗਈ। ਲਾਇਬ੍ਰੇਰੀ ਵਿੱਚ ਮੌਜੂਦ ਸਾਧਨਾਂ ਦਾ ਅੰਕੀਕਰਣ (Digitization) ਕੀਤਾ ਜਾ ਰਿਹਾ ਹੈ। ਯੂਨੀਵਰਸਿਟੀ ਲਾਇਬ੍ਰੇਰੀ ਲਈ 'ਸਥਾਨਿਕ ਖੇਤਰ ਨੈਟਵਰਕ' (Local Area Network) ਨੂੰ ਵਿਕਸਿਤ ਕਰਨ ਲਈ ਕਦਮ ਚੁੱਕੇ ਜਾ ਰਹੇ ਹਨ। 'ਵੈਟਨਰੀ ਸਾਇੰਸ ਕਾਲਜ' ਨੇ ਨੈਟਵਰਕ ਨਾਲ ਜੋੜਨ ਲਈ 2 ਐਮ. ਬੀ. ਪੀ. ਐਸ. (2Mbps) ਦੀ ਇੱਕ 'ਲੀਜ਼-ਲਾਈਨ' ਪਟੇ ਤੇ ਲਈ ਗਈ ਹੈ। 'ਕੇਂਦਰੀ ਨੈਟਵਰਕ ਪ੍ਰਣਾਲੀ' ਦੇ ਵਿਕਾਸ ਲਈ 2 ਮਜ਼ਬੂਤ (ਵੱਡੇ) ਸਰਵਰਜ਼ (IBM X 3800 ਸੀਰੀਜ਼) ਖਰੀਦੇ ਗਏ ਹਨ।
- ਫੈਕਲਟੀ ਨੇ ਅੰਤਰ-ਰਾਸ਼ਟਰੀ ਅਤੇ ਰਾਸ਼ਟਰੀ ਕਾਨਫਰੈਂਸਾਂ, ਸੰਮੇਲਨਾਂ ਅਤੇ ਕਾਰਜਕਾਰੀ ਗੋਸ਼ਟੀਆਂ (ਵਰਕਸ਼ਾਪਾਂ) ਵਿੱਚ ਭਾਗ ਲਿਆ ਅਤੇ ਖੋਜ-ਪੱਤਰ ਪੇਸ਼ ਕੀਤੇ। ਫੈਕਲਟੀ ਨੇ ਕਈ ਇਨਾਮ ਅਤੇ 'ਗੌਰਵ-ਪੱਤਰ' ਜਿੱਤੇ। ਵੱਖ-ਵੱਖ ਵਿਭਾਗਾਂ ਵਲੋਂ ਕੁਲ 13 ਮੈਨੂਅਲਜ਼, 4 ਬੁਲੇਟਿਨ ਅਤੇ 2 ਕਮਪੈਂਡਿਅਮ ਪ੍ਰਕਾਸ਼ਿਤ ਕੀਤੀਆਂ ਗਈਆਂ।
- ਮੰਗੋਲਿਆ ਦੇਸ਼ ਤੋਂ ਆਈ ਇੱਕ ਵਿਦਿਆਰਥਣ 'ਅਯੂਜ਼ਵ ਔਟਗਨਜਰਗਲ' ਨੇ 'ਐਨੀਮਲ ਨਿਯੂਟ੍ਰਿਸ਼ਨ ਵਿਭਾਗ' ਵਿੱਚ ਸਤੰਬਰ ਤੋਂ ਅਕਤੂਬਰ 2007 ਤੱਕ ਸਿਖਲਾਈ ਪ੍ਰਾਪਤ ਕੀਤੀ। 'ਸੈਂਟਰ ਆਫ ਐਡਵਾਂਸਡ ਸਟਡੀਜ਼' ਹੇਠਾਂ 'ਐਨੀਮਲ ਰੀਪ੍ਰੋਡਕਸ਼ਨ, ਗਾਇਨੀਕੋਲੋਜੀ ਐਂਡ ਓਬਸਟੈਟ੍ਰਿਕਸ ਵਿਭਾਗ' ਵਲੋਂ 3 ਅਤੇ 'ਵੈਟਨਰੀ ਸਰਜਰੀ ਐਂਡ ਰੇਡੀਓਲੋਜੀ ਵਿਭਾਗ' ਵਲੋਂ ਇੱਕ ਸਿਖਲਾਈ ਕੋਰਸ ਦਾ ਪ੍ਰਬੰਧ ਕੀਤਾ ਗਿਆ। ਪੰਜਾਬ-ਰਾਜ ਦੇ ਵੈਟਨਰੀ ਅਫਸਰਾਂ ਲਈ ਵੱਖ-ਵੱਖ ਵਿਸ਼ਿਆਂ ਵਿੱਚ ਤਿੰਨ ਸਿਖਲਾਈ ਕੋਰਸਾਂ ਦਾ ਪ੍ਰਬੰਧ ਕੀਤਾ ਗਿਆ।
- 'ਐਨੀਮਲ ਨਿਯੂਟ੍ਰਿਸ਼ਨ ਵਿਭਾਗ' ਵਲੋਂ 'ਇੰਡੀਅਨ ਪੋਲਟ੍ਰੀ ਸਾਇੰਸ ਐਸੋਸੀਏਸ਼ਨ' ਦੀ ਚੌਵੀਵੀਂ ਸਾਲਾਨਾ ਕਾਨਫਰੈਂਸ ਅਤੇ 'ਪੋਲਟ੍ਰੀ ਪ੍ਰੋਡਕਸ਼ਨ ਫੌਰ ਰੂਰਲ ਇਮਪਲਾਇਮੈਂਟ ਐਂਡ ਨੈਸ਼ਨਲ ਸਿਕਓਰਟੀ' ਵਿਸ਼ਾ ਉੱਤੇ 'ਰਾਸ਼ਟਰੀ-ਸੰਮੇਲਨ (ਸਿਮਪੋਜ਼ੀਅਮ)' ਦਾ ਪ੍ਰਬੰਧ ਮਿਤੀ 25 ਤੋਂ 27 ਅਪ੍ਰੈਲ 2007 ਨੂੰ 'ਗਡਵਾਸੂ' ਵਿਖੇ ਕੀਤਾ ਗਿਆ।



- ‘ਵੈਟਨਰੀ ਸਾਇੰਸ ਕਾਲਜ’ ਵਿੱਚ ਹੇਠ ਲਿਖੀਆਂ ਪ੍ਰਯੋਗਸ਼ਾਲਾਵਾਂ (ਲੈਬਾਰਟਰੀਜ਼) ਜਾਂ ‘ਬੁਨਿਆਦੀ-ਢਾਂਚੇ’ (Infra-structures) ਸਥਾਪਿਤ ਜਾਂ ਉੱਨਤ ਕੀਤੇ ਗਏ।
 1. ‘ਵੈਟਨਰੀ ਫਾਰਮਾਕੋਲੋਜੀ ਐਂਡ ਟੌਕਸੀਕੋਲੋਜੀ ਵਿਭਾਗ’ ਵਿੱਚ ‘ਟੌਕਸੀਕੋਲੋਜੀ ਲੈਬਾਰਟਰੀ’।
 2. ‘ਵੈਟਨਰੀ ਪੈਥੋਲੋਜੀ ਵਿਭਾਗ’ ਵਿੱਚ ‘ਇਮਯੂਨੋ-ਪੈਥੋਲੋਜੀ ਲੈਬਾਰਟਰੀ’।
 3. ‘ਵੈਟਨਰੀ ਮਾਇਕ੍ਰੋਬਾਇਓਲੋਜੀ ਵਿਭਾਗ’ ਵਿੱਚ ‘ਮੌਲੀਕਯੂਲਰ ਲੈਬਾਰਟਰੀ’।
 4. ਇੱਕ ‘ਮਲਟੀਮੀਡੀਆ ਲੈਬਾਰਟਰੀ’ ਜਿਸ ਵਿੱਚ ਡੀ.ਟੀ.ਪੀ. ਕਾਰਜ-ਸਟੇਸ਼ਨ (work-station), ਆਡੀਓ ਕਾਰਜ -ਸਟੇਸ਼ਨ, ਵੀਡੀਓ ਕਾਰਜ-ਸਟੇਸ਼ਨ, ਏ-3 ਆਕਾਰ ਵਾਲਾ ਸਕੈਨਰ, ਵੀਡੀਓ ਕੈਮਰਾ ਅਤੇ ਡਿਜੀਟਲ ਕੈਮਰਾ ਹੈ।
 5. ‘ਵੈਟਨਰੀ ਕਲਿਨਿਕਲ ਸਰਵਿਸਿਜ਼ ਕਮਪਲੈਕਸ’ ਵਿੱਚ ‘ਸੈਂਟਰਲ ਡਾਇਗਨੋਸਟਿਕ ਲੈਬਾਰਟਰੀ’।
 6. ‘ਫਿਸ਼ਰੀਜ਼ ਇਕਾਈ’ ਵਿੱਚ ਮੱਛੀਆਂ ਲਈ ਨਵੇਂ ਸਰੋਤਰਾਂ ਅਤੇ ਲੈਬਾਰਟਰੀਜ਼ ਦਾ ਉੱਨਤ ਕਰਨਾ।
 7. ਲੈਕਚਰ-ਹਾਲਾਂ ਵਿੱਚ ‘ਮਲਟੀਮੀਡੀਆ’ ਦੀ ਸਹੂਲਤਾਂ।

ਖੋਜ

- ਕੁਲ 61 ਨਵੇਂ ਪ੍ਰਾਜੈਕਟ ਪ੍ਰਸਤਾਵ ਪੇਸ਼ ਕੀਤੇ ਗਏ। ਇਨ੍ਹਾਂ ਵਿੱਚੋਂ ਹੁਣ ਤੱਕ 31 ਪ੍ਰਸਤਾਵਾਂ ਲਈ ਮਾਲੀ ਸਹਾਇਤਾ ਮੰਜੂਰ ਹੋ ਚੁੱਕੀ ਹੈ। ਸਾਲ 2007-08 ਦੌਰਾਨ ਕੁਲ 89 ਖੋਜ ਯੋਜਨਾਵਾਂ (ਸਕੀਮਜ਼) ਕਾਰਜਸ਼ੀਲ ਸਨ।
- ਗਊਆਂ ਅਤੇ ਮੱਝਾਂ ਦੇ ਉਤਪੱਤੀ-ਸੰਬੰਧੀ (ਜੈਨੇਟਿਕ) ਸੁਧਾਰ ਲਈ ‘ਕਰਾਸ ਬਰੀਡਿੰਗ (ਦੋਗਲਾ ਨਸਲੀਕਰਣ) ਪ੍ਰਾਜੈਕਟ’ ਨੇ ਦੁੱਧ ਉਤਪਾਦਨ ਦੇ ਸਾਰੇ ਬਿੰਦੂ-ਪਰਿਮਾਣ (Parameters) ਵਿੱਚ ਸੁਧਾਰ ਦਰਸਾਇਆ ਹੈ। ਆਈ. ਸੀ. ਏ. ਆਰ. (I.C.A.R.) ਦੇ ‘ਫੀਲਡ ਪ੍ਰੋਜਨੀ ਟੈਸਟਿੰਗ ਪ੍ਰੋਗਰਾਮ’ ਲਈ ਅੱਠਵੇਂ ਸੈਟ ਵਿੱਚ 4 ਦੋਗਲੀ ਨਸਲ ਦੇ ਸਾਨ੍ਹਾਂ ਦੀ ਚੋਣ ਕੀਤੀ ਗਈ। ਆਈ. ਸੀ. ਏ. ਆਰ. (I.C.A.R.) ਨੈਟਵਰਕ ਪ੍ਰਾਜੈਕਟ ਵਿੱਚ ਨਸਲ ਸੁਧਾਰ ਲਈ ਦਸਵੇਂ ਸੈਟ ਵਿੱਚ 6 ਝੋਟਿਆਂ ਦਾ ਯੋਗਦਾਨ ਪਾਇਆ ਗਿਆ।
- ਵਪਾਰਿਕ ਫਾਰਮਿੰਗ ਲਈ ‘ਪੰਜਾਬ ਸਫੇਦ ਬਟੇਰਾ’ ਦੇ ਨਾਮ ਹੇਠਾਂ ਇੱਕ ਸਫੇਦ ਰੰਗ ਦੇ ਬਟੇਰਿਆਂ ਦੀ ਕਿਸਮ ‘ਸਟੇਟ ਵੈਰਾਇਟੀ ਰਿਲੀਜ਼ ਕਮੇਟੀ’ ਤੋਂ ਮਨਜ਼ੂਰੀ ਲੈਣ ਮਗਰੋਂ ਜਾਰੀ ਕੀਤੀ ਗਈ। ਸਫੇਦ ਬਟੇਰੇ 5 ਹਫ਼ਤਿਆਂ ਦੀ ਉਮਰ ਵਿੱਚ 210 ਗ੍ਰਾਮ ਭਾਰ ਹਾਸਿਲ ਕਰ ਲੈਂਦੇ ਹਨ।
- ਮੱਝਾਂ ਅਤੇ ਜ਼ਿਆਦਾ ਦੁੱਧ ਦੇਣ ਵਾਲੀਆਂ ਗਊਆਂ ਵਿੱਚ ‘ਬਾਈਪਾਸ ਫੈਟ (ਚਰਬੀ)’ ਖੁਆਉਣ ਨਾਲ ਬਿਥਰ ਅਕਸਟਰੈਕਟ (ether extract) ਡਾਇਜੈਸਟੀਬਿਲਟੀ ਵਿੱਚ ਸੁਧਾਰ ਅਤੇ ਸੰਤਾਨ-ਉਤਪੱਤੀ ਦੀ ਕ੍ਰਿਆ ਵਿੱਚ ਸੁਧਾਰ



ਦੇ ਨਾਲ-ਨਾਲ ਸ਼ੁਰੂ ਦੇ ਸੂਏ ਵਿੱਚ ਦੁੱਧ ਦੀ ਪੈਦਾਵਾਰ ਵਿੱਚ 20 ਫੀ ਸਦੀ (ਪ੍ਰਤੀਸ਼ਤ) ਦਾ ਵਾਧਾ ਦੇਖਿਆ ਗਿਆ। ਇਹ ਸਿੱਟਾ ਕੱਢਿਆ ਗਿਆ ਕਿ ਸਪਲੀਮੈਂਟਲ ਬਾਈਪਾਸ ਫੈਟ, ਕੈਲਸ਼ੀਅਮ-ਲੋਹ ਚੈਨ (low chain) ਫੈਟੀ ਐਸਿਡ (ਐਲ. ਸੀ. ਐਫ. ਏ.) ਦੇ ਰੂਪ ਵਿੱਚ ਖਾਣ-ਵਾਲੇ ਕੁੱਲ-ਸੁੱਕੇ ਪਦਾਰਥ (ਡ੍ਰਾਈ-ਮੈਟਰ) ਦੇ 2-3 ਫੀ ਸਦੀ (ਪ੍ਰਤੀਸ਼ਤ) ਤੱਕ ਸ਼ਾਮਲ ਕੀਤੀ ਜਾ ਸਕਦੀ ਹੈ।

- ‘ਗਰਮੀ’ ਵਿੱਚ ਨਾਂਹ ਆਉਣ ਵਾਲੀਆਂ (Anoestrus) ਮੱਝਾਂ ਵਿੱਚ ‘ਮੈਲਾਟੋਨਿਨ’ (Melatonin) ਇਮਪਲਾਂਟ (Implant) ਵਿੱਧੀ ਨਾਲ ਬਹੁਤ ਵੱਡੀ ਦਰ ਤੇ ਓਵਰੀਜ਼ ਸਾਇਕਲ ਵਿੱਚ ਆ ਜਾਂਦੀਆਂ ਹਨ। ਦੂਸਰੇ ਉੱਤੇਜਕ ਰਸਾਂ (ਹਾਰਮੋਨਜ਼) ਦੇ ਮੁਕਾਬਲੇ ‘ਮੈਲਾਟੋਨਿਨ’ ਇਮਪਲਾਂਟ ਮੁੱਲੀ ਤੌਰ ਤੇ ਪ੍ਰਤੀ ਪਸ਼ੂ (35 ਰੁਪਏ) ਕਾਰਗਰ ਪਾਇਆ ਗਿਆ।
- ਮੱਝਾਂ ਵਿੱਚ ਉੱਤੇਜਕ-ਰਸਾਂ-ਸੰਬੰਧੀ (‘ਹਾਰਮੋਨਲ’) ਅਤੇ ਆਹਾਰ-ਸੰਬੰਧੀ ਫੋਰਬਦਲ ਨਾਲ ਸੰਤਾਨ-ਉਤਪੱਤੀ ਦੀ ਕ੍ਰਿਆ ਵਿੱਚ ਸੁਧਾਰ ਹੋਇਆ। ਮੱਝਾਂ ਵਿੱਚ ਮਨਸੂਈ ਦੇ ਪੰਜਵੇਂ ਦਿਨ ਬਾਅਦ 3000 ਆਈ. ਯੂ. ‘ਮਨੁੱਖੀ ਕੋਰੀਓਨਿਕ ਗੋਨੈਡੋਟਰੋਪਿਨ’ (ਐਚ. ਸੀ. ਜੀ.) ਹਾਰਮੋਨ ਦੇ ਟੀਕੇ ਨਾਲ ਗਰਭ-ਧਾਰਨ ਦੀ ਦਰ ਵਧੀ ਹੈ।
- ਮੱਝਾਂ ਵਿੱਚ ਲੇਵੇ ਦੀ ਸਿਹਤ ਦੇ ਸੰਬੰਧ ਵਿੱਚ ਦੁੱਧ ਦਾ ‘ਡੋਲਾਵਲ ਸੈਲ ਕਾਉਂਟਰ’ (ਡੀ. ਸੀ. ਸੀ.) ਦੁਆਰਾ ਸੋਮੈਟਿਕ ਸੈਲ ਕਾਉਂਟ’ (ਐਸ. ਸੀ. ਸੀ.) ਦਾ ਵਿਸ਼ਲੇਸ਼ਣ ਅਤੇ ਖੁਰਦਬੀਨ (ਮਾਇਕ੍ਰੋਸਕੋਪ) ਤਰੀਕਿਆਂ ਨਾਲ ਦੁੱਧ ਦੀ ਜਾਂਚ ਤੋਂ ਇਹ ਪਤਾ ਲਗਿਆ ਹੈ ਕਿ ਗਊਆਂ ਦੇ ਉਲਟ ਮੱਝਾਂ ਵਿੱਚ ਲੇਵੇ ਦੀਆਂ ਬਿਮਾਰੀਆਂ ਦੀ ਗਿਣਤੀ ਘੱਟ ਹੈ ਅਤੇ ਮੱਝਾਂ ਵਿੱਚ ਦੁੱਧ ਦੇ ‘ਐਸ. ਸੀ. ਸੀ.’ ਨੂੰ ਦਰਸਾਉਣ ਲਈ ‘ਡੀ. ਸੀ. ਸੀ.’ ਪ੍ਰਭਾਵਸ਼ਾਲੀ ਤੌਰ ਤੇ ਵਰਤਿਆ ਜਾ ਸਕਦਾ ਹੈ।
- ਪਸ਼ੂਆਂ ਵਿੱਚ ‘ਬਰੂਸਲੋਸਿਸ’ ਅਤੇ ‘ਜੋਹਨੀਜ਼ ਬਿਮਾਰੀ’ (ਜੇ. ਡੀ.) ਦੀ ‘ਮਹਾਮਾਰੀ-ਸੰਬੰਧੀ-ਚੈਕਸੀ’ ਬਾਰੇ ਆਂਕੜਿਆਂ ਮੁਤਾਬਿਕ 21 ਪ੍ਰਤੀਸ਼ਤ (573/2642) ਪਸ਼ੂ ‘ਬਰੂਸਲੋਸਿਸ’ ਨਾਲ ਅਤੇ 14 ਪ੍ਰਤੀਸ਼ਤ (7/49) ਪਸ਼ੂ ‘ਜੇ. ਡੀ.’ ਨਾਲ ਰੋਗੀ ਪਾਏ ਗਏ। ‘ਗੱਲ-ਘੋਟੂ’ ਬਿਮਾਰੀ ਦੇ 6, ‘ਮੂੰਹ-ਖੁਰ ਬਿਮਾਰੀ’ ਦਾ ਇੱਕ ਅਤੇ ‘ਨਾਇਟਰੇਟ/ਨਾਇਟਰਾਈਟ ਜਹਿਰਵਾਦ’ ਦੇ 3, ਬਿਮਾਰੀਆਂ ਦੇ ਉਭਾਰਾਂ (ਹਮਲਿਆਂ) ਨੂੰ ਤੁਰੰਤ ਕਾਰਵਾਈ ਕਰਕੇ ਕਾਬੂ ਕੀਤਾ ਗਿਆ।
- ਡੇਅਰੀ ਪਸ਼ੂ-ਪਾਲਕਾਂ ਅਤੇ ਪਸ਼ੂ-ਚਿਕਿਤਸਕਾਂ ਵਿੱਚ ‘ਮਨੁੱਖੀ ਬਰੂਸਲੋਸਿਸ’ ਦਾ ਪ੍ਰਚਲਨ 25.13 ਪ੍ਰਤੀਸ਼ਤ ਪਾਇਆ ਗਿਆ। ‘ਮਨੁੱਖੀ ਬਰੂਸਲੋਸਿਸ’ ਨੂੰ ਕਾਬੂ ਵਿੱਚ ਕਰਨ ਲਈ ‘ਡੈਬਲਯੂ. ਐਚ. ਓ.’ (W.H.O.) ਦੁਆਰਾ ਸਿਫਾਰਿਸ਼ ਕੀਤਾ ਗਿਆ ਇਲਾਜ (‘ਡੋਕਸੀਸਾਇਕਲਿਨ’ 100 ਮਿਲੀ-ਗ੍ਰਾਮ ਦਿਨ ਵਿੱਚ ਦੋ ਬਾਰ ਅਤੇ/‘ਰਿਫਾਮਪਿਸਿਨ’ 20 ਮਿਲੀ-ਗ੍ਰਾਮ/ਕਿਲੋਗ੍ਰਾਮ/ਦਿਨ 6 ਹਫ਼ਤਿਆਂ ਲਈ ਕਾਰਗਰ ਪਾਇਆ ਗਿਆ।
- ‘ਗੁਣ-ਯੁਕਤ ਦੁੱਧ’ ਅਤੇ ‘ਮਾਸ-ਪਦਾਰਥ’ ਜਿਵੇਂ ਕਿ ਬਟੇਰੇ ਦੇ ਆਂਡਿਆਂ ਦਾ ਅਚਾਰ, ‘ਘੱਟ-ਚਰਬੀ ਵਾਲੀ ਪੈਟੀਜ਼’, ‘ਮਿੱਠੀ-ਦਹੀ’ ਆਦਿ ਦੇ ਬਣਾਉਣ ਦਿਆਂ ਤਕਨੀਕਾਂ ਦਾ ਮਿਆਰ ਕਾਇਮ ਕੀਤਾ ਗਿਆ।



- ਜਿਗਰ ਦੇ ਸਿਰੋਹਸਿਸ, ਵਿਕਾਰਾਂ, ਛੂਤਦਾਰ ਬਿਮਾਰੀਆਂ/ਸੋਜ, ਗੁਰਦਿਆਂ ਦੇ ਤੀਖਣ ਅਤੇ ਜੀਰਣ (ਹੌਲੀ-ਹੌਲੀ ਹੋਣ ਵਾਲੇ) ਨੁਕਸਾਨ, ਤਿੱਲੀ ਅਤੇ ਢਿੱਡ-ਸੰਬੰਧੀ ਪੁੰਜਾਂ (Abdominal masses) ਦਿਆਂ ‘ਨਾਸੂਰ’ (ਕੈਂਸਰ-ਵਾਲੇ) ਅਤੇ ‘ਗੈਰ-ਨਾਸੂਰ’ ਹਾਲਤਾਂ ਦੀ ਪਰਖ ਅਤੇ ਪ੍ਰਾਸਟੇਟ ਦੇ ਵੱਖ-ਵੱਖ ਰੋਗਾਂ ਦਾ ਵਖਰੇਵਾਂ ਕਰਨ ਲਈ ਬਾਓਪਸੀ ਬੰਦੂਕ (ਗਨ) ਨਾਲ ਅਲਟ੍ਰਾਸਾਊਂਡ ਵਿੱਧੀ ਦੁਆਰਾ ਲਈ ਗਈ ਬਾਓਪਸੀ (ਯੂ.ਐਸ.ਜੀ.ਬੀ.) ਲੈਣ ਲਈ ਇਸਤੇਮਾਲ ਕੀਤੀ ਫ੍ਰੀ-ਹੈਂਡ ਤਕਨੀਕ ਆਸਾਨ, ਸੁਰੱਖਿਅਤ, ਸਹੀ ਅਤੇ ਲਾਭਦਾਇਕ ਪਾਈ ਗਈ।
- ਮੱਛੀਆਂ ਦੀ ਖੁਰਾਕ ਵਿੱਚ ਘੱਟ-ਖਰਚ ਦੀ ਖੁਰਾਕ ਬਣਾਉਣ ਲਈ ‘ਅਜੋਲਾ’ ਅਤੇ ‘ਸਪਾਇਰੋਡੋਲਾ’ 20 ਪ੍ਰਤੀਸ਼ਤ ਦੀ ਦਰ ਤੇ ਮਿਲਾਏ ਜਾ ਸਕਦੇ ਹਨ। ਮੱਛੀ-ਉਤਪਾਦਨ ਵਿੱਚ ਵਾਧਾ ਕਰਨ ਲਈ ‘ਅਜੋਲਾ’ ਦੀ ਵਰਤੋਂ ‘ਜੈਵਿਕ-ਖਾਦ’ ਦੀ ਤਰ੍ਹਾਂ ਵੀ ਕੀਤੀ ਜਾ ਸਕਦੀ ਹੈ।
- ਕੁਲ 170 ਖੋਜ-ਪੱਤਰ ‘ਰਾਸ਼ਟਰੀ’ ਅਤੇ ‘ਅੰਤਰ-ਰਾਸ਼ਟਰੀ’ ਪੱਧਰ ਦੇ ਪ੍ਰਸਿਧ ਰਸਾਲਿਆਂ (ਜਰਨਲਜ਼) ਵਿੱਚ ਪ੍ਰਕਾਸ਼ਿਤ ਹੋਏ।

ਵਿਸਤਾਰ

- ਸਾਲ 2007 ਵਿੱਚ ਪਸ਼ੂ-ਪਾਲਕਾਂ ਲਈ ਪੰਜ (5), ਖੇਤਰੀ ਪਸ਼ੂ-ਚਿਕਿਤਸਕਾਂ ਲਈ ਸੱਤ (7) ਅਤੇ ਦੂਜੀ ਯੂਨੀਵਰਸਿਟੀ ਤੋਂ ਆਏ ਸਾਂਝੇ ਸਦਾਨਾਂ ਲਈ ਇੱਕ (1), ‘ਸਿਖਲਾਈ-ਕੋਰਸਾਂ’ ਦਾ ਪ੍ਰਬੰਧ ਕੀਤਾ ਗਿਆ। ਵੱਖ-ਵੱਖ ਮੈਗਜ਼ੀਨਾਂ, ਰਸਾਲਿਆਂ (ਜਰਨਲਜ਼) ਅਤੇ ਅਖਬਾਰਾਂ ਨ ਮਿਲਾ ਕੇ ਲਗਭਗ 120 ਵਿਸਤਾਰ-ਸੰਬੰਧੀ ਲੇਖ ਪ੍ਰਕਾਸ਼ਿਤ ਕੀਤੇ ਗਏ।
- ਪਸ਼ੂਆਂ ਦੇ ਇਲਾਜ ਲਈ ਪੰਜਾਬ ਦੇ ਪੇਂਡੂ ਇਲਾਕਿਆਂ ਵਿੱਚ ਬਾਰਾਂ (12) ‘ਪਸ਼ੂ ਭਲਾਈ ਕੈਂਪਾਂ’ ਦਾ ਪ੍ਰਬੰਧ ਕੀਤਾ ਗਿਆ। ਪਸ਼ੂ-ਪਾਲਕਾਂ ਅਤੇ ਖੇਤਰੀ ਕਾਰਜਕਾਰੀਆਂ ਨ ਸਿਫਾਰਿਸ਼ ਕੀਤੀਆਂ ‘ਪਸ਼ੂ-ਸੇਹਤ-ਸੰਬੰਧੀ ਕਾਰਜ ਪ੍ਰਣਾਲਿਆਂ’ ਤੋਂ ਸੂਚਿਤ/ਜਾਣੂ ਕਰਵਾਇਆ ਗਿਆ।
- ਫੈਕਲਟੀ ਨੇ ਰਾਜ ਦੀਆਂ ਦੂਸਰੀਆਂ ‘ਪਸ਼ੂ-ਭਲਾਈ ਸ਼ਾਖਾਵਾਂ’ ਦੇ ਸਹਿਯੋਗ ਨਾਲ ਪਸ਼ੂ-ਪਾਲਕਾਂ ਨ ਵਿਸਤਾਰ-ਸੰਬੰਧੀ ਲੈਕਚਰ ਦਿੱਤੇ। ਇਹਨਾਂ ਮੌਕਿਆਂ ਤੇ ਰੋਗੀ ਪਸ਼ੂਆਂ ਤੋਂ ਸੈਂਪਲ ਜਿਵੇਂ ਕਿ ਖੂਨ, ਲੇਸਦਾਰ (ਮਯੂਕਸ) ਪਦਾਰਥ ਅਤੇ ਗੋਹਾ ਲੈਣ, ਇਨ੍ਹਾਂ ਨੂੰ ਬੰਦ ਕਰਕੇ ਇੱਕ ਜਗ੍ਹਾ ਤੋਂ ਦੂਜੀ ਜਗ੍ਹਾ ਭੇਜਣ, ਦੁੱਧ ਚੋਣ ਦੇ ਆਦਰਸ਼ ਤਰੀਕਿਆਂ, ‘ਥਣ-ਡੋਬਣ’, ਆਹਾਰ-ਸੰਬੰਧੀ ਲੇਖਾ ਬਣਾਉਣ, ਪਸ਼ੂਆਂ ਦੇ ਆਹਾਰ ਨ ਟੋਏ ਵਿੱਚ ਸਾਂਭ ਕੇ ਰੱਖਣ (ਸਾਇਲੇਜ), ਚਿਚੜੀਆਂ ਦੀ ਦਵਾਈ ਦੀ ਅਮਲੀ ਵਰਤੋਂ ਅਤੇ ਪਸ਼ੂਆਂ ਵਿੱਚ ‘ਗਰਮੀ’ (Oestrus) ਦੀ ਪਰਖ ਸੰਬੰਧੀ ਤਰੀਕੇ ਪ੍ਰਦਰਸ਼ਿਤ ਕੀਤੇ ਗਏ।
- ਮਾਰਚ ਅਤੇ ਸਤੰਬਰ ਦੇ ਮਹੀਨਿਆਂ ਵਿੱਚ ‘ਪਸ਼ੂ-ਪਾਲਣ ਮੇਲਿਆਂ’ ਦਾ ਪ੍ਰਬੰਧ ਕੀਤਾ ਗਿਆ। ਯੂਨੀਵਰਸਿਟੀ ਦੇ ਵੱਖ-ਵੱਖ ਵਿਭਾਗਾਂ ਵਲੋਂ ਪਸ਼ੂ-ਧਨ ਅਤੇ ਮੁਰਗੀ-ਪਾਲਣ ਸੰਬੰਧੀ ਵਰਤੋਂ fitu ਆਉਣ ਵਾਲੀਆਂ ਨਵੀਆਂ ਤਕਨੀਕੀ



ਖੋਜਾਂ/ਕਾਢਾਂ ਦੀ ਪ੍ਰਦਰਸ਼ਨੀ ਕੀਤੀ ਗਈ। ਇਸ ਮੌਕੇ ਤੇ ਪਸ਼ੂ ਭਲਾਈ ਕਾਰਜ ਵਿੱਚ ਸ਼ਾਮਲ 40-50 ਦੂਸਰੀ ਸਰਕਾਰੀ ਅਤੇ ਨਿੱਜੀ ਸ਼ਾਖਾਵਾਂ ਵਲੋਂ ਵੀ ਪਸ਼ੂ-ਪਾਲਣ ਸੰਬੰਧੀ ਮਹੱਤਵਪੂਰਣ ਆਪਣੀਆਂ-ਆਪਣੀਆਂ ਨੁਮਾਇਸ਼ਾਂ ਦਾ ਪ੍ਰਦਰਸ਼ਨ ਕੀਤਾ ਗਿਆ।

- ‘ਪ੍ਰਗਤੀਵਾਦੀ ਡੇਅਰੀ ਪਸ਼ੂ-ਪਾਲਕਾਂ’ ਦੇ ਮਾਸਕ ਸਮਾਗਮਾਂ (ਮੀਟਿੰਗਜ਼) ਦਾ ਬਾਕਾਇਦਾ ਪ੍ਰਬੰਧ ਕੀਤਾ ਗਿਆ। ਲਗਭਗ 250 ਪਸ਼ੂ-ਪਾਲਕਾਂ ਨੇ ਹਰ ਸਮਾਗਮ ਵਿੱਚ ਹਿੱਸਾ ਲਿਆ। ਮੱਛੀ-ਪਾਲਕਾਂ, ਸੂਰ-ਪਾਲਕਾਂ ਅਤੇ ਬਕਰੀ-ਪਾਲਕਾਂ ਦੇ ਸਮਾਗਮ ਵੀ ਹਰ ਦੂਸਰੇ ਮਹੀਨੇ ਕਰਵਾਏ ਗਏ।
- ਪਸ਼ੂ-ਧਨ ਦੇ ਵਿਕਾਸ ਲਈ ਯੂਨੀਵਰਸਿਟੀ ਦੁਆਰਾ ਗੁੜ੍ਹੇ ਪਿੰਡ (ਲੁਧਿਆਣਾ) ਵਿਖੇ ਇੱਕ ‘ਪਸ਼ੂ ਭਲਾਈ ਕੇਂਦਰ’ (ਐਨੀਮਲ ਵੈਲਫੇਅਰ ਸੈਂਟਰ) ਦੀ ਸਥਾਪਨਾ ਕੀਤੀ ਗਈ। ਇਸ ਕੇਂਦਰ ਤੇ ਦੋ ‘ਪਸ਼ੂ-ਭਲਾਈ ਕੈਂਪਾਂ’ ਦਾ ਪ੍ਰਬੰਧ ਕੀਤਾ ਗਿਆ। ‘ਪਸ਼ੂ-ਭਲਾਈ ਕੇਂਦਰ’ ਨੇ ਡੇਅਰੀ ਉਤਪਾਦਿਤਾ ਅਤੇ ਮੁਨਾਫ਼ਾ ਵਧਾਉਣ ਲਈ ਪਸ਼ੂਆਂ ਦੇ ਰਖ-ਰਖਾਵ ਅਤੇ ਦੇਖਭਾਲ ਦੀਆਂ ਕਾਰਜ-ਪ੍ਰਣਾਲੀਆਂ ਲਈ ਤਕਨੀਕੀ ਦਖਲ ਅੰਦਾਜ਼ੀ/ਰਾਹ-ਨੁਮਾਈ ਪ੍ਰਦਾਨ ਕੀਤੀ।

ਪੰਜਾਬੀ ਉਤਾਰਾ - ਡਾ. ਤੇਜਿੰਦਰ ਸਿੰਘ ਰਾਏ (ਸਹਿਯੋਗੀ ਪ੍ਰੋਫੈਸਰ)
(ਵੈਟਨਰੀ ਮਾਇਕ੍ਰੋਬਾਇਲੋਜੀ ਵਿਭਾਗ)



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INTRODUCTION

Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) was established at Ludhiana by an act of the Punjab Legislature No. 16 of 2005 notified in the Punjab Government Gazette on August 9, 2005 and started functioning w.e.f. April 21, 2006 for promoting livestock production, health and prevention of the diseases through integrated teaching, research and extension programmes. The University was established with the following goals and objectives:

- To provide adequate supply of trained veterinary professionals capable of handling livestock health and production aspects including Master's and Doctorate level specialists according to the needs of the State Government and allied agencies.
- To undertake research work in selected areas and wherever applicable following multi-disciplinary approach.
- To provide opportunities for continuing education for professionals in Veterinary Science.
- To provide consultancy and specialist services to livestock owners, government, semi-government and allied agencies.
- To run "Referral" hospitals for specialized treatment and also to provide clinical training to the students.
- To provide technical expert advice to different government and other agencies whenever called upon.
- To foster faculty development by providing opportunities to participate in appropriate training programmes, conferences, workshops, seminars, symposia etc. and avail other opportunities in exchange programmes.
- To encourage cooperation and collaboration with other departments, colleges, universities and industries, both nationally and internationally.

THE MANDATE

- To impart education and to produce quality graduates in different disciplines of Veterinary Sciences, Animal Sciences, Fisheries, and Dairy Sciences for the advancement of learning and execution of research activities and upliftment of livestock owners.
- To provide research and development support for improving human resource for generation and dissemination of knowledge for the growth of livestock, to serve the nation in terms of food and nutritional security, employment generation, poverty alleviation and economic prosperity.



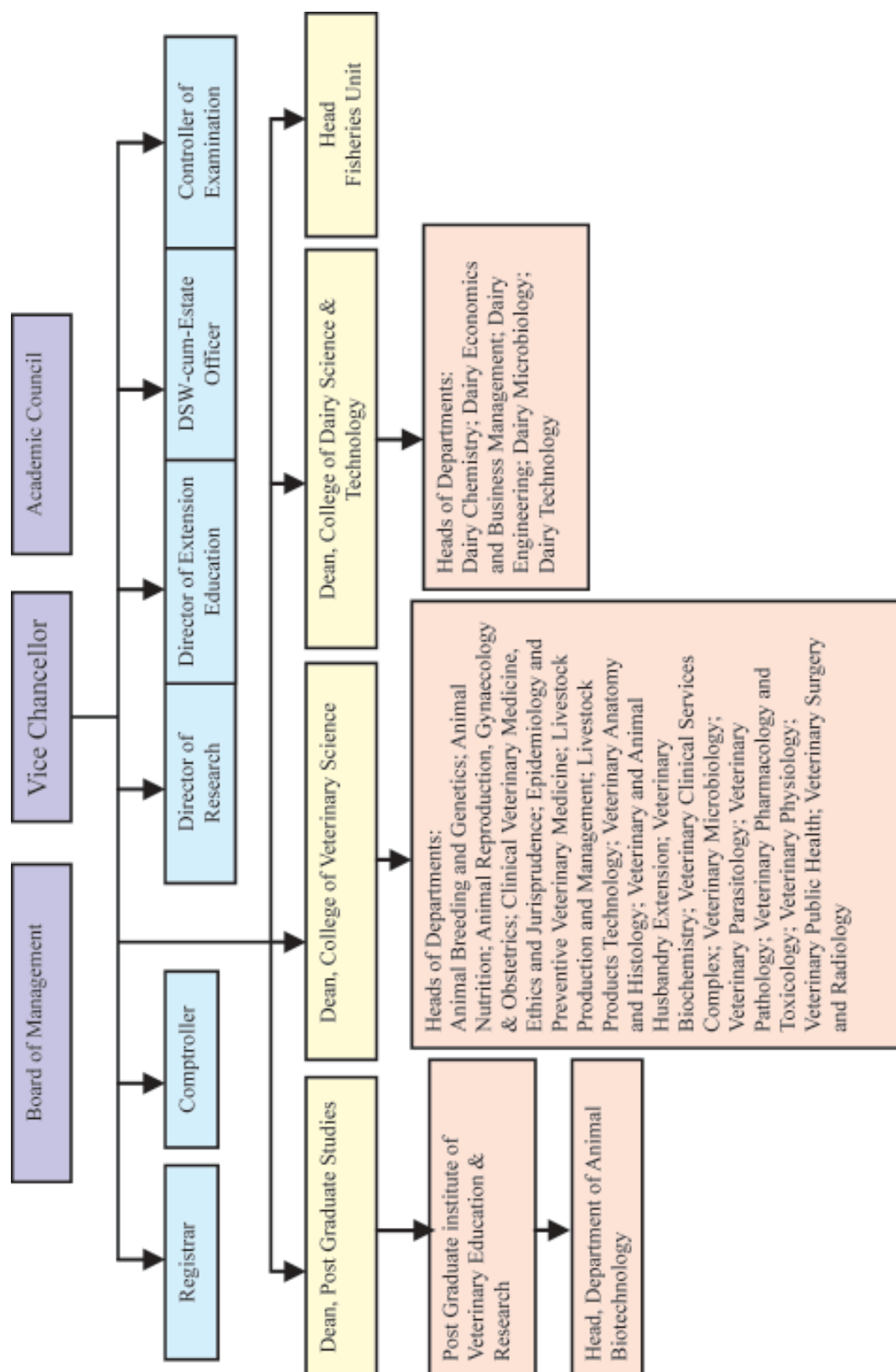
ORGANIZATIONAL SETUP

The functioning of the university is governed by following bodies focused at education, research and extension activities.

- Board of Management
- Academic council
- Committee on student's welfare
- Research Advisory Committee (RAC)
- Extension Education Advisory Committee (EEAC)
- Resident Instruction Committee (RIC)
- Postgraduate Committee
- Board of Studies

The Board of Management is the highest administrative body which controls the finances and assets of the university, appointments of all officers and teachers and provides overall guidance on running of the university. The Academic Council administer the academic functions of the university and is responsible for maintenance of standards of institution, education and examination. Committee on student's welfare regulates various students' activities. Research Advisory Committee regulates the allocation of funds for research, conditions for accepting grants and other matters regarding research programmes of the university. Extension Education Advisory Committee coordinates university extension programmes with the State and the Center and devises ways and means to implement university extension education programmes. Resident Instruction Committee makes recommendations to the Academic Council concerning the new curricula and arrangement, alteration and abolition of existing curricula. Postgraduate Committee examines the courses and curricula for postgraduate students recommended by the Board of Studies before submission to Academic Council. Board of studies proposes to the Academic Council through RIC, the courses of study and curricula for various teaching programmes. Board also reviews from time to time the standards of teaching and evaluation of students.

Organizational Structure





ADMINISTRATION

BOARD OF MANAGEMENT

Honorary Chairman

- Governor of Punjab and Chancellor

Working Chairman

- Vice Chancellor, GADVASU, Ludhiana

Members

- Chief Secretary, Punjab, Chandigarh.
- Financial Commissioner Development, Punjab, Chandigarh.
- Principal Secretary Finance, Punjab, Chandigarh.
- Secretary, Department of Animal Husbandry, Fisheries and Dairy Development, Punjab, Chandigarh.
- Director of Animal Husbandry, Punjab, Chandigarh.
- Director of Dairy Development, Punjab, Chandigarh.
- Director and Warden of Fisheries, Punjab, Chandigarh.
- The Deputy Director General, (Animal Sciences), ICAR, Krishi Anusandhan Bhavan, New Delhi.
- Director of Extension Education, GADVASU, Ludhiana.
- Vice-Chancellor, PAU, Ludhiana (Special invitee).

Secretary

- Registrar, GADVASU, Ludhiana



ACADEMIC COUNCIL

1. Dr. V.K.Taneja, Vice-Chancellor
(Chairman)
2. Dr. S.K. Jand, Dean Postgraduate Studies
3. Dr. A.S.Nanda, Director of Research
4. Dr. Simrat Sagar Singh, Dean College of Veterinary Science
5. Dr. O.S. Parmar, Director of Extension Education
6. Dr. J. K. Sharma, Professor-cum-Head, Department of Veterinary Public Health
7. Dr. P.S. Dhaliwal, Professor-cum-Head, Department of Clinical Veterinary Medicine,
Ethics and Jurisprudence
8. Dr. J. Sahoo, Professor-cum-Head, Department of Livestock Product Technology
9. Dr. R.S. Brar, Professor-cum-Head, Department of Veterinary Pathology
10. Dr. P.D. Juyal, Professor-cum-Head, Department of Veterinary Parasitology
11. Dr. Kamaldeep Kaur, Head Fisheries Unit
(Special Invitee)
12. Dr. K.S. Sandhu, DSW-cum-EO
(Special Invitee)
13. Dr. S.P.S. Sangha, Controller of Examination
(Special Invitee)
14. Dr. S.K. Jand, Registrar
Secretary



OFFICERS OF THE UNIVERSITY

Name	Designation
Gen (Retd.) S.F. Rodrigues Governor of Punjab	Chancellor
Dr. V.K. Taneja	Vice-Chancellor
Dr. S.K. Jand	Registrar (additional charge)
Dr. S.K. Jand	Dean PGS
Dr. O.S. Parmar	Director of Extension Education
Dr. Simrat Sagar Singh	Dean College of Veterinary Science
Dr. O.S. Parmar	Dean College of Dairy Science and Technology (additional charge)
Dr. A.S. Nanda	Director of Research
Dr. K.S. Sandhu	Director Students Welfare-cum-Estate Officer
Mr. O.P. Kumar	Comptroller



UNIVERSITY COLLEGES AND INSTITUTES

College of Veterinary Science

The College of Veterinary Science is a daughter institution of Veterinary School established in 1862 at Poona which started with one year course and was later upgraded as the first Veterinary College at Lahore in 1882. After partition, a part of the Lahore Veterinary College was shifted to Hisar in 1948. Later in 1969, the College of Veterinary Medicine was set up as a constituent college of Punjab Agricultural University, Ludhiana. Now this college is a part of Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana. The college was created as a centre of regional, national and international excellence in research and learning in animal health and production and has been instrumental in ushering in an era of 'White Revolution' in the State.

The College of Veterinary Science has 18 departments. All the departments have experienced faculty and laboratory facilities with adequate infrastructure for undergraduate and postgraduate teaching and research. A well equipped veterinary teaching hospital to cater the demands of large and small animal health care exists. In addition, the college has an elite dairy herd and poultry farm which provides adequate facilities for teaching and research. The college offers the following programmes of study:

1. B.V.Sc. and A.H. (5-year programme)
2. M.V.Sc.
3. Ph.D.

The college is recognized by the Veterinary Council of India and has obtained accreditation from the Indian Council of Agricultural Research in the year 2004. The college has ICAR Centres of Advanced Studies in the Department of Veterinary Surgery and Radiology and Department of Animal Reproduction, Gynaecology and Obstetrics, and experiential learning projects in the Department of Veterinary Clinical Services Complex and Department of Livestock Production and Management.



Departments of College of Veterinary Science

S. No.	Name of the Department
1.	Department of Animal Breeding and Genetics
2.	Department of Animal Nutrition
3.	Department of Animal Reproduction, Gynaecology and Obstetrics
4.	Department of Clinical Veterinary Medicine, Ethics and Jurisprudence
5.	Department of Epidemiology and Preventive Veterinary Medicine
6.	Department of Livestock Production and Management
7.	Department of Livestock Products Technology
8.	Department of Veterinary Anatomy and Histology
9.	Department of Veterinary and Animal Husbandry Extension
10.	Department of Veterinary Biochemistry
11.	Department of Veterinary Clinical Services Complex
12.	Department of Veterinary Microbiology
13.	Department of Veterinary Parasitology
14.	Department of Veterinary Pathology
15.	Department of Veterinary Pharmacology and Toxicology
16.	Department of Veterinary Physiology
17.	Department of Veterinary Public Health
18.	Department of Veterinary Surgery and Radiology



College of Dairy Science and Technology

The College of Dairy Science and Technology has been established to meet the manpower requirements for milk processing sector and for evolving and transfer of appropriate milk processing technologies. The college will have the following five departments:

1. Department of Dairy Chemistry
2. Department of Dairy Economics and Business Management
3. Department of Dairy Engineering
4. Department of Dairy Microbiology
5. Department of Dairy Technology

The college shall offer B.Tech. (Dairy Technology) degree programme from the next academic session.

Fisheries

Fisheries Unit is well equipped to undertake teaching, research and training in fisheries. The Fisheries Unit also has an experiential learning project funded by ICAR. The unit is currently concentrating on the following objectives:

- Human Resource Development in fisheries.
- Basic, applied and adaptive research on emerging problems in fisheries.
- Technology transfer to fish culturists, entrepreneurs and industry.

The Fisheries Unit has experienced faculty and appropriate field and laboratory facilities for teaching and research. A College of Fisheries is proposed to be added shortly and shall offer the following programmes of study:

1. Bachelor in Fisheries Sciences (BFSc)
2. Master in Fisheries Science (MFSc)
3. P.G. Diploma in Fisheries



Post Graduate Institute of Veterinary Education and Research

Postgraduate institute of Veterinary Education and Research (PGIVER) has been established to give impetus to specialized and need based research and training to graduates in different disciplines. The objectives of the institute are:

- To develop and strengthen post graduate education, research and training programmes.
- To strengthen embryo transfer technology for better productivity.
- To develop molecular techniques for diagnostics, production of genetically defined marker vaccines, and identification of physiological, biochemical, molecular and cytogenetic markers for early selection of animals and poultry birds in order to produce the quality products and increase the productivity.
- To have super specialty teaching/referral hospital for equine, companion and wild animals.
- To establish a centralized laboratory of international standards to deal with emerging diseases of livestock and poultry.

The department of Animal Biotechnology has been established under the PGIVER for specialized teaching and research in Animal Biotechnology with the following broad mandates:

- To undertake teaching, research and training in the various facets of Animal Biotechnology to generate scientific expertise and human resource.
- To develop specialized and state of the art laboratory facilities for research in the cutting edge fields of biotechnology.

The Institute will offer M.V.Sc./ M.Sc. (Animal Biotechnology) programme from the next academic session.



Faculty Profile of the University

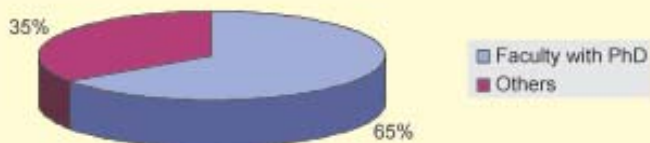
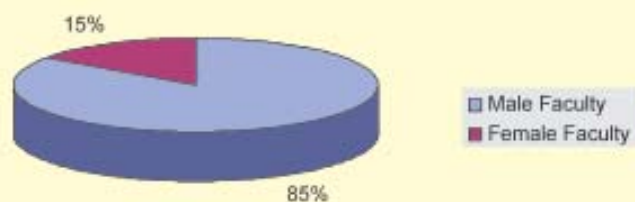
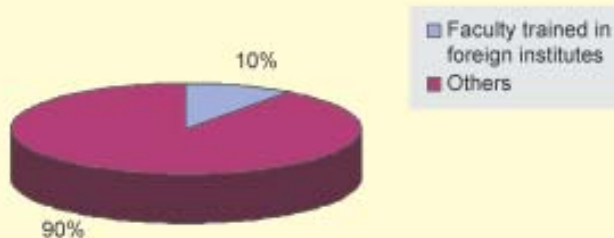
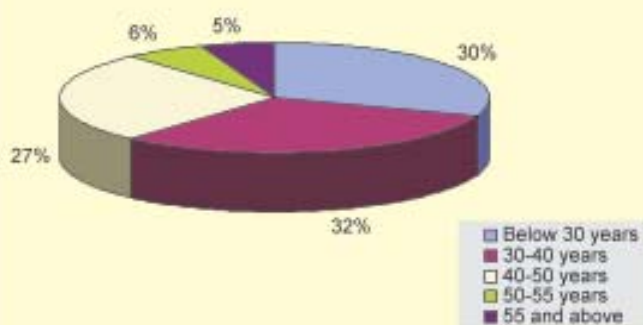
Teaching	Sanctioned	In position	Vacant
Professor	28	22	6
Associate Professor	42	34	8
Assistant Professor	62	51	11
Total	132	107	25
Research	Sanctioned	In position	Vacant
Professor	18	10	8
Associate Professor	23	17	6
Assistant Professor	51	33	18
Total	92	60	32
Extension	Sanctioned	In position	Vacant
Professor	3	2	1
Associate Professor	10	8	2
Assistant Professor	8	5	3
Total	21	15	6
Grand Total	245	182	63

New Appointments in 2007

Heads of Departments	09
Assistant Professor/Equivalent	24

Promotions under CAS

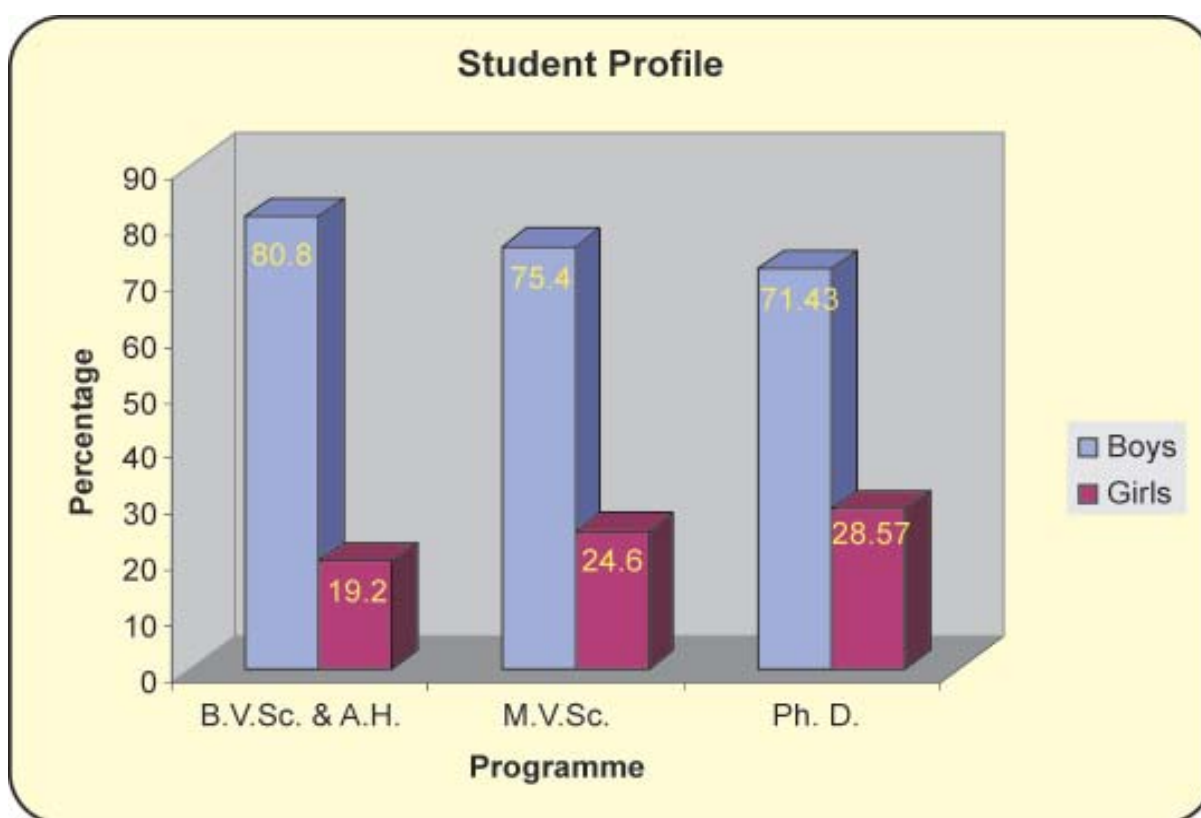
Professor/equivalent	10
Associate Professor/equivalent	02
Assistant Professor (senior scale)	02

**Faculty with Doctorate Degree****Male and Female Faculty****Faculty Trained in Foreign Institutes****Age Group**



Student Profile

B.V.Sc. and A.H.	Boys	Girls	Total
2007-08	51	16	67
2006-07	89	25	114
2005-06	58	9	67
2004-05	49	8	57
2003-04	43	11	54
Total	290 (80.8%)	69 (19.2%)	359
M.V.Sc.	Boys	Girls	Total
2007-08	35	5	40
2006-07	9	9	18
2005-06	2	1	3
Total	46 (75.4%)	15 (24.26%)	61
Ph. D.	Boys	Girls	Total
2007-08	6	1	7
2006-07	4	2	6
2005-06	1	1	2
2004-05	1	2	3
2003-04	3	-	3
Total	15 (71.43 %)	6 (28.57 %)	21
Grand Total	351 (79.59%)	90 (20.41%)	441



TEACHING

Academics and teaching programmes at the university are of high standard and attract students and fellows both at National and International level.

Educational Programme(s)

Admissions to the various undergraduate and postgraduate programmes in the College of Veterinary Science are strictly on the basis of entrance examinations conducted by the Controller of Examinations. The entrance examinations conducted by the university during 2007 were as follows:

Entrance Examination	Programme	Date
VET-07	B.V.Sc. and A.H.	22.06.2007
MET-07	M.V.Sc.	16.07.2007
DET-07	B.Tech.	18-08-2007

The details of admissions for the academic session 2007-2008 are as under:

Programme	Number of applicants	Appeared in test	Admitted
B.V.Sc. and A.H.	1310	1215	67
M.V.Sc.	16	14	40*
Ph.D	11	-	7

*Includes ICAR nominations

The total number of students admitted for the session 2007-2008 was 114 which included 67 in B.V.Sc. and A.H., 40 in M.V.Sc. (including 26 ICAR nominations) and 7 in Ph.D programme. Among 114 students admitted, 22 were girls (19.30%). The percentage of girl students in undergraduate, postgraduate and Ph. D. programme were 23.88, 12.50 and 14.28, respectively.

During the year under report, a total of 65 students successfully completed their degrees, out of which 45, 13 and 7 students completed B.V.Sc. and A.H., M.V.Sc. and Ph.D. programmes, respectively in different disciplines.



Thesis/Dissertations

Master of Veterinary Science

S. No.	Research Title	Department
1	Genetic aspects of egg production traits, immune responsiveness and microsatellite based diversity in layer chickens.	Animal Breeding and Genetics
2	Studies on semen attributes to assess fertility of cross bred bulls under field conditions.	Animal Reproduction, Gynaecology and Obstetrics
3	Epidemiological studies of Johne's disease with special reference to different diagnostic tests.	Epidemiology and Preventive Veterinary Medicine
4	Epidemiological studies on verotoxin-producing <i>Escherichia coli</i> (VTEC) from faeces of healthy dairy cattle and buffalo.	Epidemiology and Preventive Veterinary Medicine
5	Efficacy of different fat replacers on quality of low-fat buffalo meat patties.	Livestock Products Technology
6	Histomorphochemical study on the adrenal gland of neonatal buffalo calves.	Veterinary Anatomy and Histology
7	Studies on isolation and molecular detection of <i>Brucella abortus</i> by polymerase chain reaction.	Veterinary Microbiology
8	Protective efficacy of outer membrane proteins of <i>Pasteurella multocida</i> serotype B:2.	Veterinary Microbiology
9	Cytopathology of cutaneous and subcutaneous affections of dogs with special reference to neoplasia.	Veterinary Pathology
10	Cytopathology of canine mammary gland affections with special reference to mammary gland tumours.	Veterinary Pathology
11	Studies on insecticide residues in feed and fodder in Punjab.	Veterinary Public Health
12	Studies on occurrence of aflatoxin residues in milk and milk products and their public health significance.	Veterinary Public Health
13	Evaluation of ultrasonography as a diagnostic tool for reticulo-omasal disorders in bovines.	Vety Surgery and Radiology



Ph. D. Programme

S. No.	Research Title	Department
1	A clinical study on efficacy of natural and synthetic suture materials vis-à-vis anti-adhesion measures in bovine caesarean section.	Animal Reproduction Gynaecology and Obstetrics
2	Studies on mineral imbalances in dairy animals with special reference to copper, manganese and iodine status in Punjab.	Clinical Veterinary Medicine Ethics and Jurisprudence
3	Comparative efficacy of synthetic and herbal methionine in broiler chicks and laying hens.	Livestock Production and Management
4	Studies on the use of organic alternates in poultry production	Livestock Production and Management
5	Study on histomorphogenesis and histochemistry of thymus during pre and postnatal development in buffalo (<i>Bubalus bubalis</i>)	Veterinary Anatomy and Histology
6	Development of glycoprotein E (gE) gene deletion mutant of Bovine Herpesvirus-1 (BHV-1) as a candidate marker vaccine.	Veterinary Microbiology
7	Clinical studies on the ultrasound guided biopsy for the diagnosis of abdominal affections in canine	Veterinary Surgery and Radiology

New/Revised courses

LPM-527	Laboratory Animal Management
VAN-521	Anatomical, Histological and Histochemical Techniques
VAN-531	Anatomy of laboratory and zoo animals
VPA-529	Techniques in Parasitology
VPT-528	Renal and Nutritional Pharmacology
VPT-529	Autacoid and Immunopharmacology
VPT-531	Ethnopharmacology
VPT-533	Clinical Toxicology I
VPT-534	Clinical Toxicology II
VPT-601	Advances in Drug metabolism and Pharmacogenetics
VPT-604	Molecular Toxicology
VPT-606	Ecotoxicology



Scholarships/Fellowships

The university awards merit scholarships to students for academic excellence. During this period, 61 undergraduate and 24 postgraduate students received University Merit Scholarship. Three undergraduate students admitted through an all India entrance examination were awarded National Talent Scholarship. Junior Research Fellowship of ICAR was awarded to eight postgraduate students.

Internship Programme

On completion of course work in nine semesters, the students of B.V.Sc. and A.H. have to complete six months compulsory rotational internship programme in different disciplines. The students are given intensive training in various departments like Clinical Veterinary Medicine, Ethics and Jurisprudence; Epidemiology and Preventive Veterinary Medicine; Animal Reproduction, Gynaecology and Obstetrics; Livestock Production Management (LPM); Veterinary Clinical Services Complex. In Veterinary Clinical Services Complex, interns are further divided to give



Internship students in the Clinic



training in Livestock Product Technology, Veterinary Pharmacology and Toxicology, Veterinary Parasitology, Veterinary and Animal Husbandry Extension, and Veterinary Laboratory Diagnosis. The LPM group interns attend Veterinary Pathology in the afternoon for post mortem examination. The forenoon LPM group gets training in (a) dairy farm, (b) animal nutrition, (c) poultry farm, (d) fisheries, (e) ruminant nutrition, (f) rabbit farm, (g) equine and (h) sheep and goat management.

In July 2007, 47 students successfully completed their degree programme in B.V.Sc & A.H. after completing their internship.

All India Study Tour

An all India Study Tour of fifteen days for the final year B.V.Sc. and A.H. students was organized and students visited various Veterinary Colleges, National Institutes, Laboratories and Wild Life Sanctuaries at Hyderabad, Bangalore, Chennai, Goa and Mumbai.

Sports and Co-curricular activities

Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana got affiliation from the Association of Indian Universities for its Sports and Youth Activities from the academic year 2006-07. During the year 2007, students of this University participated in various cultural programmes and sports events as under:

Sports

- 1st Annual Athletic Meet of this University was successfully organized during February, 2007. Mr. Kuljotvir Singh was declared best athlete among men and Ms. Karandip Kaur was declared best athlete among women.
- Basketball (M) and Handball (M) teams won Gold and Silver medals, respectively in All India Inter Agricultural Universities Sports and Games Meet at PAU, Ludhiana from Feb. 26-27, 2007. In Athletics, Kulvir Singh, Amandeep Kaur and Tusharpreet Sharma got Silver Medals in different events. Kuljotvir, Gursharan, Baltej and Harshpdeep won Bronze Medal in 4X100 m relay event.
- Table Tennis (M) and Badminton (W) teams won Gold and Silver medals, respectively in All India Inter-Veterinary Colleges Badminton and Table Tennis (MandW) Tournaments at Pantnagar from March 16-18, 2007.
- Badminton (M and W) team of the university participated in the North Zone Inter Varsity Tournament held at MDU, Rohtak from October 20-23, 2007.



1st Annual Athletic Meet



Opening ceremony



Oath taking ceremony



Students participating in race event



*Chief Guest Principal Sarwan Singh being honoured
by worthy Vice Chancellor Dr. V. K. Taneja*



Students performing Bhangra



Student performing Giddha

- Lawn Tennis (M) team participated in the North Zone Inter Varsity Tournament held at P.A.U., Ludhiana from October 26-31, 2007.
- Handball (M) team participated in the North Zone Inter Varsity Tournament held at GNDU, Amritsar from November 01-07, 2007.
- Football (M) team participated in the North Zone Inter Varsity Tournament held at Garhwal University, Srinagar from November 22-28, 2007.



GADVASU Contingent at All India Inter Agricultural Universities Sports and Games Meet



Basketball (M) team of GADVASU that Won Gold Medal in All India Inter Agricultural Universities Sports and Games Meet

Cultural Activities

- The team of GADVASU participated in All India Inter Agricultural Youth Festival held at Maharana Pratap University of Agriculture and Technology (MPUAT), Udaipur (Rajasthan) from September 22-26, 2007 and won the following medals:

- ☐ Gold Medal in Group Song Indian
- ☐ Silver Medal in Folk Dance (Bhangra)
- ☐ Silver Medal in Fine Arts (Rangoli)
- ☐ Silver Medal in Mime
- ☐ Silver Medal in Extempore
- ☐ Consolation in Light Vocal (Solo Song)



Bhangra Team won Gold Medal and Cash prize at Expression 2007



- 1st Cultural Night was successfully organized during April, 2007.



Cultural Evening: Students performing Giddha

- An exhibition on the life of Mahatma Gandhi and Blood donation camp were organized at College of Veterinary Science on the eve of Gandhi Jayanti on Oct. 2, 2007.



Exhibition on the life of Mahatma Gandhi



Blood Donation Camp on the eve of Gandhi Jayanti

R&V Sqn NCC Unit

1st Punjab R&V Sqn NCC is an integral part of GADVASU, is entrusted with the task of imparting infantry as well as equestrian training to NCC cadets enrolled with this unit. Six students attended Republic Day Camp and PM Rally from Dec. 29, 2006 to Jan. 31, 2007. During one month long equestrian competition, cadets won two gold, three silver, one bronze medals and two trophies. Eighty eight cadets of the College of Veterinary Science attended Combined Annual Training Camp at Punjab Police Academy Phillaur from Sept. 12-23, 2007. Six cadets during the camp donated blood. Ten cadets participated in Army Attachment Camp from Feb. 4-15, 2007 at RVC Centre and College, Meerut Cantt. Plantation was also carried out by cadets in unit area. Eleven cadets appeared in Certificate 'B' examination, out of which 7 cadets got A grade and remaining cadets got B grade.



NCC Activities



Veterinary Clinical Services Complex

The College of Veterinary Science is one of the premier Veterinary Institutes in North India, imparting teaching, clinical orientation and training on Animal Husbandry practices to undergraduate and postgraduate students. The Department of Veterinary Clinical Services Complex houses a referral hospital, where animals of different species with varied diseases are presented for specialized diagnosis and treatment. Approximately 21,180 cases both in pets and large animals including buffaloes, cows, horses, mules, elephants, sheep, goats, and pigs were presented during the year 2007. Pets constituted a major chunk (approx. 17,704) of this number. Most of the buffaloes/cows presented were suffering from congestive heart failure, traumatic reticulo-peritonitis, intestinal impaction, dystocia, retention of placenta and mastitis while equines were suffering from colic, lameness, eye worm and fractures. Pets, mainly dogs, were presented from within the city of Ludhiana and its surroundings; however, many complicated cases requiring specialized diagnosis and treatment including surgery were presented from different districts of Punjab, Chandigarh and neighbouring states, including police and other organizations. Among pets 70 percent cases were presented for medicinal problems that included general examination and vaccination, 24 per cent with affections needing surgery and 6 per cent with reproductive problems including spays and caesarean.



Clinical Diagnostic Laboratory

Veterinary Clinical Services Complex at GADVASU has a Small Animal Clinic, Primary Unit to handle farm animals with medicinal problems and a Specialized Unit where surgical and obstetrical interventions, reproductive disorders in large animals including infertility and inseminations are undertaken. The cases requiring prolonged care and treatment are kept in the indoor wards. Most of the staff members in clinical subjects have specialised capabilities and experience of working in institutions abroad.

A Clinical Diagnostic Laboratory, fully equipped to test complete biochemistry and haematology, blood acid-base parameters and urine analysis has been established. Large and small animal X-rays, Ultrasound and ECG facilities are also available. In addition, this department also runs ambulatory clinics in which two villages have been adopted and teachers from surgery, medicine and gynaecology along with students provide free consultancy to the farmers. In year 2007, a total of 783 cases were treated through ambulatory clinics. The department also organizes periodically pet owner awareness programmes to educate them about prevailing diseases of pets.

Library and Computer Centre

The university library organized book exhibition on 27th and 28th Feb. 2007 for on the spot selection of books of different disciplines of Veterinary, Animal Sciences, Fisheries and allied fields. Fifteen book publishers and distributors of repute from north India participated. A large number of students and faculty members visited the exhibition and showed keen interest in the latest topics of different disciplines. The library purchased 582 books worth Rs. 14,65,175/-. The library subscribed to 43 foreign and 14 Indian Journals at the cost of Rs. 16,22,180/- during this



Computer centre with inter and intranet facilities



period. The online access to foreign journals was also provided. Libsys 4.0 software was purchased to automate the library. The resources available in the library are being digitized. Steps have been taken to develop local area network for the university library. The construction work of the university library is likely to complete shortly.

A lease line of 2 Mbps was installed for providing network connectivity to the College of Veterinary Science. Two robust servers IBM X 3800 series were purchased for developing centralized networking system. The networking connectivity in the main building of the college was also extended to 130 nodes. Local Area Network was developed for providing network facility in the main building of the College of Veterinary Science. Broadband internet connectivity to various departments and Teaching Veterinary Hospital in the Silver Jubilee Block of the University was provided. The university website www.gadvasu.in was updated from time to time. Computer Center was further strengthened. On an average, about 100 students and staff members of the university use this facility daily.

Achievements

Awards and Honours

Department of Animal Nutrition

- Dr. M.P.S. Bakshi, Dr. K. Kaur, Dr. M. Wadhwa and Dr. J. Kaur got second prize in poster presentation for the research work entitled “Nutritional status of animals in various agro climatic zones of Punjab” in the International Tropical Animal Nutrition Conference held at NDRI, Karnal from Oct. 4-7, 2007.
- Dr. M.P.S. Bakshi acted as Chief Editor and Dr. M. Wadhwa as Editor of “Indian Journal of Animal Nutrition” published by the Department of Animal Nutrition, GADVASU, Ludhiana. Dr. M.P.S. Bakshi acted as member, Research Advisory Committee of National Institute Animal Nutrition and Physiology, meeting held at Bangalore from July 26-27, 2007.
- Dr. S.S. Sikka was conferred with “Shiksha Rattan Puruskar” by Indian International Friendship Society for the year 2007.
- Dr. M.S. Pannu, nominated as member Board of Studies in Agriculture, Punjabi University, Patiala.

***Department of Veterinary Clinical Medicine, Ethics and Jurisprudence***

- Dr. S.S. Randhawa and Dr. Sushma Chhabra were awarded first and second best oral presentation awards for their research works at 25th Convention of Indian Society for Veterinary Medicine held at Pantnagar, Uttaranchal from Feb. 26-28, 2007.
- Dr. Kirti Dua was awarded Fellow of National Academy of Veterinary Sciences.

Department of Epidemiology and Preventive Veterinary Medicine

- Dr. Randhir Singh was awarded Clemson University Scholarship for doctoral studies.
- Dr. S. Sharma was awarded Australian Leadership Award, Govt. of Australia for doctoral studies.
- Dr. P.K. Sidhu was awarded UKIERI-Research Fellowship.

Department of Veterinary Anatomy and Histology

- Dr. Devendra Pathak was awarded Dr. A.M. Srivastava Award and Gold Medal for Best thesis award at XXII Convention of Indian Association of Veterinary Anatomists held at Tirupati from Nov. 21-23, 2007.
- Dr. Devendra Pathak, Dr. R.S. Sethi, Dr. Neelam Bansal, Dr. Opinder Singh and Dr. Varinder Uppal were awarded best paper presentation award at XXII Convention of Indian Association of Veterinary Anatomists held at Tirupati from Nov. 21-23, 2007.

Department of Veterinary Microbiology

- Dr. H M Saxena was awarded ISVIB Scientist Gold Medal for the best research paper published.
- Dr. N.S. Sharma was awarded Shiksha Rattan Puraskar.
- Dr. Ramneek, Dr. P.N. Dwivedi and Dr. N.S. Sharma won Best Poster Award in the Avian Health Session in XXIV Annual Conference of Indian Poultry Science Association held at GADVASU, Ludhiana from April 25-27, 2007.

Department of Veterinary Parasitology

- Dr. P.D. Juyal admitted as Fellow of Indian Association for Advancement of Veterinary Parasitology during XVIII National Congress of Veterinary Parasitology at SKAUST Jammu from Sept. 7-9, 2007. He received Shiksha Rattan Puruskar (2007) for outstanding services in the field of education and was made in charge of the Public- private partnership cell in Indian Society of Parasitology.
- Dr. P.D. Juyal and Dr. L.D. Singla received 1st prize in poster session at National Seminar held at Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar, Gujarat from Feb. 9-11, 2007.



- Dr. L.D. Singla was awarded travel grant from Ministry of Foreign Affairs through French Embassy in India for attending 12th International Conference on Tropical Veterinary Medicine at Montpellier, France from Aug. 19-22, 2007. He received best research article award as co-author in XVIII National Congress of Veterinary Parasitology held at Jammu from Sept. 7-9, 2007.

Department of Veterinary Pathology

- Dr. Amarjit Singh, Dr. (Mrs) Sandeep Sodhi and Dr. Kuldeep Gupta won best poster presentation awards in different session of XI Annual Conference of Indian Poultry Science Association held at GADVASU, Ludhiana from April 25-27, 2007.
- Dr. N.K. Sood was awarded Bharat Gyan Joyti Award
- Dr. N.K. Sood got best research article award for oral presentation in pathology of parasites session of XVIII National Congress of Veterinary Parasitology held at Jammu from September 7-9, 2007

Department of Veterinary Public Health

- Dr. R.S. Aulakh was awarded Commonwealth Post-Doctoral Fellowship.
- Dr. B.B. Singh and Dr. R. Sharma were awarded “The Flemish Interuniversity VLIR-UOS travel grant to attend the WAAVP international conference, held at Ghent, Belgium.

Department of Veterinary Surgery and Radiology

- Dr. J. Mohindroo, Dr. A. Kumar, Dr. V. Sangwan, Dr. R. Udehiya and Dr. S.S. Singh were conferred gold medal for their work on “Ultrasonography of normal omasum in cows and buffaloes” at 31st annual conference of Indian Society for Veterinary Surgery held at SKUAST (J), RS Pura, Jammu, from Oct. 27-29, 2007.
- Dr. N. Singh, Dr. K.I. Singh, Dr. K.S. Roy and Dr. S.K. Mahajan received appreciation certificate for their research paper at 31st annual conference of Indian Society for Veterinary Surgery held at SKUAST (J), RS Pura, Jammu, from Oct. 27-29, 2007.
- Dr. Simrat Sagar Singh, Dean College of Veterinary Science, GADVASU, was elected as Vice President of the Society at 31st Annual conference of Indian Society for Veterinary Surgery held at SKUAST (J), RS Pura, Jammu, from Oct. 27-29, 2007.
- The paper entitled “Use of B+M mode ultrasonography for evaluation of reticular health in cows and buffaloes” by Dr. J. Mohindroo, Dr. V. Sangwan, Dr. A. Kumar and Dr. Sarvjot Singh was selected for appreciation award in the Imaging technique session at 31st annual conference of Indian Society for Veterinary Surgery held at SKUAST (J), RS Pura, Jammu, from Oct. 27-29, 2007.



Participation of faculty in conferences, symposia, workshop, trainings etc.

Department of Animal Breeding and Genetics

- Dr. M.L. Chaudhary, Dr. G.S. Brah, Dr. P.K. Trehan, Dr. I.S. Bajwa and Dr. G.V.P.P.S. Ravi Kumar attended XXIV Conference of Indian Poultry Science Association and National Symposium on “Poultry Production for Rural Employment and Nutritional Security held at GADVASU, Ludhiana from April 25-27, 2007.

Department of Animal Nutrition

- Dr. M. Wadhwa, Dr. J. Kaur and Dr. K Kaur participated and presented research papers in National seminar on farm Mechanization for Diversification of Agriculture, held at COAE, PAU, Ludhiana from Jan. 19-20, 2007, International Tropical Animal Nutrition Conference held at NDRI, Karnal from Oct. 4-7, 2007 and XI Annual Conference of Indian Poultry Science Association held at GADVASU., Ludhiana from April 25-27, 2007.
- Dr. R.S.Grewal and Dr. Nitin Tyagi participated in the 21 days short course entitled “Recent techniques in feed and fodder evaluation for assessing feed quality and safety” organized by the National Institute of Animal Nutrition and Physiology, Bangalore from Nov. 21- Dec. 11, 2007.
- Dr. M.S. Pannu participated in Research-Extension-Industry-farmer interface for dairy Development at NDRI, Karnal from Feb. 6-7, 2007.

Department of Animal Reproduction, Gynaecology and Obstetrics

- Dr. V. K. Gandotra, Dr. Jagir Singh, Dr. Parkash Singh, Dr. S.P.S. Ghuman, Dr. Ajeet Kumar and Dr. Mrigank Honparkhe attended XXIII Annual Convention of Indian Society for the Study of Animal Reproduction (ISSAR) held at Bhubaneswar (Orissa) from Dec. 7-9, 2007.

Department of Clinical Veterinary Medicine, Ethics and Jurisprudence

- Dr. P.S. Dhaliwal, Dr. B.K. Bansal, Dr. Swarn Singh Randhawa and Dr. Sushma Chhabra participated and presented papers in 25th Convention and National Symposium of Indian Society for Veterinary Medicine at Pantnagar, Uttaraanchal from Feb. 26-28, 2007.
- Dr. Naimi Chand attended and presented paper at Asian Congress on Canine Practice organized by Indian Society for Advancement of Canine Practice held at Nagpur from Feb. 7-9, 2007.
- Dr. B. K. Bansal and Dr. Sushma Chhabra participated in Animal Husbandry, Dairying and Fisheries Officers Workshop at Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana on Dec. 12, 2007.



- Dr. Kirti Dua participated and presented paper at International Conference on Advances in Zoo and Wild Animal Health Management at SKUAST, Jammu from April 26-27, 2007.
- Dr. Kirti Dua attended and presented a research paper in the 13th International conference on Production diseases at Leipzig, Germany from July 29 to Aug. 4, 2007.
- Dr. B. K. Bansal attended and presented a paper in the 8th World Buffalo Congress, Caserta, Italy, from Oct. 19-22, 2007.
- Dr. Sushma Chhabra participated and presented paper at International Tropical Animal Nutrition Conference at NDRI, Karnal from 4-7 Oct, 2007.

Department of Epidemiology and Preventive Veterinary Medicine

- Dr. P.K.Patil and Dr. P.K.Sidhu attended Annual Review of ADMAS, at Trivendram, Kerala from March 21-22, 2007.
- Dr. M.P. Gupta participated in International Congress on Advances in Zoo and Wild Animals Health and Management at SKAUST, Jammu from April 26-27, 2007.
- All faculty members attended Symposia on World Veterinary Day on April 28th 2007.
- Dr. Kamalpreet Kaur and Dr. Ashuma Vasudev attended XXIV Annual Conference of Indian Association of Vety. Pathologist at Tirupati from Oct. 1-3, 2007.
- All faculty members attended the Animal Husbandry Workshop at GADVASU, Ludhiana on Dec.12, 200.
- Dr. P.K. Patil and Dr. M.S. Bal attended training programe on 'DNA based diagnostics' at Dept. Animal Biotechnology at CCS HAU, Hissar from Nov. 13 to Dec. 4, 2007.
- Dr. G. Filia attended ICAR sponsored winter school on 'Molecular diagnostic of animal tuberculosis with particular reference to recent developments in the tuberculosis research for its diagnosis and prophylaxis' at IVRI, Bareilly from Dec. 3-12, 2007.
- Dr. S. Sharma attended the training on 'Recent techniques instrumental and functional genomics' at Central Institute for Medicinal and Aromatic Plants, Lucknow from Dec. 1-10, 2007.

Department of Livestock Production and Management

- All the faculty members attended XXIV Annual Conference of Indian Poultry Science Association and National Symposium on 'Poultry Production for Rural Employment and Nutritional Security' at GADVASU from April, 25-27, 2007.



- All the faculty members attended Workshop of Animal Husbandry, Dairying and Fisheries Officers' at Pal Auditorium on Dec. 12, 2007 organized by Director of Extension Education, GADVASU, Ludhiana.
- Dr. K.S. Das participated in the 21 days short course on 'Animal Behaviour and Welfare' at Indian Veterinary Research Institute, Izatnagar, Bareilly from Sept. 27 to Oct. 17, 2007.
- Dr. Chandras has participated in the 21 days Winter School on 'Advances in Video and Multimedia Production' at NAARM, Hyderabad from November 1-21, 2007.
- Dr. D. S. Malik participated in the 21 days short course on 'Small ruminant feeding system for commercial mutton production and value addition to augment income generation' at CSWRI, Avikanagar from Nov. 20 - Dec. 10, 2007.

Department of Livestock Products Technology

- Dr. J. Sahoo, Dr. D.K. Sharma, Dr. M.K. Chatli and Dr. A. K. Biswas attended XXIV Annual Conference of Indian Poultry Science Association and National Symposium on "Poultry Production for Rural Employment and Nutritional Security, at GADVASU Ludhiana from April 25-27, 2007.
- Dr. J.Sahoo, Dr. M.K.Chatli and Dr. S.Siva Kumar attended ICTDF-07, at NDRI- Karnal from Nov 14-17, 2007.

Department of Veterinary Anatomy and Histology

- Dr. Neelam Bansal and Dr. Varinder Uppal attended and presented papers at international conference on Advances in Zoo and Wild Animal Health Management held at Sher-e-Kashmir University of Agricultural Sciences and Technology- Jammu from April 25-26, 2007.
- Dr. Devendra Pathak attended XXIInd Convention and national symposium of Indian Association of Veterinary Anatomists held at COVS, Sri-Venkateswara Veterinary University Tirupati from Nov. 21-23, 2007
- Dr. Neelam Bansal, Dr. Opinder Singh, Dr. R.S. Sethi, Dr. Varinder Uppal and Dr. Devendra Pathak attended Animal Husbandary Dairying and Fisheries Officers workshop held at GADVASU, Ludhiana on Dec 12, 2007.

Department of Veterinary and Animal Husbandry Extension

- International congress on advances in zoo and wild animal health and management held at SKUAST-J, Jammu from April 26-27, 2007.



- International Tropical Animal Nutrition Conference at NDRI, Karnal from Oct. 4-7, 2007
- Research Industry Interface at NDRI, Karnal from Feb. 6-7, 2007
- 24th All India Poultry Science Association Conference held at GADVASU from April 25-27, 2007
- Annual Congress of ISVS held at SKUAST-J, Jammu from Oct. 27-29, 2007.
- Refresher Training course on “Improving postpartum fertility using nutritional and hormonal approaches in farm animals”, held at GADVASU, Ludhiana from Nov. 12 to Dec 2, 2007.
- Training Course for newly appointed DES/Asstt. Prof held at GADVASU from April 9-20, 2007.
- Dr. Prahlad Singh attended Asian Congress on Canine Practice and Symposium organized by ISACP and 4th Annual convention of ISACP held at Nagpur from Feb. 7-9, 2007.

Department of Veterinary Biochemistry

- Dr. Sandeep Kumar attended VI Annual Congress on Alternatives and Animal Use in Life Sciences held in Tokyo, Japan from Aug. 21-25, 2007.

Department of Veterinary Clinical Service Complex

- Dr. S.S. Sidhu and Dr. R.S. Singh attended Asian Congress on Canine Practice and Symposium organized by ISACP and 4th Annual convention of ISACP from Feb. 7-9, 2007, Nagpur.
- Dr. S. Prabhakar, Dr. S.K. Uppal and Dr. P.S. Mavi participated and presented papers in XXIII Annual Convention of Indian Society for Study of Animal Reproduction and National Symposium on “Challenges in Improving Reproductive Efficiency of Farm and Pet Animals” held at Department of Gynaecology, Faculty of Veterinary Science and Animal Husbandry, Orissa University of Agriculture and Technology, Bhubaneswar, India from Dec. 7-9, 2007.
- Dr. R. S. Singh participated in Winter School organized by Department of Veterinary Medicine, Madras Veterinary College, Chennai from Nov. 26 to Dec. 19, 2007
- Dr. Vandana Sangwan attended XXXI Annual Congress on Indian Society for Veterinary Surgery and National Symposiums on Rehabilitation of Veterinary Surgical patients, at Division of Veterinary Surgery and Radiology, SKUAST-Jammu from Oct. 27-29, 2007.

Department of Veterinary Microbiology

- Dr. H. M. Saxena participated in the Indo-US Workshop on Flow Cytometry organized at SGPGIMS, Lucknow in Dec. 2007.



- Dr. N. S. Sharma attended 8th World Buffalo Congress at Caserta, Italy from Oct. 19-22, 2007.
- Dr. H. M. Saxena, Dr. P.N. Dwivedi, Dr. N.S. Sharma, Dr. Ramneek, Dr. T.S. Rai and Dr. A.K. Arora attended XIII Annual Conference of ISVIB held at Pookot, Kerala in Feb. 2007.
- Dr. A.K. Arora attended the 3rd Annual Scientist meet of All India Network Project on HS held at CSKHPKV, Palampur in June 2007.
- Dr. Deepti attended Department of Biotechnology sponsored short term training course on “Gene Expression Techniques: Gene amplification, cloning, characterization of recombinant clones and *in vitro* expression analysis” held at Division of Biotechnology, IVRI, Izatnagar from July 25 to 14 Aug. 2007.
- Dr. T.S. Rai attended Department of Biotechnology sponsored short term training course on “Molecular techniques for production of recombinant cytokines and genome analysis in poultry” held at CARI Izatnagar from Aug. 18 to Sept. 7, 2007.
- Dr. A.K. Arora and Dr. Mudit Chandra attended ICAR sponsored winter school on “Molecular diagnosis of Animals Tuberculosis with particular reference to recent developments in Tuberculosis research for its diagnosis and prophylaxis” held at IVRI, Izatnagar from Dec. 3-12, 2007.
- Dr. N.S. Sharma attended FAO/WHO expert meeting on Animal feed impact on Food safety at FAO headquarters, Rome from Oct. 8-12, 2007.

Department of Veterinary Parasitology

- Dr. P.D. Juyal, Dr. S.S. Rath, Dr. A Kaur, Dr. N.K. Singh, Dr. Paramjit Kaur and Dr. Harkirat Singh attended XVIII National Congress of Veterinary Parasitology and Symposium on Emerging Parasitic Zoonoses and Advances in Herbal Medicine against Parasites of Veterinary Importance held at SKUAST, R S Pura (J).from Sept. 7-9, 2007
- Dr. P.D. Juyal attended a workshop on “Commercialization of biotechnology” held at New Delhi on March 2, 2007.
- Dr. P.D. Juyal and Dr. L.D. Singla attended 19th National Congress of Parasitology and International symposium on Parasitic Diseases of man and animals at Vishkhapatnam (A.P.) from Oct. 26-28, 2007.
- Dr. L.D. Singla attended National Seminar on “Recent diagnostic trends and control strategies for haemoprotozoan infections in livestock” held at Sardarkrushinagar Dantiwada Agricultural



University, Sardarkrushinagar, Gujarat from February 9-11, 2007, 12th International Conference of the Association of Institutions for Tropical Veterinary Medicine (AITVM) at Montpellier, France from August 19-22, 2007 and 5th Annual Scientist Meet of All India Network Project on Gastrointestinal Parasitism (AINP GIP) at Gangtok, Sikkim from May. 22-25, 2007.

- Dr. Paramjit Kaur attended Training course on “DNA Based Diagnostics” held at CCS HAU, Hisar from Nov. 13 to Dec. 4, 2007.

Department of Veterinary Pathology

- Dr. Amarjit Singh attended Four-week Training Course on Molecular Pathology, at Clinic for Avian, Reptile and Fish Medicine, University of Veterinary Medicine, Vienna, Austria from Aug. 1-28, 2007.
- Dr. R.S. Brar, Dr. N.K. Sood, Dr. C.K. Singh, Dr. H.S. Banga, Dr. Amarjit Singh, Dr. B.S. Sandhu, Dr. Kuldeep Gupta and Dr. (Mrs.) Sandeep Sodhi attended XXIV Conference of Indian Poultry Science Association and National Symposium on “Poultry Production for Rural Employment and Nutritional Security held at GADVASU, Ludhiana from April 25-27, 2007.
- Dr. B.S. Sandhu attended National Hands on Workshop on Rabies Diagnostics and Serology at the Department of Neurovirology, NIMHANS, Bangalore, India from Sept. 27–29, 2007.
- Dr. N.K. Sood attended VIII National Congress of Veterinary Parasitology, SKUAST, Jammu from Sept. 7-9, 2007
- XXXI Annual Congress of Indian Society for Veterinary Surgery, SKUAST, Jammu from October 27-29, 2007.
- Dr. N.K. Sood, Dr. A.P.S. Brar and Dr. Nittin Dev Singh attended 24th conference of Indian Association of Veterinary Pathologist at Tirupati in Oct. 1-3, 2007.
- Faculty members attended Animal Husbandary Dairying and Fisheries Officers workshop held on Dec. 12, 2007 at GADVASU, Ludhiana.

Department of Veterinary Pharmacology and Toxicology

- Dr. S.K. Sharma and Dr. R.K. Chaudhary attended 10th Punjab Science Congress held at DAVIET, Jalandhar from Feb. 7-9, 2007.
- Dr. H.S. Sandhu and Dr. S. Rampal participated in 27th Annual Conference of Society of Toxicology (STOX), held at Veterinary College, Bangalore from Oct. 6-8, 2007.
- Dr. S. Rampal attended International Workshop on Toxicology held at Advinus, Bangalore from 8-12 Oct. 2007.



- Dr. S. Rampal, Dr. S.K. Sharma, Dr. S.P.S. Saini and Dr. Rajdeep Kaur attended 7th Annual Conference of ISVPT held at Vety. College, Pookat from Nov, 28-30, 2007.

Department of Veterinary Physiology

- Dr. Digvijay Singh attended XVI annual conference of Society of Animal Physiologists of India (SAPI) held at Department of Veterinary Physiology, College of Veterinary Science Assam Agricultural University, Khanapara, Guwahati from Jan. 10-12, 2007.

Department of Veterinary Public Health

- Dr. B.B. Singh and Dr. R Sharma attended 21st International Annual Conference of World Association for Advancement of Veterinary Parasitology held at Ghent, Belgium from Aug. 18-23, 2007.
- Dr. J.K. Sharma, Dr. J.P.S. Gill, Dr. R.S. Aulakh, and Dr. J.S. Bedi attended 6th Annual conference of IAVPHS and National Symposium on Horizons of Veterinary Public Health in Augmenting Veterinary, Medical and Environmental Health” held at Department of Veterinary Public Health, GAU, Anand, Gujarat from Nov. 29 -30, 2007.

Department of Veterinary Surgery and Radiology

- Teachers and postgraduate students of the department of Veterinary Surgery and Radiology, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, participated in 31st annual conference of Indian Society for Veterinary Surgery held at SKUAST (J), RS Pura, Jammu, from Oct. 27-29, 2007.

Fisheries Unit

- Dr. Kamaldeep Kaur, Dr. Asha Dhawan, Dr. Meera D Ansal and Dr. Vaneet Inder Kaur attended International Tropical Animal Nutrition Workshop at NDRI, Karnal from Oct. 4-7, 2007.
- Dr. Asha Dhawan and Dr. Vaneet Inder Kaur participated in Asian Fisheries Forum (International) at Cochi Kerala from Nov. 20-23, 2007.
- Dr. Kamalpreet Kaur and Dr. Asha Dhawan attended Workshop on innovations in Inland Saline Waters in India and Australia, NAAS, New Delhi on Nov. 28, 2007.
- Dr. Kamaldeep Kaur, Dr. Asha Dhawan and Dr. Vaneet Inder Kaur attended Workshop on Dairy, Poultry and Fisheries officers at GADVASU, Ludhiana on Dec. 12, 2007.
- Dr. Meera D Ansal attended Training Programme on Advances in Freshwater Aquaculture Nutrition from Nov. 28 to Dec. 18, 2007.



Invited lectures delivered by faculty

Name of the faculty	Invited Lecture
Dr. V.K. Taneja	‘Enhancing Livestock Productivity in Punjab – A Road Map’, Punjab State Planning Board, Chandigarh, July 27, 2007.
Dr. V. K. Taneja, Dr. P.K. Trehan and Dr. P.D. Juyal	‘The Role, Structure and Management of Veterinary, Animal and Fishery Science Universities’, National Seminar on Veterinary Education and Practice – Present Status and Future Needs to Meet the Emerging Challenges, Bangalore, Sept. 21-22, 2007.
Dr. H.M. Saxena	Lead paper at the Indo-US Workshop on Capacity Building in Avian Diseases under the Indo-US Agricultural Knowledge Initiative at Chennai, Aug 2007.
Dr. P. D. Juyal	‘Status of Animal Trypanosomosis Research in Indian sub- Continent’ in 19 th National Congress of Parasitology and International Symposium on Parasitic Diseases of animals and Man, Oct. 26-28, 2007.
Dr. N. K. Sood	Role of Cytopathology in Canine Surgical Oncology, XXXI Annual Conference of Indian Society of Veterinary Surgery at Jammu, Oct. 27-29, 2007. Diagnostic cytology – A Pathologist’s Prespective, XXIV Annual Conference of IAVP at Tirupati, Oct. 1-3, 2007. Linking.....Johne Disease and Crohn’s Disease, Seminar on zoonotic diseases on the World Zoonosis Day at CMCandH Ludhiana, July 7, 2007.
Dr. M.P.S. Bakshi	Lecture in 21 day Training Course on Improving Post Partum Fertility Using Nutritional and Hormonal Approaches in Farm Animals, GADVASU Ludhiana, Nov. 28, 2007.
Dr. M.P.S. Bakshi and Dr. S. Saijpaul	Lectures in the “Animal Husbandry, Dairying and Fisheries Officers Workshop” organized by GADVASU, Ludhiana, Dec. 12, 2007.

Manuals, Compendiums, Bulletins Published

- Manual of Practical in Animal nutrition (Paper-I; ANN-211 and 212) by Dr. M.S. Pannu, Dr. P.S. Chawla and Dr. P.K. Naik.
- Manual of Practical in Animal nutrition (Paper- II; ANN-221 and 222) by Dr. S.S. Sikka, Dr. M.S. Pannu and Dr. A.P.S. Sethi.
- Laboratory Manual of General Pathology – VPP-211 by Dr. B.S. Sandhu, Dr. A.P.S. Brar, Dr. Kuldeep Gupta and Dr. N.K. Sood.



- A Manual on guidelines to import the equipments by Dr. H.S. Banga, Dr. R.S. Brar, Dr. S.S. Singh and Dr. S.K. Jand.
- Dr. Daljeet Kaur, Assistant Professor, compiled the compendium of XXIV Annual Conference of Indian Poultry Science Association and National Symposium on 'Poultry production for rural employment and nutritional security' at GADVASU from 25-27th April, 2007.
- Three Laboratory Manuals on "Milk and Milk Products Technology (LPT-311)", "Meat and Meat Products Technology (LPT-411)" and Abattoir Practices and Animal By-Products Technology (LPT-321) were revised by the faculty members of the Department and distributed to the students.
- Two practical manuals in the department of Veterinary and Animal Husbandry Extension were revised/upgraded.
- Department of Veterinary and Clinical services Complex prepared manual for internship programme and Ambulatory clinical course.
- Department of Animal Reproduction, Gynaecology and Obstetrics prepared compendiums of trainings conducted under CAS and revised/upgraded three practical manuals.
- Dr. Amarjit Singh, Associate Professor compiled Lecture and Practical Schedules for B.V.Sc and A.H. degree programme.
- Department of Epidemiology and Preventive Veterinary Medicine published following Technical bulletins:
 - ☐ Collection of samples for animal disease diagnosis.
 - ☐ Status of infectious animal diseases of regional importance.
 - ☐ Infectious causes of bovine abortions.
 - ☐ Diagnostics of commonly encountered animal diseases in north India.

Visitors to the University

The distinguished visitors to the university included: Hon'ble S. Parkash Singh Badal, Chief Minister Punjab; Hon'ble S. Gulzar Singh Ranike, Minister for Animal Husbandry and Fisheries, Dairy Development, Sports and Youth Services and Welfare of SCs and BCs, Punjab; Hon'ble Mr. Manpreet Singh Badal, Finance Minister, Punjab; Sh. H.R. Dhanda, Parliamentary Secretary, Govt. Punjab; Dr. K.M. Bujarbaruah, Deputy Director General (AS), ICAR, New Delhi; Dr. S.S. Johal, Vice-Chairman Punjab Planning Commission; Dr M.S. Kang, Vice Chancellor, PAU, Ludhiana and Dr. G.S. Kalkat, Chairman, Punjab Farmer's Commission.



Hon'ble S. Parkash Singh Badal, Chief Minister Punjab with Vice-Chancellor Dr. V.K. Taneja



Hon'ble S. Gulzar Singh Ranike, Minister for Animal Husbandry and Fisheries, Dairy Development, Sports and Youth Services and Welfare of SCs and BCs, Punjab being welcomed by Vice-Chancellor Dr. V. K. Taneja



Dr. Zia-ur-Rehman, Chairman, Division of Physiology and Pharmacology University of Agriculture, Faisalabad, Pakistan visited the Department of Veterinary Pharmacology and Toxicology.



Delegates from Pakistan interacting with Vice Chancellor Dr. V.K. Taneja and university scientists



Sh. S.C. Aggarwal Financial Commissioner, Animal Husbandary, Dairy Development and Fisheries on a visit to GADVASU



Dr. R.K.C. Bali, Visiting Professor and Leading Veterinary Practitioner from Cologne (Germany), visited the Department of Veterinary Surgery and Radiology, from Nov. 5-12, 2007. He delivered lectures and imparted practical training on recent techniques in diagnosis and management of stifle surgery such as cruciate ligament repair, patellar luxation, elbow and hip dysplasia, neuro-diagnosis and neurosurgery in canine patients.



Dr. R.K.C. Bali providing training to scientists

The seven delegates from Myanmar (Burma) visited the university under university exchange programme and their study tour of one week duration was planned and conducted in the field areas of Punjab relating to animal health and production by the Department of Veterinary and Animal Husbandry Extension.



Delegates from Tamilnadu Veterinary and Animal Sciences University with Dr. V.K. Taneja, Dr. S.K. Jand and Dr. O.S. Parmar

Visits Abroad

- Dr. C. K. Singh, Department of Veterinary Pathology visited Paris, France to participate in the International Conference on Rabies organized by OIE/WHO/EC from May 27-30 2007.
- Dr Kirti Dua, Department of Clinical Veterinary Medicine visited Leipzig, Germany to attend 13th International Conference on Production Diseases from July 29 to Aug. 4, 2007.
- Dr. Amarjit Singh, Department of Veterinary Pathology visited Clinic for Avian, Reptile and Fish Medicine, University of Veterinary Medicine, Vienna, Austria for Four-week Training Course on Molecular Pathology from Aug. 1-28, 2007.
- Dr. Sandeep Kumar, Department of Veterinary Biochemistry visited Tokyo, Japan to attend VI Annual Congress on Alternatives and Animal Use in Life Sciences from Aug. 21-25, 2007.
- Dr. B.B. Singh and Dr. R. Sharma, Department of Veterinary Public Health visited Ghent, Belgium to attend 21st International Annual Conference of World Association for Advancement of Veterinary Parasitology from Aug. 18 – 23, 2007.
- Dr. L.D. Singla, Department of Veterinary Parasitology visited Montpellier, France to attend 12th International Conference of the Association of Institutions for Tropical Veterinary Medicine (AITVM) from Aug. 19-22, 2007.
- Dr. N.S. Sharma, Department of Veterinary Microbiology attended FAO/WHO expert meeting on Animal feed impact on Food safety at FAO headquarters, Rome from Oct. 8-12 2007.
- Dr. B.K. Bansal, Department of Clinical Veterinary Medicine, Ethics and Jurisprudence visited Italy to attend 8th World Buffalo Congress from Oct. 19-22, 2007.

Conferences and Trainings Organized

- The XXIV Annual Conference of Indian Poultry Science Association and National Symposium on 'Poultry production for rural employment and nutritional security' was organized at GADVASU from April 25-27, 2007.
- The College of Veterinary Science organized training on "Diagnosis of Brucellosis" from Dec. 14-17, 2007 under the Continuing Veterinary Education Programme of Veterinary Council of India.



Inaguration of Veterinary Education Programme of Veterinary Council of India



- Training was imparted by Department of Animal Nutrition to Ms. Ayushjav Otgonjargal from Mongolia during Sept.-Oct. 2007.
- The Department of Animal Reproduction, Gynaecology and Obstetrics organized the three advanced trainings under Centre of Advanced Studies in Veterinary Gynaecology and Reproduction:
 - ❑ Latest strategies in semen technology and andrology for optimum reproduction, Jan. 5-25, 2007
 - ❑ Controlled reproduction in canines, Feb. 15 to March 7, 2007
 - ❑ Improving postpartum fertility using nutritional and hormonal approaches in farm animals, Nov. 12 to Dec. 2, 2007.
- Department of Veterinary Surgery and Radiology conducted advanced training courses under CAS, on Emerging Trends in Diagnostic Imaging in Veterinary Practice from Feb. 8th to 28th, 2007 and Diagnosis and Management of Musculoskeletal Disorders in Veterinary Practice from Nov. 1-21, 2007.
- The Department of Veterinary Microbiology organized two training programs (of one month each) in “Microbiological and Molecular Biological Techniques” for the students from outside universities in the months of May and June 2007.
- Department of Veterinary Parasitology Organized “Hands on Training on Diagnosis of Parasitic Infections in Domestic Animals” for Veterinary Officers of Punjab State from Oct. 29 to Nov. 2, 2007.
- Department of Veterinary Pathology Organized a course on “Common Diagnostic Techniques in Veterinary Pathology” for Veterinary Officers of Punjab State from November 12-16, 2007.

National and International Linkages

- The Department of Animal Reproduction, Gynaecology and Obstetrics has been recognized by FAO/IAEA as a centre for training to participants from developing countries. Under this programme Mr. Ye Tun Win from Myanmar and Ms Otgonjargal Ayushjav from Mongolia received training.
- The Department of Veterinary Microbiology continued to be a collaborating centre in ICAR sponsored project “All India Network Programme on Haemorrhagic Septicaemia”.
- Fisheries Unit collaborated with National Fisheries Development Board, Hyderabad for conducting Fish Farmer’s Training. The unit is also a member of consortium for NAIP Project with National Bureau of Fish Genetics Research (ICAR) Lucknow.

Infrastructure

The college has established a new Toxicology Laboratory in the Department of Veterinary Pharmacology and Toxicology, Immunopathology Laboratory in the Department of Veterinary Pathology and Molecular Laboratory in the Department of Veterinary Microbiology. A Multimedia Laboratory with equipments like DTP work station, Audio work station, Video work station, Scanner A3 size, Printer, Video camera and Digital camera has been established. A well equipped centralized diagnostic laboratory has been established in the Veterinary Clinical Service Complex. Lecture halls in the College of Veterinary Science has been renovated and equipped with multimedia facilities. Excavation of new fish ponds and upgradation of laboratories were carried out in Fisheries Unit.



Bucket Milking Machine for Buffaloes



Cattle Milking Parlor



RESEARCH

Undertaking need based research on different aspects related to production and health of various livestock species, poultry and fisheries forms an integral part of the mandate of the university. During the year 2007, a total of 61 new project proposals were submitted to following funding agencies:

- Indian Council of Agricultural Research (15)
- Department of Animal Husbandry, Dairying and Fisheries, Govt. of Punjab (22)
- Department of Science and Technology (10)
- Department of Biotechnology (4)
- Punjab State Farmers' Commission (4)
- Ministry of Agriculture, Govt. of India (3)
- National Fisheries Development Board (1)

Out of these, 31 proposals have so far been approved for funding. During the year 2007, a total of 89 schemes were operational as detailed below:

Plan Schemes	21
Non Plan Schemes	36
ICAR Adhoc Schemes	9
ICAR Coordinated Schemes	6
Centrally Sponsored Schemes	1
Revolving Fund Schemes	5
FAO/IAEA Schemes	1
UGC Schemes	2
DBT Schemes	2
Punjab State Farmers' Commission	4
Misc. Schemes	2

LIST OF SCHEMES

Plan Schemes	
S. No.	Name of the Scheme
1.	Establishment of Regional Research Centre for Nili Ravi Buffalo
2.	Regional Livestock Research Centre for Sahiwal Cattle
3.	Strengthening of Postgraduate Institute of Veterinary Research and Education
4.	Animal Farm Advisory Services Scheme
5.	Establishment of Research Centre and Referral Hospital for Equine
6.	Studies on Goat for Meat and Milk Production Under Stall-fed Conditions in Punjab
7.	Strengthening of Veterinary Laboratory for Advanced Diagnostic Facilities
8.	Establishment of Critical Care Unit for Small and Large Animals
9.	Establishment of Research- cum- quality Control Laboratories for Feed for livestock/ poultry and fisheries
10.	Introduction and Breeding and Naked Neck/Rhode Island Red and other Miscellaneous Stocks of Poultry
11.	Molecular and Cytogenetic Studies on Animals for faster genetical gains
12.	Ambulatory Clinical Services for better techniques and farms services
13.	Strengthening of Department of Livestock Products Technology for Value Addition to Livestock Products
14.	Establishment of Livestock Farm for Teaching Students
15.	Establishment of an Immunopathology research-cum-disease diagnostic center in the Department of Veterinary Pathology
16.	Pesticide –induced adverse effects: Implication on livestock production
17.	Development of strategies for production of safe and residue free animal food.
18.	Integrated Management and control of Parasitic Diseases in domestic animals for enhancing livestock productivity in different agro-climatic zones of Punjab State
19.	Diagnosis and Control of Brucellosis – a dreadful zoonotic disease in Domestic Livestock for Enhancing Productivity in Punjab State
20.	Regional Livestock and Poultry Research and Training Centre for Kandi Area
21.	College of Dairy Science and Technology



Non Plan Schemes	
1.	Research Facilities for Dairy Cattle and Buffalo Breeding
2.	Recovery , cryopreservation and embryo transfer in buffaloes and crossbred cattle
3.	Additional facilities for modernization of diary operations
4.	Advanced Research Centre for Buffalo Reproduction
5.	Rearing of Buffalo Male Calves for Meat
6.	Genetic Improvement of Egg-Type Stock
7.	Germplasm Multiplication of Egg-type Poultry Stocks
8.	Physical Facilities to Breed Quails for Meat and Egg
9.	Reprod. Biology, Ecology, and Management of Birds and Mammals–Only a portion of it in ABG
10.	Creation of facilities for rearing of meant animals i.e. goat, pig and rabbit
11.	Studies on Utilization and Popularization of Processed Meat Products Prepared from Buffaloes and other Species
12.	Establishment of Small Animal Colony (NPV-10)
13.	Regional Livestock Research Centre at Bhatinda
14.	Regional Livestock Research Centre at Kapurthala
15.	Improvement of buffalo and crossbred cattle through nutrition effect of plans of nutrition on their growth rate age at puberty, pregnancy and lactation
16.	Intensification of Research in Animal Nutrition
17.	Establishment of Research Laboratory for feed evaluation and processing
18.	Improvement of forage and establishment of forage unit (NPV-52)- (NP-53 Part A unit II)
19.	Storage, Processing and Packaging of Farm Produce
20.	Seed Production in Forage Crops
21.	Reproductive disorders in dairy animals
22.	Control of Mastitis in Punjab State – A Pilot Project
23.	Internal diseases of dairy animals their clinico pathological diagnostic and therapeutic aspect
24.	Nutritional deficiency diseases of dairy animals and their clinico pathological diagnostic and therapeutic aspect
25.	Animal Disease Research Centre and Strengthening of diagnostic experimentation
26.	Anatomical, histological, histo-chemical, electron-microscopic studies as related to hormonal and biochemical profile in female reproductive organs in buffalo



27	Studies on viral bacterial and mycotic infection of cattle and buffaloes with a view to develop diagnostic test and suitable vaccines
28	Immunological Studies on the helminthic diseases of livestock
29	Immunological control of cattle tick (<i>Boophilus microplus</i>)
30	Establishment of research-cum-diagnostic laboratory for rabies
31	Research on poultry diseases
32	Toxicity studies on insecticide in livestock
33	Research on the diagnostic aid and surgical treatment of musculo-skeletal and abdominal disorders in large animals
34	Fisheries Research Scheme
35	Establishment of Institute of Fisheries and Wildlife (NPV-56)
36	Strengthening of Fisheries Research scheme (NPV-54)
ICAR Schemes	
1.	Network project on buffalo Breeding (Main Unit)
2.	Network Project on Buffalo Breeding (Field Unit)
3.	Project Directorate on Cattle-Field Progeny Testing Project
4.	All India Coordinated Research Project on Poultry Improvement
5.	AICRP on improvement of feed resources and nutrient utilization in raising animal production
6.	A study on the preparation and feeding of by-pass fat to high yielding dairy animals
7.	Improving postpartum reproductive efficiency of buffaloes affected with dystocia.
8.	Centre of Advanced Studies in Vety. Gynaecology and Reproduction
9.	Induction of fertility in delayed pubertal buffaloes through appropriate endocrine and nutritional interventions
10.	Incidence of prolonged estrus in repeat breeding crossbred cows vis-à-vis. its hormonal profile, ovarian dynamics and possible interventions
11.	Project Directorate on Animal Diseases Monitoring and Surveillance
12.	All India Network Programme on H.S.
13.	Development of intramedullary interlocking nailing (IILN) for long bone fracture fixation in Veterinary College
14.	Antiluteolytic strategies – a novel approach to enhance fertility in buffalo
15.	Centre of Advanced Studies in Veterinary Surgery and Radiology



Centrally Sponsored Schemes (MoA, GoI)	
1.	Conservation and Improvement of Beetal goats
Revolving Fund Schemes	
1.	Processing and Distribution of Milk in the Department of Food Science and Technology Part-B
2.	Production of table size fish and fish seed
3.	Resource Mobilization from Poultry Farm
4.	Diagnostic and Clinical Services in COVS
5.	Manufacture/sale of mineral mixture for dairy animals
FAO/IAEA Schemes	
1.	Integrated approaches to improve livestock production using indigenous resources and conserving the environment
UGC Schemes	
1.	Development and regulation of granulose cell function in Goat
2.	Effect of water pollution on the immunology of Fish
DBT	
1.	Identification of target Molecule on B cells which binds infectious Brusar Disease (IBD) Virus and its regulation for immunoprophylaxis of IBD in chickens
2.	Characterization of antimicrobial peptide genes in buffaloes in health and disease
Punjab State Farmers' Commission	
1.	Establishment of Model Fish Farms in Punjab
2.	Establishment of Fish Farming Demonstration Unit
3.	Utilization of Inland Saline Waters of South-West Punjab for Aquaculture
4.	Demonstration of modern dairy housing and feeding practices to the dairy farmers (Silo pit for 20 milk animals)
Misc. Schemes	
1.	Protocol Efficacy of herbal formulations on digestibility and nutrient utilization of Wheat Straw in Calves
2.	Intensive Aquaculture in ponds and tanks (4 training programs)

Research Highlights

1. Department of Animal Breeding and Genetics

Cattle breeding

The Crossbreeding Project for the genetic improvement of cattle showed an upward trend in all milk production traits. The average 305-day milk yield and peak yield were recorded as 4232.0 kg and 20.90 kg, respectively with wet average of 13.79 kg. The average milk yield of the elite herd being used for the production of future crossbred bulls was 5342.9 kg with the peak yield of 26.71 kg. Seventy seven crossbred cows calved during the period. Four breeding crossbred bulls in the 8th set were selected for the ICAR field progeny testing programme. For the genetic improvement of cattle population of the State, ten bulls, 20284 doses of frozen semen and 4330 doses of chilled semen were supplied /sold to the farmers and other dairy development agencies of the State.



Crossbred bulls



Elite cows and foundation stock

Buffalo breeding

The average lactation yield of university buffaloes was 2294 kg with 305-day milk yield of 2105 kg and average peak yield of 12.35 kg. Fourteen thousand six hundred and seventy two doses of frozen semen and 1348 ml chilled semen were supplied to farmers and other dairy development



agencies for improvement of buffalo population in the State. Thirty six buffalo bulls/male calves were sold to farmers for breeding purposes.

Breeding bulls for 10th set were selected by committee constituted by ICAR and six bulls out of total eleven buffalo bulls in the ICAR network project were contributed by GADVASU.



Elite buffaloes and foundation stock

Field progeny testing programme

The field progeny testing project is a network programme of the ICAR with collaborative units at GADVASU, Kerala Agricultural University, Manuthy and Bhartiya Agro-industries Foundation, Pune. The area of operation is served by 21 A.I. centres in Ludhiana district. Matings with the sixth set of 25 test bulls were completed and matings with bulls from the seventh set of 22 test bulls are in progress. During the year, a total of 6708 artificial inseminations were carried out. Performance recording of 148 daughters of third, fourth and fifth set of test bulls has been completed.

Broiler breeding project

A total of about 7956 chicks of the dam line (PB-2) and 2618 chicks of the male line (PB-1) along with a control line were hatched during the year. The five week body weights of the birds of pure lines PB-1 and PB-2 were further improved with an average of 1080g and 1077g, respectively. The growth rate was highest among the four centres of the All India Co-ordinated research Project. The egg production to 52 weeks in the dam line was 119 eggs. The department supplied parent stock and hatching eggs to Animal Husbandry Deptt. of J and K state and commercial chicks to the farmers of the state. Hatching eggs were sent to the Random Sample Performance Test centre at Gurgaon.

Layer breeding project

Currently the university is maintaining and improving two White Leghorn, two Rhode Island and one dual-purpose red strains of layer chickens. The age at sexual maturity of the different

strains varied between 145 and 166 days. The sexual maturity of White Leghorn and RIR strains did not differ, however the red dual purpose strain had late maturity (166 days). The 20 week body weight of the WLH strains averaged 1000g while that of RIR was 1220 g. The red stock achieved body weight of 1278 g.

Quail breeding project

Two coloured strains attained 5 week average body weight of 220 g. The white strain of quails under the name “PUNJAB WHITE QUAIL” was released after approval by the State Variety Release Committee for commercial farming. The white quails attained a weight of 210g at 5 weeks.



Punjab White Quail

PCR-RFLP studies on growth hormone in egg and meat type chicken

Growth hormone polymorphism was investigated in egg and meat type chicken by PCR-RFLP. The analysis of the two identified SNPs with growth traits showed that A+119G was significantly associated with body weight at all ages in layer chicken and with body weight at 5 weeks of age in meat type chicken.

Embryo transfer technology

During the period under report, a total of 7 elite cows were superovulated using Follicle Stimulating Hormone (FSH)/Pregnant Mare Serum Gonadotrophin (PMSG). Some of the cows were exposed to repeated superovulation procedures. All animals responded to superovulation treatment. On an average 15.7 and 13.5 Corpora Lutea (CL's) developed on the ovaries. An embryo recovery rate of 3.5 and 2.6 were obtained with FSH and PMSG, respectively. However, only 0.8 and 2.3 transferable embryos were recovered with FSH and PMSG treatment, respectively.

2. Department of Animal Nutrition

Survey of the feeding practices followed in the State

In order to assess the nutritional status of livestock, a survey was conducted in different agro climatic zones of Punjab State viz. Sub mountain undulating region (SMUZ), undulating plain region (UPZ), central plain (CPZ), western plain (WPZ), western (WZ) and flood prone belt (FPBZ) with respect to the feeding practices. It revealed that most of animals in different agro climatic zones were fed highly imbalanced ration. The proportion of roughage in the complete feed was highest in UPZ (86.9%) followed by that in SMUZ (82.2%) whereas lowest amount/proportion of roughage was used in the diet of animals of WZ, where a high proportion of concentrate was used. This was evident from the condition and productive performance of animal in the zone. Animals in



all zones except CPZ were offered protein deficient diets. Even in CPZ, which is in the vicinity of GADVASU, only 19.7% of the farmers supplemented the diet with mineral mixture (MM), regularly. Around 2.5% of the farmers of SMUZ used mineral mixture in the ration while 48% of the farmers of CPZ and 10% of the farmers of WZ supplemented the diet with salt. The deficiency of minerals and salt was reflected in reproductive performance as the highest cases of repeat breeding/anoestrus were recorded in CPZ and WPZ.

Waste bread as an alternate energy source in the diet of buffaloes

Waste bread is an excellent source of cooked starch. It also contained 12% CP, equivalent to that of wheat. An experiment was conducted to study the impact of graded level of waste bread replacing cereal grains in the concentrate mixture for buffaloes. Adult male buffaloes (9) divided into 3 equal groups were offered conventional concentrate mixture in which wheat was replaced by waste bread on nitrogen basis at 0, 50 and 100% levels for 30 days, which was followed by a 7-day metabolism trial. The concentrate mixtures were supplemented with wheat straw. Simultaneously, these diets were fed to three rumen fistulated male buffaloes in order to assess the impact of waste bread on rumen metabolites. The results revealed that waste bread did not have any adverse effect on the nutrient utilization or biochemical changes in the rumen.

Phlaris minor as a substitute of cereal grains in diet of ruminants

Concentrate mixtures containing 30, 40, 50 or 60% *Phlaris minor* seeds supplemented with wheat straw were offered to 20 male buffaloes for 30 days, followed by a 7-day metabolism trial. The results revealed that there was no adverse effect on the nutrient utilization in buffaloes.

Comparative evaluation of wheat straw with or without plastic thread thrashings

In- vitro evaluation: The wheat straw with or without thrashings of plastic thread evaluated by in-vitro gas production as well as by in-sacco technique revealed that presence of plastic thread thrashings did not have any adverse effect on degradability of nutrients.

In- vivo evaluation: Adult male buffaloes (8) divided into 2 equal groups were offered either wheat straw as such or wheat straw with plastic thread thrashings supplemented with concentrate mixture for 30 days followed by a 7-day metabolism trial by feeding these to rumen fistulated male buffaloes. The presence of plastic thread thrashings in wheat straw did not have any adverse effect on the nutrient utilization or biochemical changes in the rumen.

Utilization of leather meal in broilers

Leather meal was incorporated in the broiler diets @ 1, 2, 3 and 4 percent levels replacing soybean meal on iso-nitrogenous basis. Feeding was continued up to six weeks. The results indicated

that leather meal can be incorporated in the broiler starter and finisher diet up to 4 percent without affecting the growth, feed intake and feed conversion ratio.

Effect of supplementing polyzyme on the ME requirement of broilers

Day old broilers (252) distributed into 18 groups (7 chicks of each sex) were offered diets with 3 energy levels viz. 2.60, 2.70, 2.80 and 2.80, 2.90, 3.00 Mcal/kg diet respectively during starter (0-3 wks) and finisher (4-6 wks) phases with or without enzyme supplementation. At the end of feeding trial a metabolic trial was conducted and 4 birds from each group were sacrificed for studying the carcass traits. The results revealed that enzyme supplementation in broilers had beneficial effect only during starter phase (0-3 wks).

Effect of feeding bypass fat on nutrient utilization in adult buffaloes

Adult buffaloes (20) divided into 5 equal groups were offered either basal concentrate mixture (T_1) or supplemented with 300 g rice bran fatty acid oil (RBO) (T_2), 200 g RBO + 100 g bypass fat (T_3), 100 g RBO + 200 g bypass fat (T_4) or 300 g bypass fat (T_5) along with limited green fodder (*Chari*) and wheat straw in the ratio of 35.0: 5.0: 60.0. There was no difference ($P < 0.05$) in the dry matter intake (DMI) and digestibilities of organic matter (OM), crude protein (CP) and neutral detergent fiber (NDF) among the groups. The dry matter (DM) and ether extract (EE) digestibility was lowest ($P < 0.05$) in exclusive oil group and highest ($P < 0.05$) in 2% and 3% bypass fat groups. All the animals were in positive nitrogen, Ca and P balances. The Total digestible nutrient percentage (TDN %) was comparable among bypass fat groups but higher than the oil group. It was concluded that supplemental bypass fat in the form of Ca-low chain fatty acids (LCFA) could be included at 2-3% of the total DM intake.

Nutrient utilization was also studied on sixteen adult buffaloes offered concentrate mixture (CM) supplemented without (T_1) or with 100 g (T_2), 200 g (T_3) and 300 g (T_4) bypass fat, respectively along with limited green fodder (berseem) and wheat straw maintaining roughage: concentrate ratio 80:20. There were no differences in the DMI and apparent digestibility of the proximate principles and fiber fractions among the groups. Supplementation of bypass fat @ 200 g (84.21%) and 300 g (84.57%) increased ($P < 0.05$) the EE digestibility over T_1 (control) group. All the animals were in positive Ca and P balances. It was concluded that bypass fat supplementation improved the EE digestibility at 200-300 g (2-3% of DMI).

Effect of feeding bypass fat in high yielding dairy cows

High yielding crossbred cows (15) divided into 3 equal groups were offered either a basal conventional diet (T_1), T_1 supplemented with 200g RBO (T_2) or 200 g bypass fat (T_3) for 150 days. During early lactation, the milk yield (3.2 kg; 19.69%) and 4% fat corrected milk (FCM) yield (2.8



kg; 22.3%) was higher ($P < 0.05$) in bypass fat fed group (T_3) than the control group (T_1). The recovery of BW after parturition in the supplemental fat groups was better than the control group. During mid lactation, there was no effect of bypass fat on the performance of lactating cows. The number of artificial inseminations required per conception in bypass fat fed group (1.2) was lower than the RBO fed group (1.4) indicating better reproductive performance. It was concluded that supplementation of 200 g bypass fat increased (20%) the milk yield in early lactation with improved reproductive performance.

Feed Analytical Services

About 202 samples of poultry and cattle feed and feed ingredients received from farmers, Government and semi-Govt agencies, and industries were analyzed for their chemical composition. Twenty samples were analyzed for urea and salt. The analysis indicated a variation in the chemical composition of feeds and feed ingredients with respect to the BIS specifications.

3. Department of Animal Reproduction, Gynaecology and Obstetrics

Studies on anestrus in dairy animals

Studies on anestrus revealed that buffaloes illustrated regular ovarian follicle turnover with dominant follicle attaining ovulatory size but regressing without ovulation, suggesting the lack of proper hormonal stimulus required for ovulation. Melatonin hormone released during night time is a positive stimulus for GnRH release. Increased day-length during off-breeding season could depress melatonin release. In this study, for the first time, use of melatonin implant treatment has been exploited for initiating ovarian cyclicity in anestrus buffaloes during periods of increased day length. Ovarian ultrasonography revealed that none of the control group anestrus buffalo ovulated during the study period where as all the treatment group buffaloes ovulated within 7 to 32 days following melatonin implant treatment. This concluded that melatonin implant treatment induces ovarian cyclicity in anestrus buffaloes with a very high success rate. Compared to cost of other hormonal treatments, melatonin implant treatment per anestrus animal is relatively low (Rs 35/-) and shall be easily accepted by economically poor farmers.

Frequent per-rectal ovarian massage is claimed to be responsible for the resumption of cyclicity in ovarian function affected dairy cows, but similar study was lacking in buffaloes. Investigation in buffaloes demonstrated that repeated per-rectal ultrasound examination and even per-rectal ovarian massage does not alter ovarian activity in anestrus buffaloes.

Studies on repeat breeding in buffaloes

Fifteen repeat breeding buffaloes with abnormal coloured cervico-vaginal mucus (cvm) were treated for clinical endometritis with parenteral infusion of Ciprofloxacin – 2g and Metronidazole – 2.5 g intravenously for 5 days. The first service conception rate was 47% (7/15 animals).



Studies on ovarian dynamics and estrous cycle in repeat breeder and normal cycling cows

Twenty cows (n=15 with history of prolonged estrus and repeat breeding for the last three estrous cycles, and n=5 healthy control) were studied. Animals were observed and examined using ultrasonography and cervico vaginal mucus (CVM) starting from 48-96 hrs before the expected date of estrus up to 9th day of the estrous cycle. It was seen that the cows with history of repeat breeding showed the estrus symptoms up to 120 hrs (average 62.4 hrs) and normally cyclic cows showed estrus symptoms up to 36 hrs (average 19.8 hrs). The consistency of CVM remained thin up to 96 hrs in repeat breeder cows. The fern pattern of CVM also remained secondary up to 96 hrs and then started becoming tertiary or atypical for more period than the normal cyclic cows. The length of estrous cycle was almost similar in both the groups of cows.

There was no significant difference in the average antral follicular diameter of ovulatory follicle in normal cyclic cows (16.2 mm) and repeat breeder cows (15.7 mm). Also no significant difference was found in average size of CL in two groups. The ovulation was also delayed up to 144 hrs (average 77 hrs) in repeat breeder cows as compared to 48 hrs (average 32 hrs) in normal cyclic cows after the start of estrus. The duration of dominant follicle was significantly more in repeat breeder cows with prolonged estrus than that of normal cyclic cows. The function of CL was almost similar in both types of cows provided that the CL is completely formed, however the formation and function of CL is delayed in repeat breeder cows.

Analysis of repeated inseminations on conception rate in prolonged estrus cases

Retrospective analysis of repeated inseminations in 154 repeat breeder cows with prolonged estrus revealed that only 29 (18.83%) cows conceived with multiple inseminations or some hormonal (GnRH and PGF₂α or its analogue) interventions. Out of these 29 cows, 12 were inseminated more than twice at 24 hrs interval till cow ceased to show heat symptoms and the remaining 17 cows were also given some hormonal interventions at the time of insemination.

Effect of dystocia on postpartum reproductive efficiency in buffaloes

Dystocia affected animals were slow to respond in terms of onset of reproductive activity till the uterine infections persisted. The uterine involution was achieved in 65 per cent (9/14) dystocia affected buffaloes, treated with antibiotics by day 46 while in rest of the cases it was delayed. Ovarian activity though had started by then, but the growth of the follicles was slow and ovulation did not occur in any of these animals.

Majority of buffaloes presented for treatment of dystocia at university clinics carried uterine infections, and after delivery 90 per cent (29/32) animals were voiding foul smelling uterine discharge



indicating metritis. *In-vitro* culture sensitivity testing of uterine discharge revealed gentamicin, ofloxacin, enrofloxacin, chloramphenicol, cephalosporins, and metronidazole as the effective antibiotics. Due to inconsistent pattern, a combination of two sensitive antibiotics was recommended in dystocia-affected buffaloes.

Percent phagocytosis and percent extra cellular killing by the polymorphonuclear leucocytes (PMNL) were studied in buffaloes suffering from dystocia (n=44) and normally calved buffaloes (n=5) on different day postpartum viz. day 0, 1, 3, 7, 14 and 28. The PMNL were separated from the peripheral blood and co-cultured with fetal calf serum and *Candida albicans* to study phagocytosis and killing ability. Dystocia resulted in increased phagocytosis but reduced killing ability by the PMNL. The levels corresponding to normal calving were achieved only by day 28 postpartum. This indicated that stress of dystocia reduced immunity and predisposes the animals to infections thereby delaying postpartum reproduction.

The average level of PGFM on the day of normal calving (n=5) was 3.06 ± 1.06 ng/ml. In dystocia affected buffaloes (n=12) the levels of PGFM on the day of presentation for the treatment were 8.16 ± 2.14 ng/ml ($P < 0.05$). This probably indicates higher tissue trauma due to handling and stress.

Improvement of livestock productivity through nutritional and endocrine interventions

Two farm trials were carried out on synchronization of the dairy animals and insemination, and putting into practice improved housing and nutritional strategies. Supplementation of Monensin medicated UMMB induced ovarian cyclicity in 60% delayed pubertal buffaloes heifers, and it improved the conception rate by 20-30%. While Ovsynch protocol improved conception rate and resulted in 65% and 30% conceptions in breeding and non-breeding seasons in buffaloes.

Preliminary studies also showed that injecting hCG 3000 I.U. 5th day post A.I. in buffaloes enhanced conception rate.

Role of antioxidants in enhancing activity of cattle bull spermatozoa

The optimum dose of ferrous ascorbate (FeAA: FeSO₄ + ascorbic acid) for inducing oxidative stress by affecting motility, viability and lipid peroxidation (LPO) has been ascertained in the local crossbred cattle bull spermatozoa. Semen samples (n=5) with more than 80% sperm motility and 1200×10^6 to 1400×10^6 per ml sperm count were obtained from healthy crossbred cattle bulls. Three ejaculations of each bull were analyzed. The fractions of spermatozoa suspended in 2.9% sodium citrate were subjected to three doses of FeAA (100mM : 500mM, 150mM : 750mM, 200mM : 1000mM ; FeSO₄ : ascorbic acid). Among these, 150mM FeSO₄ : 750mM Ascorbic acid was found optimum dose for inducing oxidative stress.



After assessing the optimum dose of ferrous ascorbate (FeAA), it was used to induce oxidative stress in cattle bull spermatozoa. Thereafter, Optimum dose of Mn^{2+} (a biological antioxidant) among the three doses i.e, 60 μM , 100 μM , 200 μM to reverse the free radical mediated oxidative damages was ascertained. All doses of Mn^{2+} increase motility and viability, but 60 μM dose was found more effective under normal and oxidative stress.

4. Department of Clinical Veterinary Medicine, Ethics and Jurisprudence

Economic analysis of bovine mastitis in dairy animals

The annual economic losses due to mastitis were calculated to be Rs. 7165.51 crores in India and Rs. 503.49 crores in Punjab. At national level these losses were found to be almost same for cows (3649.56 crores) and buffaloes (3515.95 crores). But, in Punjab buffaloes shared a major loss of Rs. 319.51 crores as compare to 183.98 crores by cows. Much economic losses occurred due to subclinical mastitis; these being 57.93% (4151.16 crores) and 71.90% (362.03 crores) of total losses in India and Punjab, respectively. Of the total economic losses due to subclinical mastitis, milk quality premium loss constituted a significant proportion of 28.42% in cows and 7.04% in buffaloes.

Evaluation of somatic cell count and biochemical components of milk in relation to udder health in buffaloes

Somatic cell count (SCC) and biochemical components of buffalo milk were evaluated related to udder health. Cell count results of DeLaval cell counter (DCC) were compared with their corresponding microscopic values. Foremilk samples from 399 clinically healthy quarters of 101 Murrah buffaloes were collected at afternoon milking and analyzed for California mastitis test (CMT), SCC (DCC and Microscopic methods), electrical conductivity (EC) and pH (EC and pH meter, Systronics), fat, total protein, lactose, SNF and density (Lactoscan milk analyzer), and bacterial isolation (National Mastitis Council procedure). Categorization of udder health (IDF criteria; threshold 100×10^3 cells/ml) revealed presence of specific subclinical mastitis in 7% of quarters, and non-specific mastitis in 49% of quarters with a mean DCC value of 220×10^3 cells/ml. Latent infections comprised 1% of quarters. Staphylococci (42.80%) followed by streptococci (39.30%) and corynebacteria (17.90%) constituted dominant etiological agents of specific mastitis. Analysis of biochemical composition of milk viz. a viz. udder health showed significantly ($p < 0.01$) higher EC (mS/cm) in specific (4.72 ± 0.81) and non-specific mastitis (4.21 ± 0.56) than in healthy quarters (3.98 ± 0.36). Total protein was lowered in non-specific and specific mastitis cases, but significant effects for lactose, SNF and density could be seen in specific mastitis. Latent infections represented only a significant increase in pH. Pair t-test of SCC by DCC and microscope revealed that both



methods depicted almost similar cell count levels, with a correlation coefficient of 0.89. The correlation between DCC and EC was 0.51. Studying a relationship between DCC and CMT indicated 94.37% of quarters with negative CMT reaction having DCC values $< 3 \times 10^5$ cells/ml. The mean DCC values for negative, trace, and +1 to 2 CMT reactions were observed as 122, 238, and 593 ($\times 10^3$) cells/ml, respectively. These results showed that buffaloes unlike cows have low number of quarter infections, respond on similar line as cows to udder inflammation, and DCC may be effectively employed for expressing milk SCC in this species.

Culture sensitivity pattern of clinical mastitis in cows and buffaloes

During the period under report 1188 quarter milk samples from mastitic cows (810), buffaloes (342), goat (12) and bitch (24) were received in the mastitis laboratory for under taking culture sensitivity. The staphylococci were found to be chief etiological agent of mastitis. Current sensitivity pattern revealed neomycin followed by erythromycin, gentamicin and tetracycline as the highly effective drugs for treatment of mastitis. The penicillin, cloxacillin and streptomycin were found as less effective.

Lameness in dairy animals

Evaluation of 337 lactating cows and 82 buffaloes revealed clinical lameness as major problem in cattle (8.92%) as compared to buffaloes (2.26%). The lameness was more prevalent in cows at organized farms (11%) than at unorganized farms (2%). Use of formalin footbath and supplementation with biotin and zinc helps in prevention and treatment of lameness in farm animals.

Studies on peritonitis and pericarditis in dairy animals

Peritonitis occurred more commonly around calving; incidence being 73.68% of cases presented for treatment within 3 months of peri-parturient period. Gastrointestinal stasis, depression and abdominal pain were the main clinical presentation. Peritoneal fluid differential leucocyte count (DLC) was found as better indicator for assessing severity of peritonitis than blood leukocyte count.

Shortening of QRS complex in Electrocardiogram (ECG) was found a good indicator of pericarditis in dairy animals. Increased heart rate (>70 per min) in combination with higher values of hemato-biochemical parameters like TLC, neutrophil count, globulin and fibrinogen can be used as prognostic indicators.

Studies on mineral imbalances in dairy animals

A study was conducted to assess the efficacy of iodized oil administration in hypothermic buffalo calves. Fifteen hypothermic buffalo calves with rectal temperature less than 97°F were treated with subcutaneous administration of 1 ml of the iodized oil containing 375 mg/ml of elemental

iodine. Pre-treatment mean rectal temperature (96.8 ± 0.12 °F) significantly increased to 100.4 ± 0.12 °F ten days after the iodized oil administration. All the treated calves showed clinical improvement and recorded normal rectal temperature thereafter. There was a significant increase in the mean plasma inorganic iodine levels from the pre-treatment phase.

5. Department of Epidemiology and Preventive Veterinary Medicine

Epidemiological surveillance of important diseases in cattle

During the period under report 2642 animals were tested for brucellosis of which 573 (21%) animals were found positive on the basis of RBPT and STAT test. The detail is given below:

Samples (place)	No. of samples	Positive samples
Dairy farm	103	2
Gaushala	464	98
Guresh village	311	34
On Farmer's request	1764	439
Total	2642	573

A total of 49 animals were screened for JD by ELISA and 7 animals were found positive. Twelve fecal samples suspected for JD were submitted during the period. Acid fast staining revealed that ten samples were positive for acid fast bacilli.

A study conducted on 90 samples from diarrheic calves indicated most common enteropathogen to be Rotavirus. Antigen detection ELISA based prevalence of rotavirus, corona virus and cryptosporidium in neonatal calf diarrhea was found to be 8% (7/90 samples), 7% (6/90 samples) and 5% (4/90 samples), respectively. Diagnosis of Rotavirus was further confirmed using SDS-PAGE.

Epidemiological studies on Vero toxin producing *E. coli* was carried out on faeces of healthy cattle, buffalo, sheep and goat. Hundred faecal samples were collected from cattle and buffalo. A total of 241 *E. coli* isolates were obtained after biochemical identification and were characterized. Serotyping showed that 211 (87.6%) isolates belong to 66 'O' serogroups. Rests were either untypable or rough. Multiplex PCR assay revealed 135 (56%) out of 241 isolates positive for virulence genes. Antibigram pattern of 135 VTEC isolates showed that all of these sensitive to trimethoprim and resistant to metronidazole.



Epidemiological studies of VTEC in healthy sheep and goat flocks were carried out on 200 faecal samples. A total of 369 isolates were obtained after biochemical identification and characterization. Serotyping revealed that 87.82% isolates belonged to 68 'O' seogroups. By multiplex PCR assay, 132 out of 369 (39.99%) isolates were positive for virulence gene.

Toxicological problems encountered in Punjab

Poisonings due to chlorinated hydrocarbon and organophosphorous compounds were found major hazards in the Punjab state due to intensive agricultural practices and indiscriminate use of insecticides. Three outbreaks of Chlorinated hydrocarbon toxicity and three of nitrate/nitrite toxicity were attended and managed as presented below:

Animal Speicies	Toxicity	Outbreaks	Total animals	Attacks	Died
Cows	Chlorinated hydrocarbon	01	300	30	10
Buffaloes	Chlorinated hydrocarbon	02	70	17	03
Cows	Nitrate/ Nitrite toxicity	03	255	135	117

Management of animal disease outbreaks

The following outbreaks have been attended, diagnosed and validated in the laboratory:

Animal species	Disease	Oubreaks attended	Total Animals	Attacks	Deaths
Buffaloes	Hemorrhagic Septicemia	06	396	80	32
Cattle	FMD	01	-	-	-
Cattle and Buffalo	Trypanosomiasis	02	352	37	11
	Babesiosis	02	85	26	12
	Anaplasma/ Theileriosis	01	35	03	-
Sheep	Fasciolosis	01	475	175	100
	Listeriosis	01	-	-	-
	Pulmonary adenomatosis	01	-	-	-
Pigs	Swine fever	09	296	77	35
	Swine pox	2	105	14	3
	Abortioins	3	195	15	06

Evaluation of antiparasitic efficacy of *Leucaena leucocephala* seed extract

A floor pen trial was conducted in 65 one-week-old broiler chicks for evaluating antiparasitic efficacy and feed additive effect of *Leucaena leucocephala* seed extract (LLS). Results of the trial indicated that LLS at 5% and 10% concentration in feed provide protection against *Eimeria tenella* and *Ascaridia galli* infection. But, higher concentration (10%) resulted in reduced weight gain, decreased feed intake and increased mortality as compared to control group, which may be due to presence of mimosine in LLS. It is concluded that *Leucaena leucocephala* seed extract may have antiparasitic efficacy in broiler chicken but higher concentrations may produce toxicity.

6. Department of Livestock, Production and Management

Efficacy of herbal v/s synthetic methionine in broiler performance

An experiment was conducted on broiler chicks to compare the effects of synthetic and herbal methionine on growth performance, carcass yield, immune function and biochemical profile using corn- soybean meal based diet. 144, day- old healthy broiler chicks procured from M/s Venky's (India) Ltd. were randomly divided into 12 groups, each having 12 no's on similar body weight range and average group weight basis. On 42nd day, 4 birds (2 males and 2 females) from each treatment were randomly sacrificed for studying total carcass yield and cut-up parts. The study revealed that broiler chicks fed herbomethionine performed poorly as compared to synthetic methionine.

Alternate uses of agricultural by-products as litter material for broilers

An experiment was conducted to analyze 4 types of litter materials and the performance of broiler chickens reared on them. One hundred twenty, day-old broiler chicks procured from M/s. Venky's (India) Ltd. were randomly divided into 12 groups each having 10 no's on similar body weight range and average group weight basis. The studies indicated that maize stacks, paddy straw and wheat straw could economically and successfully serve as alternative litter materials to rice husk in growing broilers. Especially, paddy straw being an agricultural waste and cause of air pollution can be made use as litter material for chickens.

Small animal colony

A total of 237 Swiss Albino Rats and 418 Swiss Albino Mice have been supplied to the different departments in the College of Veterinary Science viz. Veterinary Microbiology, Parasitology, Epidemiology and Preventive Medicine, Pharmacology and Toxicology, Public Health and others viz. CMC and H, Punjab Vety. Vaccine Institute, Department of Zoology and Food Sci (PAU), Institute of Medical Sci. (Bathinda) and Deptt. Pharmaceutical Sci and Drug Res., Punjab Univ. Patiala.



7. Department of Livestock Products Technology

The department standardized the formulation and processing techniques for manufacturing different value added milk and meat products such as quail egg pickle, low- fat buffalo meat patties, sweetened curd etc.

Low fat buffalo meat patties

The level of incorporation of soy protein isolate (SPI) as fat replacer was standardized on the basis of physico-chemical, compositional and sensory attributes. On sensory evaluation, it was found that 3.0 % level of Tapioca starch was optimum for development of low-fat buffalo meat patties. Hot air oven cooking was the best as it had higher overall sensory scores and better cooking parameters.

Value addition to turkey meat

Lactic acid (0.15M) and calcium chloride (0.15M) marination of turkey meat improved its acceptability. Papain at concentration of 0.25% resulted in over-tenderization of turkey meat chunks, when treated along with Lactic Acid and Calcium chloride. Mashed potatoes incorporated upto 5% level also increased the product quality.

Low fat sweetened curd

On the basis of physico-chemical and sensory evaluation it was concluded that the low-fat sweetened curd could be prepared with the incorporation of 10% carrot juice and 1% Soy Protein Isolate.

8. Department of Veterinary Anatomy and Histology

Ultrastructural and histochemical studies on buffalo oviduct

During the follicular phase of estrous cycle the physiological activity of different segments of buffalo oviduct was found to be high as revealed by histoenzymic and ultrastructural studies. The activity in the infundibulum was more marked during the different stages of estrous cycle as compared to other segments of the oviduct. The distribution of oxidoreductases, phosphatases and esterases were high during the follicular phase of estrous cycle unlike the activity of acid phosphatase.

9. Department of Veterinary Biochemistry

Effect of leather meal feeding in poultry birds

Feeding of leather meal in poultry birds had no adverse effect on health of poultry birds as revealed by liver and kidney function tests.

10. Department of Veterinary Microbiology

Immunological studies on infectious bursal diseases

Interaction of immature B cells with Non Lymphoid Bursal Cells (NLBCs) promoted B cell survival while the inhibition of this interaction by IBDV binding to B cells caused B cell apoptosis

Studies on bacterial diseases

Eight isolates of *Pasteurella multocida* were recovered from a total of 150 cattle and buffaloes. All the isolates were pathogenic for mice and confirmed by polymerase chain reaction using species- and type-specific primers. These were sensitive to enrofloxacin, gentamicin, cephotaxime, cephalixin and pefloxacin but resistant to streptomycin. Studies were also carried out to elucidate the protective efficacy of outer membrane proteins extracted from *P. multocida* with or without the use of ultracentrifuge. The outer membrane proteins (OMPs) obtained from the organisms were extracted by sonication, ultracentrifugation and detergent (sodium lauryl sarcosinate) treatment and by lithium chloride, lithium acetate method. The study indicated that OMPs extracted by different procedures were protective against homologous challenge with *P. multocida*. Though the yield of OMPs by lithium chloride-lithium acetate method is considerably less than the conventional procedure but they are protective. However, more studies are needed to observe the duration of immunity in the large animals.

A total 80 samples comprising of foetal stomach contents (17), foetal membranes (43) and vaginal mucus (20) were collected from aborted cattle and buffaloes. Eleven (13.75%) were positive in isolation whereas 14 (17.50%) were positive by PCR. Out of total 11 isolates, one isolate was identified as biotype 2; two isolates were identified as biotype 3 while eight isolates were identified as biotype 1. Prevalence of *Brucella abortus* was 20.51% in cattle and 14.63% in buffaloes. Foetal stomach content was the best sample for isolation and PCR detection of *Brucella* organism in cattle (40% and 50%, respectively) as well as in buffalo (42.85% and 57.14%, respectively). Sensitivity to antimicrobial agents revealed that *Brucella abortus* was 100 per cent sensitive to tetracycline and ampicillin, 90.91 per cent sensitive to enrofloxacin, gentamycin, streptomycin and chloramphenicol, 81.82 per cent for neomycin, 72.73 per cent for norfloxacin, 63.64 per cent for amoxicillin and 18.18 per cent for co-trimoxazole, cephalixin and resistant to penicillin. The detection threshold of PCR was observed as 116 cfu/ml or 1.16 cfu in a single PCR reaction mix.

11. Department of Veterinary Parasitology

Control of snails by indigenous plant leaves

An experiment was conducted on herbal control of snails using fresh and oven dried leaves of *Calotropis procera* (Aak), *Datura alba* (Datura), *Azadirachta indica* (neem), and *Eucalyptus*



lanceolata (Safeda). The freshly minced leaves were found to be more effective @ 10g per litre of water (10,000 ppm) than the dried leaves in controlling the population of common snails under laboratory conditions.

Effect of herbal coccidiostat on Eimeria tenella infection

A study conducted on 90 day-old broiler chicks to evaluate anticoccidial activity of an ayurvedic coccidiostat AV/CCP/22 containing *Holerrhena antidysentrica*, *Barberia* spp. and *Alium* spp. The polyherbal coccidiostat @ 0.4% in feed broke the life cycle of *Eimeria tenella* by destroying primarily the second generation schizonts and also appeared to have tissue healing properties. The drug was having static effect on the gametogonic stages also.

Studies on efficacy of cypermethrin and deltamethrin against Linognathus stenopsis

The efficacy of cypermethrin and deltamethrin was evaluated both *in-vitro* and *in-vivo* against *Linognathus stenopsis*. Cypermethrin (0.03%) and deltamethrin (0.02%) were found to be 100% effective against louse *Linognathus stenopsis* on goats and are also found to be safe for the animals.

12. Department of Veterinary Pathology

Emerging poultry diseases

A total of 5407 necropsies on poultry including wild birds, were carried out and hydropericardium syndrome and ascites syndrome were found to be an important emerging diseases/conditions of broiler chicken. Other diseases diagnosed on the basis of gross lesions, histopathology and bacterial isolation or feed analysis etc. were yolk sac infection, aerosacculitis, rickets, gout, heatstroke, thrush, brooder pneumonia, encephalomalacia, chronic respiratory disease, inclusion body hepatitis, Marek's Disease, lymphoid leukosis, infectious brochitis, coryza and mycotoxicosis.

Experimental studies on feed supplements

Experimental studies were conducted on broiler chicks to evaluate the adverse effects of excess sodium bicarbonate intake. Higher supplementation with sodium bicarbonate, normally used to combat heat stress, in layer diet (5% and above) led to hyperuricemia and gout. Supplementation of Vit. E and selenium was found to improve the humoral immune response of the birds.

Rabies

During the year 2007, a total of 53 cases of different species were tested for rabies. These included 28 dogs, 13 buffaloes, 9 cows, and one each of horse, cat and mongoose. Out of these 53 cases, 28 were found to be rabid. These included 10 dogs, 10 buffaloes, 6 cows and one each of horse and mongoose.

13. Department of Veterinary Pharmacology and Toxicology

Testing safety of new insecticides on buffalo skin

Indoxacarb, a recently introduced oxadiazine insecticide, widely used in agriculture on various crops was found to be a relatively safe pesticide when used in the recommended dosages (0.5 % solution) as skin application in buffalo calves for 14 days.

14. Department of Veterinary Physiology

Mineral profile of reproductive organs of buffaloes

The study on reproductive organs of 30 female buffaloes revealed that concentrations of iron, copper, zinc and manganese were highest in the ampulla as compared to that in ovary, uterus, infundibulum and isthmus. The concentration of these elements in ovary, uterus and different parts of oviduct were comparable during both luteal and follicular phases.

15. Department of Veterinary Public Health

Insecticide residues in feed and fodder in Punjab

A study was undertaken to ascertain the levels of insecticides in green fodder (36), animal concentrate feed (40) and feed ingredients (32). Major insecticide residues detected in green fodder were HCH (hexachlorocyclohexane), DDT (dichlorodiphenyltrichloroethane), endosulfan, chlorpyrifos, aldrin and chlordane with mean residue level 0.51, 0.33, 0.12, 0.37, 0.08 and 0.01 mg/kg, respectively. HCH was found to be the most predominant insecticide with mean residue level of 0.34 mg/kg followed by endosulfan (0.28 mg/kg), DDT (0.14 mg/kg), chlorpyrifos (0.06 mg/kg) and aldrin (0.05 mg/kg) in animal concentrate feed. Major insecticide residues detected in feed ingredients were HCH, DDT, endosulfan, chlorpyrifos, aldrin and chlordane with mean residue level 0.29, 0.13, 0.16, 0.06, 0.05 and 0.08 mg/kg, respectively.

Aflatoxins residues in milk and milk products

Aflatoxins (M1) were found in 40.90% milk samples (18/44) with levels varying from 0.533 to 9.6 µg/L with mean level 3.43 µg/L. About 83.3 % of positive milk samples (15/18) showed transfer of AFM1 from milk to dahi with mean level of 3.06 µg/kg and 61.1 % of positive milk samples (11/18) showed transfer of AFM1 from milk to paneer with mean level of 1.88 µg/kg. On the other hand 94.4% of positive milk samples (17/18) showed transfer of AFM1 from milk to Khoa with mean level being 7.08 µg/kg.

Brucellosis testing

A total of 183 samples of blood of dairy farmers and veterinarians were tested for brucellosis. Incidence of human brucellosis was found to be 25.13% (46/183 samples) among dairy farmers



and veterinarians. Treatment advised (Doxycycline 100-mg bid and Rifampicin 20 mg/kg/day for 6 weeks) as per the recommendations of WHO was found to be effective in controlling it.

Potability of water for human consumption

A total of 198 samples of water from farmers and Health Department Ludhiana were tested for suitability of human consumption. Out of these samples 105 samples were found to be contaminated with coliform bacteria and were reported as unfit for human consumption. Health Department Ludhiana has recognized the department as reference laboratory.

Prevalence of Giardia intestinalis infection in dairy calves in Punjab

A prevalence study was contemplated to determine the prevalence of *Giardia* spp. in dairy farms in Punjab. Fresh faecal samples were collected from 187 calves and adult cattle. The *Giardia intestinalis* was detected from 106 diarrheic (16.04%) and 81 non-diarrheic (8.64%) animals, respectively.

16. Department of Veterinary Surgery and Radiology

Diagnostic aids and surgical treatment of musculo-skeletal and abdominal disorders in large animals

The major abdominal disorders handled in large animals included diaphragmatic hernia (19), rumenotomy (45), reticular abscess (14), omasal impaction (13), abomasal Disorders (9), generalised atony (11) and lateral abdominal, ventral Hernia and umbilical hernia (14). Among musculoskeletal disorders, application of Plaster of Paris along with U splint application was the most common



Ultrasonography in Cattle

surgical procedure followed. Application of hanging pin cast was performed in 3 buffalo calves. In one buffalo and one horse interlock nailing was attempted.

Ultrasonography of forestomach disorders has been standardized and used for diagnosis of diaphragmatic hernia, reticular abscess, reticular adhesions, and impaction of omasum, abomasum and reticulum.

Development of intramedullary interlocking nailing (iiln) for management of long bone fracture in veterinary practice

A total of 25 long bone fractures of dogs were operated with intramedullary interlocking nailing. The etiological factor of the fracture was automobile accident (16), fall from the height (6) and fracture due to unknown injury (3). Femur was the most common long bone involved (20), followed by tibia (3) and humerus (2). The fractures were treated with intramedullary interlocking nailing. Ancillary support in the form of full cerclage wiring was done where there were either splints/wedges or longitudinal split in the bone. Postoperative follow up included regular bandaging on every alternate day up to 15 day, and taking radiographs at regular intervals of 15 days to one month there after till complete fracture healing.



Interlocking nailing for repair of multiple fractures

Dogs were able to start weight bearing on 3-4th postoperative day in most of the cases. Complete fracture healing was evident after 8-12 weeks. Normal limb function with normal joint motion was achieved in most of the cases. There were minor resistance to stifle flexion and occasional lameness in fractures involving the supracondylar region of femur or comminuted distal diaphyseal fractures.

Studies on ultrasound guided biopsy

Ultrasound-guided biopsy (USGB) was done in 51 clinical cases of dogs. USGB with biopsy gun using free hand technique was an easy, safe and accurate technique for obtaining sufficient and good quality tissue for histopathological diagnosis in cases of hepatic, renal, prostatic, splenic affections and abdominal masses in dogs. USGB was found helpful in differentiating degenerative, infectious/inflammatory and cirrhotic conditions of liver, differentiating acute and chronic renal damage, diagnosis of neoplastic and non-neoplastic conditions of splenic and abdominal masses, and in diagnosis of various affections of prostate like benign prostate hyperplasia, prostatitis, abscess and adenocarcinoma.



17. Fisheries Unit

- Analysis of underground water and water samples collected from villages, private ponds and water logged areas of south west Punjab revealed maximum salinity in district of Muktsar (up to 165 ppt) followed by Ferozepur (up to 47 ppt), Mansa (up to 6.5 ppt) and Faridkot (up to 6.0 ppt). A 100% survival for catla, rohu, common carp and fresh water prawn was seen at 8, 10, 12 and 15 ppt salinity, respectively.
- Manuring with Vermicompost @ 15,000 kg/ha/yr resulted in maximum growth of common carp (*Cyprinus carpio*). The water quality parameters remained within the optimum levels.
- Inclusion of Azolla (20%) in carp feed by replacing 50% rice bran of control diet (rice bran 40% + mustard cake 40% + meat meal 20%) resulted in net profit increase up to 49.91%
- Summer season with the atmospheric temperature from 35 – 45°C was found to be the most suitable time to culture *Spirodella* by using both poultry manure or poultry manure and cow dung (1:1)
- Both *Azolla* and *Spirodella* could be incorporated in carp diet @ 20 % for low cost feed formulation
- *Azolla* could also be used as a bio-fertilizer for boosting the fish production; Post larvae of freshwater prawn could be successfully reared till Nov. 2007 but with decline in temperature (below 19°C) mortality of prawn took place.





RESEARCH PUBLICATIONS

1. Arora, A.K., Jand, S.K., Sandhu, K.S. and Oberoi, M.S. (2007). Outer membrane protein profiles of *Pasteurella multocida* isolates of bovine origin. *Indian J Anim. Sci.* 77: 663-666.
2. Arora, R., Singh, N.K., Hassan, S.S., and Juyal, P.D. (2007). Identification of immuno-dominant antigens of *Paramphistomum epiclitum*. *J. Vet. Parasito.* 21:117-120.
3. Aulakh R.S., Bedi, J.S., Gill, J.P., Joia, B.S., Pooni, P.A. and Sharma, J.K. (2007). Occurrence of DDT and HCH residues in human biopsy adipose tissues in Punjab, India. *Bull. Environ. Contamin. Toxicol.* 78: 330 – 334.
4. Aulakh R.S., Bedi, J.S., Gill, J.P. and Sharma, J.K. (2007). Organochlorine pesticide residues in water at poultry farm in Ludhiana, Punjab (India). Proc. of 8th Asian Pacific Poultry Conference 2007 Science to Solution, Bangkok, 325-327.
5. Aulakh, R.S., Gill, J.P.S., Bedi, J.S., Joia B.S. and Sharma J.K. (2007). Contamination of poultry feed and eggs with organochlorine pesticide residues at a layer farm in Punjab. *Indian J. Anim. Sci.* 77: 845 – 847.
6. Babbar, B.K. and Bilaspuri, G.S. (2007). Changes in testicular proteins and enzymes during maturation in Murrah buffalo. *Indian J. Anim. Sci.* 77: 40-43.
7. Bajwa, I.S., Kaur, N., Kaur, R. and Singh, B. (2007). A study of bilateral asymmetry in two stocks of broilers. *Indian J. Poul. Sci.* 42: 194-197.
8. Bajwa, N.S., Bansal B.K., Srivastava A.K. and Ranjan R. (2007). Pharmacokinetic profile of erythromycin after intramammary. Administration in lactating dairy cows with specific mastitis. *Vet. Res. Commu.* 31: 603-610.
9. Bakshi, M.P.S. and Wadhwa, M. (2007). Tree leaves as complete feed for goat bucks. *Small Rumin. Res.* 69: 74-78.
10. Bakshi, M.P.S., Wadhwa, M., Kaushal, S. and Ameir, A.A. (2007). In-vitro evaluation of fruit and vegetable wastes, *Indian J. Anim. Nutr.* 24: 12-15.
11. Bansal, A.K. and Bilaspuri, G.S. (2007). Effect of ferrous ascorbate on *in vitro* capacitation of crossbred cattle bull spermatozoa. *Animal Sci. Rep.* 1: 69-77.
12. Bansal, B.K., Chohan, A.S, Singh, Sukhbir, R. and Dhaliwal P.S. (2007) Hypothyroidism in a bitch. *Indian Vet. J.* 84: 512-513.



13. Bansal, B.K., Hamann, J., Lind O., Singh, S.T. and Dhalwial, P.S. (2007). Somatic cell count and biochemical components of milk related to under health in buffaloes. *Italian J. Anim. Sci.* 6 (suppl. 2):10-13.
14. Bansal, N., Uppal, V., Roy, K.S. and Singh, O. (2007). Histoenzymic observations on the kidneys of rabbits due to cypermethrin toxicity. *Indian J. Poul. Sci.* 77: 148-50.
15. Bath, G. and Dua, K. (2007). Chronic (Long lasting) epiphora in dogs. *Indian J. Vet. Med.* 27: 75-76.
16. Bath, G. and Dua, K. (2007). Diagnosis and treatment of canine conjunctivitis. *Indian J. Vet. Med.* 27: 151-152.
17. Bedi, J.S., Gill, J.P.S., Aulakh, R.S., Sharma, C.S. and Sharma, J.K. (2007). Potability evaluation of community drinking water supply of Ludhiana District. *Punjab Vet. J.* 5:
18. Bedi, J.S., Sharma, J.K., Gill, J.P.S., Aulakh, R.S., Sharma, C.S. and Sharma, V.K. (2007). Seroepidemiological survey of *Brucella* agglutinins in animal handlers in Punjab State, India. *Indian J. Anim. Sci.* 77: 1283-85.
19. Bedi, M., Singh J., Dadarwal, D. and Dhaliwal, G.S. (2007). Effect of intravenous supplementation of soyabean oil on pregnancy rate in repeat breeding cross-bred cows. *Indian J. Anim. Sci.* 77: 293-296.
20. Bedi, M. Singh J., Gandotra, V.K., Dadarwal, D. and Dhaliwal, G.S. (2007). Incidence of repeat breeding; variation of fertile estrus with respect to season and duration of estrus, and progesterone profile of repeat breeding cross bred cattle. *Indian J. Anim. Sci.* 77: 355-358.
21. Behl, K.S., Gandotra, V.K., Nanda, A.S. and Mavi, P.S. (2007). Efficacy of GnRH in inducing ovulation and improving the conception rates in crossbred cattle with history of prolonged estrus. *Indian J. Anim. Sci.* 77: 173-174.
22. Bilaspuri, G.S. and Babbar, B.K. (2007). Effect of albumin and zinc on capacitation and acrosome reaction in buffalo spermatozoa. *Indian J. Anim. Sci.* 77:35-39.
23. Brar, P.S. and Nanda, A.S. (2007). Effect of prepartum supplementary feeding of urea molasses multi-Nutrient block on postpartum production and fertility in dairy buffaloes. *Indian J. Anim. Sci.* 77: 965-969.
24. Brar, P.S. and Prabhakar, S. (2007). A case of atypical monster in a buffalo. *Indian J. Anim. Reprod.* 28: 92-93.



25. Brar, P. S., Singh, H. and Prabhakar, S. (2007). Rupture of pre-pubic tendon and ventral abdominal wall in a pregnant mare. *Indian J. Anim. Reprod.* 28: 94-95.
26. Chachra D., Jand, S. K., Coote, J., Parton, R. and Arora, A.K. (2007). Relationship of *Pasteurella multocida* B:2 plasmids with antibiotic resistance. *Indian J Anim. Sci.* 77 (11): 1111- 1114.
27. Chandra, M., Singh, B.R., Shankar, H., Agarwal, M., Agarwal, R.K., Sharma, G. and Babu, N. (2007). Prevalence of Salmonella antibodies among goats slaughtered for chevon in Bareilly (North India). *Preventive Veterinary Medicine* 80: 1-8.
28. Chhabra, S., Randhawa S.S., and Bhardwaj S.D. (2007). Effect of parenteral supplementation of iodine on reproductive performance of buffaloes in iodine deficient area. *Indian Vet. J.* 8: 471- 472.
29. Chhabra, S., Randhawa, S.S. and Bhardwaj S.D. (2007). Role of copper supplementation during the treatment of theileriosis with halofuginone in cows. *Indian J. Vet. Med.* 27:127-128.
30. Chhabra, S., Randhawa, S.S., Dhaliwal P.S. and Dhillon S.K. (2007). Trace mineral profile in dairy cattle. *Indian Vet. J.* 84: 878-879.
31. Chohan, A.S., Bansal, B.K., Randhawa, C.S. and Dhaliwal, P.S. (2007). Liver dysfunction in dogs. *Indian Vet. J.* 84: 1042-1044.
32. Dadarwal, D., Honparkhe, M., Singh J., Cheede, G.S. and Kumar A. (2007). Efficacy of double injection of Buserelin in improving pregnancy rates in prolonged oestrus repeat breeding crossbred cattle. *Indian J. Anim. Sci.* 77: 544-548.
33. Dadarwal, D., Singh, J., Honparkhe, M., Dhaliwal, G.S. and Cheede, G.S. (2007). Field efficacy of *E coli* lipopolysaccharide intrauterine infusion in treating endometritis in cross-bred cows. *Indian J. Anim. Sci.* 77: 1224-1227.
34. Dardi, M. S., Sharma, S.K. and Srivastava, S.K. (2007). Pharmacokinetics and dosage regimen of ceftriaxone in buffalo calves after single intramuscular administration. *Ind. J. Anim. Sci.* 77: 40-42.
35. Das, K.S., Chandrahas and Handa, M.C. (2007). Mortality pattern of rabbits. *Indian Vet. J.* 84 :529- 530.
36. Das, K.S. and Das, N. (2007). Feeding behavior of pregnant dairy heifers during last trimester under loose housing system. *Indian J. Anim. Sci.* 20:1402-1406.



37. Das, K.S., and Das, N. (2007). Prediction of first lactational milk production traits from prepartum body measurements in dairy cows. *Indian J. Anim. Sci.* 77: 777-780.
38. Das, K.S., Das, N. and Ravi Kumar G.V.P.P.S. (2007). Effect of steaming-up on subsequent production in dairy cows. *Indian J. Anim. Sci.* 77: 583-585.
39. Das, K.S., Sirohi, A.S. and Chandrahas. (2007). Effect of stocking density on the performance in Soviet Chinchilla rabbit. *Indian Vet. J.* 84:309-310.
40. Debnath, M., Nandeesha, M.C., Dhawan, A., Anand, V., Pal, A. and Ray, M. (2007). Economics of aquaculture feeding practice: Punjab, India. FAO Fisheries Technical Paper No. 505, Rome FAO. pp. 101-122.
41. Deore, M., Dumka, V., Sharma, S. and Srivastava, A. (2007). Toxicokinetics and urinary excretion of selenium following single oral and intravenous administration of selenourea in buffalo calves. *Environ. Toxicol. Pharmacol.* 24: 55-59.
42. Devatkal, S.K. and Mehndiratta, S.K. (2007). Evaluation of shelf life and spoilage pattern of aerobically stored buffalo liver. *J. Muscle Foods*, 18: 276-84.
43. Dhaliwal, G.S. (2007). Sexing of mammalian spermatozoa. CAS training on "Latest strategies in semen technology and andrology for optimum reproduction" held at Deptt. of Animal Reproduction, Gynaecology and Obstetrics, GADVASU, Ludhiana from Jan. 5-25, 2007, pp 84-88.
44. Dhillon, K.S., Singh, J., Ashuma, Kumar, H., Bal, M.S., Sandhu, K.S., and Dhaliwal, B.B.S. (2007). Haemoglobinurea in dairy herds. *The Vet. Rec.* 24: 276.
45. Dhindsa, S.S., Gandotra, V.K. and Prabhakar, S. (2007). Plasma and blood volume in dystocia affected buffaloes. *Indian J. Anim. Sci.* 77: 837-39.
46. Dumka, V.K. (2007). Disposition kinetics and urinary excretion of levofloxacin on concomitant administration with paracetamol in cross bred calves. *J. Vet. Sci.* 8: 357-360.
47. Dumka, V.K., Sandhu, H.S. and Rajput, N. (2007). Effect of gatifloxacin on the pharmacokinetics of meloxicam in buffalo calves. *Indian J. Anim. Sci.* 77: 1270-1272.
48. Dumka, V.K. and Srivastava, A.K. (2007). Disposition kinetics, urinary excretion and dosage regimen of levofloxacin formulation following single intravenous administration in cross bred calves. *Vet. Res. Commun.* 31: 873-874.



49. Dumka, V.K. and Srivastava, A.K. (2007). Kinetic disposition, urinary excretion and dosage regimen of subcutaneously administered levofloxacin in cross bred calves. *Iranian J. Vet. Res.* 8: 313-318.
50. Filia, G., Jand, S.K., Arora, A.K. and Oberoi, M.S. (2007). Comparative efficacy of whole cell vaccines prepared from *Pasteurella multocida* grown under different growth conditions. *Indian J Anim. Sci.* 77: 119-122.
51. Gangale, D. P. and Saxena, H. M. (2007). Inhibition of binding of IBD virus to chicken B lymphocytes by antibodies against immature B cell markers. *J. Immunol. Immunopathol.* 9: 50-53.
52. Gatoria, I.S., Saini, N.S., Rai, T.S. and Dwivedi, P.N. (2007). Antimicrobial sensitivity pattern in urolith associated bacterial urinary tract infections in dogs. *Vet. Pract.* 8: 193-197.
53. Ghai J.K. and Sodhi, S. (2007). Detection of aflatoxin B by ELISA. *Indian Vet. J.* 84: 1104-1105.
54. Ghatak, S., Agarwal, R.K. and Bhilegaonkar, K.N. (2007). On species identification of clinically important *Aeromonas* spp. by restriction fragment length polymorphism of 16S rDNA. *Lett. Appl. Microbiol.* 45: 694 – 695.
55. Ghuman, S.P.S., Prabhakar, Smith, R.F. and Dobson, H. (2007). GABA control of AVP release from ewe hypothalamic slices in vitro: Sensitivity to oestradiol. *Rep. Dom. Anim.* 42: 527-535.
56. Ghuman, S.P.S., Prabhakar, Smith, R.F. and Dobson, H. (2007). Noradrenergic control of AVP release from ewe hypothalamic slices in vitro: Sensitivity to oestradiol. *Rep. Dom. Anim.* 43: 137-143.
57. Gupta, D.K, Tripathi A.K., Rajora, V.S., Gupta G.C and Shukla S.K. (2007) Evaluation of antioxidant activity of *Ocimum Sanctum* and *Embllica officinalis* in rats. *Indian J. Anim. Sci.* 77: 425-427.
58. Gupta, J.K., Chaudhary, R.K. and Dumka, V.K. (2007). Cefoperazone pharmacokinetics following single intravenous administration in cross bred calves. *Israel J. Vet. Med.* 62: 87-90.
59. Gupta, K., Roy, K. S. and Singh, A. (2007). Histochemical and histoenzymic studies in experimental aflatoxicosis, infectious bursal disease and their interaction in broiler chicks. *Indian J. Anim. Sci.* 77: 247-49.



60. Honparkhe, M, Dhindsa, S.S., Ghuman, S.P.S. and Kumar, A. (2007). Dystocia due to muscular hypertrophy of neck in a buffalo foetus. *Indian J. Anim. Reprod.* 28: 82-83.
61. Honparkhe, M., Gandotra, V.K. and Nanda, A.S. 2007. Ultrasonographic size and characteristics of reproductive organs of repeat breeder buffaloes (*Bubalus bubalis*). *Indian J. Anim. Sci.* 77: 821-824.
62. Jain, A.K., Kumar, R. and Mehra, M.L. (2007). Incidence of Inbreeding and its effect on production trials in graded Murrah herd. *Indian J. Anim. Sci.* 77:1155-1157.
63. Jain V. and Raghunath M. (2007). Evaluation of combination of doxorubicin and cyclophosphamide for management of canine mammary neoplasms. *Indian J. Vet. Surg.* 28: 94-97.
64. Joshi, B. and Sharma, S.K. (2007). Pharmacokinetic disposition and bioavailability of cefepime in buffalo calves. *J. Vet. Pharmacol. Therap.* 30: 500-502.
65. Kalsi, J.S., Randhawa, S.S. and Chhabra, S. (2007). Macro and micro element status in overgrown hooved dairy animals in relation to soil-plant mineral status. *Indian J. Anim. Sci.* 77: 1129-1130.
66. Kang, R.S., Nandam A.S., Brar, P.S., Honparkhe, M., Gandotra, V. K. and Jindal, R. (2007). Plasma biochemical alterations in relation to induction of oestrus through supplementary feeding and hormonal treatment in summer anoestrus buffaloes. *Indian J. Anim. Sci.* 77: 359-362.
67. Kanwar, R., Singh, R, Filia, G., Arora, A. and Sandhu, K.S. (2007). Virulence factor of E.coli and Salmonella Spp from diarrheic calves and their antibiogram pattern.. *Indian J Anim. Sci.* 77: 1069-1073.
68. Kaur, A., Rai, H.S. and Singh N.K. (2007). Prevalence of oribatod mites and its correlation with cestodes of Veterinary importance in Ludhiana. *J. Vet. Parasitol.* 21: 149-152.
69. Kaur, K., Filia, G., Randhawa, S.S. and Chhabra, S. (2007). Neonatal calf diarrhea- causes control. *Indian J. Anim. Sci.* 77: 855-856.
70. Kaur, K., Kaur, J., Wadhwa, M. and Bakshi, M.P.S. (2007). Natural fermentation of rice straw in bales and stack and its evaluation as livestock feed. *Indian J. Anim. Nutr.* 24: 88-91.
71. Kaur, N., Banga, H.S. and Brar, R.S. (2007). Leiomyoma of uterus in a cow. *Punjab Vet. J.* June issue: 19.



72. Kaur, P., Juyal, P.D., Sharma, S. and Srivastava, A.K. (2007). Pharmako-kinetics of Diminazene in combination with antipyrine and procaine in *Trypanosoma evansi* infected cow-calves. *Indian J. Anim. Sci.* 77:16-169.
73. Kaur, S., Parmar, O.S. and Ravi Kumar, G.V.P.P.S. (2007). RAPD Assay to evaluate the genetic diversity of Holstein-Friesian crossbred cattle produced using sires obtained from different countries. *Indian J. Dairy Sci.* 60: 268-273.
74. Kumar R.R., Sharma B.D., Manish Kumar, Chidanandaiah and Biswas A.K. (2007). Storage Quality and Shelf Life of Vacuum Packaged Extended Chicken Patties. *Journal of Muscle Food* 15: 253-263.
75. Kumar, A., Honparkhe, M. and Dhaliwal, G.S. (2007). Dystocia due to bull dog calf with excessive accumulation of fat in a cross bred cow. *Indian J. Anim. Reprod.* 28: 84-85.
76. Kumar, A., Singh, J., Dhaliwal, G.S. and Singh, P. (2008). Incidence and factors associated with poor libido in breeding buffalo bulls. *Indian J. Anim. Sc.* 78: 143-145.
77. Kumar, H., Mahajan, V., Sharma, S., Alka, Singh, R., Arora, A.K., Banga, H.S., Verma, S., Kaur, K., Kaur, P., Meenakshi and Sandhu, K.S. (2007). PCR based detection of *Pasteurella multocida* type B: 2 occurring as concurrent infection in the outbreaks of classical swine fever in pigs in Punjab (India). *J. Swine Health Prod.* 15: 279-283.
78. Kumar, H., Singh, B.B., Bal, M.S., Singh, R., Kaur, K., Sidhu, P.K., and Sandhu, K.S. (2007). Pathological and epidemiological association of *Listeria* in outbreaks of encephalitis in sheep. *Small Rumin. Res.* 71: 293-297.
79. Kumar, M., Mohindroo, J., Kumar, A. and Singh, S.S. (2007). Ultrasonographic diagnosis of reticulophrenic adhesions in bovines: A report of 15 clinical cases. *Indian J. Vet. Surg.* 28: 117-119.
80. Kumar, M. and Sharma, B.D. (2007). Quality Characteristics of low-fat ground pork patties processed with varying levels of water. *J Food Science and Technol.* 44: 408-412.
81. Kumar, M., Sharma, B.D. and Kumar, R.R. (2007). Evaluation of sodium alginate as a fat replacer on processing and shelf life of low-fat ground pork patties. *Asian- Aust. J Animal Sci.* 20: 588-597.
82. Kumar, R., Jain, A.K. and Mehra, M.L. (2007). Effect of Inbreeding on body weight at different ages in graded Murrah Buffalo. *Indian Vet. J.* 84: 1148-1150.



83. Kwatra, J., Randhawa, S.S., Saini, N. and Dhaliwal P.S. (2007). Thyroid function in dogs suffering from mange infestation. *Indian J. Vet. Med.* 27: 68-69.
84. Mahajan, S.K., Singh, S.S., Bains, S.S., Sandhu, H.S. and Singh, N. (2006). Clinical studies on the management of supracondylar fractures (SCF) of femur in canine. *Indian J. Vet. Surg.* 28: 120-122.
85. Mahajan, S.K., Sood, A.C., Kumar, A., Singh, N. and Yadav, R.K. (2007). Urethral obstruction due to air gun projectile in a dog. *Indian J. Vet. Surg.* 28: 161.
86. Mavi P.S. (2007). Factors affecting involution of uterus and its' relationship with onset of postpartum ovarian activity in farm animals. Compendium of training on 'Improving Postpartum Fertility using Nutritional and Hormonal Approaches in Farm Animals', held at Center of Advance Studies in Vety Gynaecology and Reproduction, GADVASU, Ludhiana.
87. Mavi, P. S. (2007). Role of antioxidants in onset of postpartum ovarian activity in cattle. Compendium of training on 'Improving Postpartum Fertility using Nutritional and Hormonal Approaches in Farm Animals', held at Center of Advance Studies in Vety Gynaecology and Reproduction, GADVASU, Ludhiana.
88. Mavi, P.S. (2007). Sexual behaviour and breeding guidelines for dogs and bitches. Compendium of training on "controlled reproduction in canines" held at Center of Advance Studies in Vety Gynaecology and Reproduction, GADVASU, Ludhiana. pp. 12-17.
89. Mavi, P.S., Bagha, C.S., Singh, N. and Chemm, R. (2007). Effect of hormonal treatment on induction of estrus and plasma mineral composition in true estrous buffalo heifers. *Indian J. Anim. Repro.* 28: 39-41.
90. Mavi, P.S and Singh, D.V. (2007). Treatment of peracute mastitis with Flunixin Meglumine- a case report. *Journal of Remount Veterinary Corps* 46: 85-87.
91. Mavi, P.S., Singh, N.K. and Rath, S. S. (2007). Efficacy of closantel, flumethrine and cypermethrin against tick infestation in crossbred calves. *Ind Vet. J.* 84: 1108-1109.
92. Mavi, P.S., Singh, N.K. and Rath, S.S. (2007). Therapeutic efficacy of closantel, .flumethrin and cypermethrin against tick infestation in cross bred calves. *Indian Vet. J.* 84: 1108-09.
93. Mavi, P.S., Verma, H.K. and Sidhu, S.S. (2007). Pyometra in canine. *Vet Alumnus*, 28: 19-21.
94. Meenakshi, Sandhu, K.S., Bal, M.S., Kumar, H., Sharma, S., Sidhu, P.K., Sreekumar, C. and Dubey, J.P. (2007). Seroprevalence of Neospora caninum antibodies in cattle and water buffaloes in India. *J. Parasitol.* 93: 1374-1377.



95. Mohindroo, J., Chaudhary, M. and Sood, A.C. (2007). Management of traumatic lung evisceration in a dog. *Indian J Vet Surg.* 28: 160.
96. Mohindroo, J., Kumar, M., Kumar, A. and Singh, S.S. (2007). Ultrasonographic diagnosis of reticular diaphragmatic hernias in buffaloes. *Vet. Record.* 161: 757-758.
97. Nag L.K., Rajora V.S, Singh P.K., Jadon N.S. and Gupta, D.K. (2007). Efficacy of a herbal formulation in the treatment of clinical cases of calf diarrhea. *Indian J. Vet. Med.* 27: 40-42.
98. Naik, P.K., Saijpaul, S. and Rani N. (2007). Evaluation of Rumen protected fat prepared by fusion method. *Anim. Nutr. Feed Technol.* 7: 95-101.
99. Pangasa, A. and Singla, L.D. (2007). Effect of coccidiostats and Immunomodulators on haematology of *Eimeria tenella* infected broilers. *Indian Vet. J.* 84:1131-34.
100. Pangasa, A., Singla, L. D., Sood, N., Singh, A. and Juyal, P. D. (2007). Histopathological evaluation of anticoccidial activity of ayurvedic coccidiostat, in induced *Eimeria tenella* infection in chicken. *Indian J. Anim. Sci.* 77: 214-216.
101. Pangasa, A., Singla, L.D, and Ashuma (2007). Biochemical alteratins in chicken during *Eimeria tenella* infection medicated with coccidiostats and immunomodulator. *Indian J. Field Vet.* 3: 6-9.
102. Prabhakar, S., Matharu, S.S., Gandotra, V.K. and Brar, R.S. (2007). The corpus luteum does not contribute to higher progesterone concentration around parturition in buffaloes with uterine torsion. *Indian J. Anim. Sci.* 77: 956-959.
103. Prabhakar, S., Singh, R. and Brar, R.S. (2007). Uterine response to different treatments following foetal delivery in dystocia affected buffaloes. *Indian J. Anim. Sci* 77: 457-459.
104. Raghunath, M., Mohindroo, J., Singh, N., Kumar, A. and Singh S.S. (2007). Successful repair of diaphragmatic hernia in two pups. *Indian J. Vet. Surg.* 28: 162.
105. Raghunath, M., Singh, M., Yadav, R.K. and Singh, S.S. (2007). Distribution and classification of canine long bone fractures. *Indian Vet. J.* 84: 1243-1246.
106. Raipuria, M., Dumka, V.K and Sandhu, H.S. (2007). Plasma concentrations, pharmacokinetics and urinary excretion of gatifloxacin after single intravenous injection in buffalo calves. *Vet. Res. Commun.* 31: 1013-1020.
107. Raipuria, M., Dumka, V.K, Sandhu, H.S. and Ram, D. (2007). Dosage regimen of gatifloxacin following single subcutaneous administration in buffalo calves (*Bubalus bubalis*). *Indian J. Vet. Med.* 27: 5-9.



108. Rajput, N., Dumka, V.K. and Sandhu, H.S. (2007). Disposition kinetics and urinary excretion of cefpirome after intravenous injection in buffalo calves. *J. Vet. Sci.* 8: 21-25.
109. Rajput, N., Dumka, V.K. and Sandhu, H.S. (2007). Pharmacokinetics of cefpirome in buffalo calves (*Bubalus bubalis*) following single intramuscular administration. *Iranian J. Vet. Res.* 8: 212-217.
110. Ramayya, P.J., Kumar, V., Pathak, D., Singh, O. and Sethi, R.S. (2007). Histomorphological studies on the testes of neonatal buffalo calves (*Bubalus bubalis*) *Indian J. Anim. Sci.* 19:7-12.
111. Ranjan, R., Chand, N. and Dhaliwal, P.S. (2007) Diagnosis and therapeutic management of lower urinary tract infection in dogs. *Indian Vet. J.* 84: 507-508.
112. Rath, S.S., Kumar, S. and Joia, B.S. (2007). Resistance to diazinon and malathion (Acari: Ixodidae) populations from Punjab, India. *J. Insect Sci.* 19: 74-81.
113. Roy, K.S., Kumar, A. and Singh, O. (2007). Histomorphological studies on development of gut associated lymphoid tissue (GALT) in ileum of buffalo fetuses. *Indian J. Anim. Sci.* 77: 468-469.
114. Saijpal, S., Naik, P.K. and Makkar, G.S. (2007). Effect of Bioboost supplementation on nutrient utilization and performance in buffalo (*Bubalus bubalis*) calves. *Anim. Nutr. Feed Technol.* 7: 247-252.
115. Saini, J.S., Dhaliwal, G.S., Ghuman, S.P.S. and Kumar, A. (2007). Reliability of ultrasonography for detecting the ovarian changes across the oestrous cycle in buffaloes. *Indian J. Anim. Sci.* 77: 940-944.
116. Saini, N.S. and Mohindroo, J. (2007). Rectal tear leading to intestinal evisceration through anus in a calf. *Canadian Vet. J.* 48: 1297-1298.
117. Saini, N.S., Kumar, A., Mahajan, S.K. and Sood, A.C. (2007). The use of ultrasonography, radiography and surgery in the successful recovery of diaphragmatic hernia in cow. *Canadian Vet. J.* 48: 757-59.
118. Saini, S., Brah, G.S. and Chaudhary, M.L. (2007). Effect of selection for 4- weeks body weight on growth, haematocrit and thermoregulation in Japanese quails. *Indian J. Poul. Sci.* 42: 125-130.
119. Saini, S., Chaudhary, M.L., Brah, G.S. and Ravi Kumar, G.V.P.P.S. (2007). Polymorphism analysis in egg type chickens using microsatellite markers. *Indian J. Poul. Sci.* 42: 27-30.



120. Sandhu, B.S. and Singh C.K. (2007). Influence of temperature on the virulence of street rabies virus in saliva. *Indian J. Anim. Sci.* 77: 225-226.
121. Sandhu, B.S. and Singh, C.K. (2007). Effect of temperature treatment on the virulence of street rabies virus in mammary secretion. *Indian J. Vet. Pathol.* 31: 58-59.
122. Sandhu, B.S. and Singh, C.K. (2007). Effect of sunlight on the virulence of SRV in different weather conditions. *Indian Vet. J.* 84: 1116-1117.
123. Sandhu, B.S., Uppal, S.K., Ashwani K, and Brar A.P.S. (2007). Small cell anaplastic carcinoma of the lung in a dog. *Indian Vet. J.* 84: 807-809.
124. Sangwan, V., Singh, N., Mahajan, S.K. and Singh K. (2007). Proceedings of advanced training course on “Emerging trends in Diagnostic Imaging in Veterinary Practice”. Held at Department of Veterinary Surgery and Radiology, COVS, GADVASU from Feb. 8-28, 2007.
125. Sathya, A. and Prabhakar, S. (2007). Haematological changes in dystociac buffaloes following dexamethasone administration vis-à-vis normal parturition. *Indian J. Anim. Sci.* 77: 300-303.
126. Sathya, A., Prabhakar, S., Sangha, S.P.S. and Ghuman, S.P.S. (2007). Vitamin E and Selenium supplementation reduces plasma cortisol and oxidative stress in dystocia affected buffaloes. *Vet. Res. Commun.* 31: 809-818.
127. Saxena, R., Dua, K, Uppal, S.K. and Saini, N. (2007). Effect of hypertonic and isotonic saline on clinical, haematological, biochemical and electrocardiographic parameters in fore stomach impaction in bufaloes. *Indian J. Anim. Sci.* 77: 970-974.
128. Sharma, R., Sharma, D.K., Juyal, P.D. and Sharma, J.K. (2007). Comparison of immunodiagnostic techniques for diagnosis of porcine cysticercosis. *Punjab Vet. J.* 5: 30 – 34.
129. Sharma, S., Alka, Mahajan, V., Verma, S., Kaur, K., Meenakshi. and Kumar, H. (2007). Screening of dairy farms of Punjab (India) for brucellosis and paratuberculosis. *Indian Vet. J.* 84: 315-316.
130. Sharma, S., Mahajan, V., Kumar, H., Kanwar, R.S., Fila, G., Singh, R. and Bal, M.S. (2007). Peste des petits ruminants (PPR) outbreaks in sheep and goats in Punjab. *Indian J. Vet. Pathol.* 31: 32-35.
131. Sidhu, S.S, Bansal, B.K. and Singh Balbir (2007). Inter- relationship between periparturient reproductive disorders and mastitis in buffaloes. *Indian Vet. J.* 84: 322-323.



132. Sikka, S.S. and Jaswinder Singh. (2007). Nutraceuticals vis a vis poultry nutrition. In Proc. of IPSACON 2007, held at GADVASU, Ludhiana, pp 62-67.
133. Sikka, S.S. (2007). Effect of replacement of maize and rice bran with paddy on the growth performance and carcass traits of growing finishing pigs. *Livestock Research for Rural Development. Volume 19, Article #92*. Retrieved February 16, 2003, from <http://www.cipav.org.co/lrrd/lrrd19/7/sikk19092.htm>
134. Sikka, S.S. and Singh, J. (2007). Nutritional challenges for poultry and pigs in post antibiotic era. In Proc. International Tropical Animal nutrition Conf. (TROPNUTRICON-2007), held at NDRI, Karnal, pp53-64.
135. Singh, A. and Mohindroo, J. (2007). Ultrasonographic and radiographic diagnosis of canine urinary bladder neoplasia. *Indian J. Vet. Surg.* 28: 43-45.
136. Singh, A., Rath, S.S. and Bal, M.S. (2007). Studies on therapeutic efficacy of pyrethroids insecticides for tick control in buffalo calves. *Indian Vet. J.* 84: 1234-36.
137. Singh, B.R., Chandra, M., Agarwal, R.K. and Babu, N. (2007). Infertility associated with subclinical salmonellosis. *Indian J. Exp. Biol.* 45: 834-836.
138. Singh, C.K. and Sandhu, B.S. (2007). Epidemiological investigation of Rabies in Punjab. *Indian J. Anim. Sci.* 77: 653-658.
139. Singh, D.V. and Sodhi, S.P.S. (2007). Acid-base and blood gas status during bovine endotoxic shock and after I/V infusion of hypertonic saline in buffalo calves. *Indian J. Anim. Sci.* 77: 975-979.
140. Singh, D.V., Singh, R.V. and Sodhi, S.P.S. (2007). ECG studies during bovine endotoxic shock and after various treatments. *Indian J. Anim. Sci.* 77: 37-42.
141. Singh, D.V., Singh, R.V. and Sodhi, S.P.S. (2007). Some biochemical profiles during bovine endotoxic (lipopolysaccharide) shock and after treatment with hypertonic saline solution. *Indian J. Anim. Sci.* 77: 438-441.
142. Singh, J., Kaur, K., Meenakshi, Alka, Verma, S., Kumar, H. and Pannu, M.S. (2007). Treatment of bovine mastitis with trisodium citrate. *Indian J. Vet. Med.* 27:133-134.
143. Singh, J., Kaur, K., Meenakshi, Alka, Verma, S., Kumar, H. and Pannu, M.S. (2007). Non antibiotic treatment of bovine mastitis. *Indian J. Vet. Med.* 27: 133-134.
144. Singh, J., Sikka, S.S. and Sethi, A.P.S. (2007). Effect of Vitamin D₃ and calcium phosphorus ratios on the performance of broilers. *Indian J. Anim. Nutr.* 24: 75-79.



145. Singh, M., Randhawa, S.S. and Chhabra, S. (2007). Clinico-epidemiological studies on manganese deficiency in dairy animals in relation to its status in soil-plant system. *Indian J. Vet. Med.* 27: 145-146.
146. Singh M., Singh, R., Arora, A.K. and Sandhu, K.S. (2007). Molecular characterization of *Escherichia coli* isolated from diarrhoeic neonatal calves. *Indian J Anim Sci.* 77: 1063-1068.
147. Singh, M., Yadav, R.K., Raghunath, M. and Singh, S.S. (2007). Repair of bilateral femur fractures with static intramedullary interlocking nailing in three dogs: A clinical report. *Indian J. Vet. Surg.* 28: 48-49.
148. Singh, N., Verma, H.K., Singh, J., Singh, K.B. and Mavi, P.S. (2007). Present status of adoption of artificial insemination (AI) in dairy animals in different agroclimatic zones of Punjab. *Indian J. Dairy Sci.* 60: 129-132.
149. Singh, N.D, Sharma, A.K., Dwivedi, P., Patil, R.D and Kumar, M. (2007). Citrinin and endosulfan induced terratogenic effects in wistar rats. *J. Applied Toxicology* 27: 143-151.
150. Singh, N.D, Sharma, A.K., Dwivedi, P., Patil, R.D. and Kumar, M. (2007). Citrinin and endosulfan induced maternal toxicity in pregnant wistar rats: Pathomorphological study. *J. Applied Toxicology* 27: 589-601.
151. Singh, O., Roy, K. S., Kumar, A. and Bawa, B. S. (2007). Histomorphological studies on prenatal development of abomasum in buffalo. *Indian J. Anim. Sci.* 77: 727-729.
152. Singh, O., Roy, K. S., Kumar, A. and Kumar, R. (2007). Histoenzymic distribution of oxidoreductases in rumen during prenatal development in buffalo. *Indian J. Anim. Sci.* 77: 1280-1282.
153. Singla, L.D, Aulakh G.S. and Juyal P.D. (2007). Haemato-biochemical and clinico-pathological observations on haemoprotists in cattle and buffaloes. Proceedings of National Seminar on Recent Diagnostic Trends and Control Strategies for Haemoprotozoans Infections in Livestock held from February 9-11 at Sardar Krushi Nagar, Gujarat, pp.107-110.
154. Sodhi, S. (2007). Antioxidants in preventing Insecticides induced oxidative stress and immunosuppression. Scientific Review, www.feedinfo.com, 05-12.
155. Sodhi, S., Banga, H.S. and Brar, R.S. (2007). Biochemical and histopathological studies to assess bone function in chicks with rickets. *Indian Vet. J.* 84: 533.
156. Sodhi, S., Banga, H.S. and Brar, R.S. (2007). Biochemical and histopathological studies in hepatic lipidosis in chicks. *Indian Vet. J.* 84: 765-766.



157. Sonika, Sharma, G., and Juyal, P.D. (2007). Trypanosomosis in German shepherd dog-a case report. *Journal Vet. Parasitol* 21: 81-82.
158. Sood, N. K., Bhardwaj, R.K., Bineesh, P. P., Goyal, D., Sandhu, B. S. and Gupta, K. (2007). An angiokeratotic acanthomatous papilloma in a heifer. *Indian. Vet. J.* 84: 401-402.
159. Soodan, J.S., Randhawa, S.S., Randhawa, C.S, Uppal, S.K, Sood, N.K. and Sharma, N.S. (2007). Studies on sub-clinical hypocuprosis in Buffaloes. *Indian Vet. J.* 84 (9): 929-931.
160. Suman, M. and Bansal, N. (2007). Histochemical study on the metanephros of buffalo foetii. *Indian J. Anim. Sci.* 77: 462-464.
161. Suman, M. and Bansal, N. (2007). Histomorphometrical studies on the pronephros of buffalo foetii. *Indian J. Anim. Sci.* 77: 465-467.
162. Suman, M. and Bansal, N. (2007). Morphology and biometry of kidneys of buffalo fetuses. *Indian Vet. J.* 84: 641-642.
163. Tripathi A.K., Gupta D.K., Rajora, V.S., Singh, G.D. and Shukla, S.K. (2007) Hepatozoonosis in bitch-A case report . *Vet Pract.* 8: 69-70.
164. Tripathi, A.K., Rajora, V.S., Gupta, D.K. and Shukla, S.K. (2007). Etiological screening of canine dermatosis in and around Pantnagar. *Vet Pract.* 8: 57-58.
165. Turkar S. and Uppal, S.K. (2007). Blood biochemical and ruminal liquor profile in buffaloes (*Bubalus bubalis*) showing omasal impaction. *Vet. Res. Commun.* 31: 967-975.
166. Turkar, S., Uppal, S.K., Dhaliwal, P.S., Randhawa, S.S. and Singh, S.T. (2007). Clinical and haemato-biochemical profile of omasal impaction in cattle .*Indian J. Vet. Med.* 27: 87-90.
167. Uppal, V. and Bansal, N. (2007). Histoenzymic study on the thymus of neonatal buffalo calves. *Indian J. Anim. Sci.* 77: 462-464.
168. Uppal, V. and Bansal, N. (2007). Study on spermatozoal concentration in different parts of epididymis of donkeys. *Centaur* 24: 1-5.
169. Uppal, V. and Roy, K. S. (2007). Histoenzymic studies on the oviduct during prenatal life in buffalo (*Bubalus bubalis*). *Indian J. Anim. Sci.* 77: 376-380.
170. Uppal, V. and Roy, K. S. (2007). Histogenesis and histochemical studies on the oviduct during prenatal life in buffalo (*Bubalus bubalis*). *Indian J. Anim. Sci.* 77: 371-375.

EXTENSION

The Directorate of Extension Education geared up extension activities through its various wings like Farm Advisory Service, Trainings and visit to villages. In order to transfer the new technologies evolved by the University, many training courses were organized for the farmers, field veterinarians and scientists from other universities. A total of 120 extension articles were published in various magazines, journals and news papers.

Training Programmes

Name of the training programme	Duration (days)	No. of trainings held	No. of participants
Refresher Training course for Vety. Officers	10	3	21
Refresher Training course on dogs for Vety. Officers	10	2	12
Training programme on laboratory diagnosis for Vety. Officers	5	1	4
Refresher training course on quality milk and milk products for Veterinary Officers.	1	1	5
Specialised dairy farming training course for farmers	12	2	41
Specialised piggery training course for farmers	5	2	58
Specialised poultry training course for farmers	10	1	23
Training of army personnel in dairy farming	3	2	24
Interactive seminar on feed, fodder and quality control	1	1	6
Progressive dairy farmers association seminars	1	11	900-1000
Training course for newly appointed DES/Asstt Professor	12 days	1	4



- **Inservice specialized training course as per Veterinary Council of India:** Specialized Refresher Training courses of Technical Competency Development Programme (TCDP) and Skilled Technology Course (STC) were developed to give specialized and need based trainings to Registered Vety. Graduates (Inservice Field Vety. Officers) as per guidelines of Veterinary Council of India.
- The Directorate started and coordinated the following specialized training courses under “Assistance to State to control animal diseases” (ASCAD) for inservice field veterinarians of Punjab State.
 1. Hands on training on “Diagnosis of parasitic infections in domestic animals”.
 2. Common diagnostic techniques in Veterinary Pathology.
 3. Common diagnostic techniques in Veterinay Microbiology.
 4. Quality semen processing.
 5. Hands on diagnostic aid for X-Ray and ultrasound.
- **Animal Welfare Camps:** Twelve animal welfare camps were organized in the rural areas of Punjab for the treatment of sick animals. In these camps the farmers and the field functionaries were advised/made aware of the recommended animal health practices.



Animal Welfare Camp

- Pashu Palan Mela:** The Pashu Palan Mela of the Guru Angad Dev Veterinary and Animal Sciences University was successfully held in the months of March and September, 2007. In these melas, various departments arranged exhibition stalls to show the new technologies/innovations developed for the farmers. Other Govt. and private agencies involved in animal welfare work also displayed their activities important to the farming community. A large number of farmers visited the melas and discussed their problems with experts of the university. The mela highlighted the services and facilities available at GADVASU and other informational materials were distributed to the farmers.



Farmers participating in Pashu Palan Mela at Ludhiana



*Dr. V.K. Taneja explaining about
Uromin Lick*

*Chief Minister S. Parkash
Singh Badal taking Sweet
Lassi prepared by
Department of LPT,
GADVASU, Ludhiana*



*Hon'ble Mr. Justice Vijender
Jain with Chief Minister's
award winner farmers*

- Animal Welfare Centre:** An animal welfare centre was established by the University at 'Gureh' village on 15-8-07 for undertaking various welfare activities of livestock development programme by providing the technological interventions at the door step of the farmers. A survey on 369 families of the village was conducted to formulate the animal welfare activities as per local needs. The animal population of the village included 957 cattle, 876 buffaloes, 128 goats, 13 sheep, 10 pigs, 108 dogs and 26 mule/ponies. The survey revealed that 14.24% families were rearing only cattle, 35.96% families were rearing only buffaloes and 49.80% families were rearing both cattle and buffaloes. It was observed that 75.88% families had the animal sheds, out of which sheds of 54.69% families were in wrong direction. The data further revealed that 56.2 and 59.5% families were doing vaccination to their cattle and buffaloes, respectively against foot and mouth disease (FMD) and haemorrhagic septicaemia (HS). Among the milk producing families, 40.72% were disposing their surplus milk to the cooperative milk plants, 51.32 to private milk plants/dairies and remaining 7.96% to the milk vendors. Animal health problems were also surveyed and incidence of repeat breeding, anoestrus and mastitis was found to be 12.96, 9.26 and 10.79% in cattle and 2.76, 13.36 and 1.38% in buffaloes, respectively. Animal Welfare centre provided technical interventions/guidance for managerial practices to uplift the dairy standards and profitability. Two animal welfare camps were organized at the centre.



Animal Welfare Centre Inaguration at Gureh



Vice-Chancellor Dr. V.K. Taneja and other university officials with farmers at Gureh



Visit of Dr. K.M. Bujarbaruah, Deputy Director General (AS), ICAR, New Delhi to village Gureh



Dr. K.M. Bujarbaruah, Deputy Director General (AS), ICAR, New Delhi interacting with farmers



Tree Plantation at Animal Welfare Centre – Gureh



Scientists from NAARM, Hyderabad for the Field Experience Training at Gureh

- Farmers Associations:** The directorate is engaged in regulating the activities of different associations viz. Progressive Dairy Farmers Association (regd.), Innovative Fish Farmers association (Regd.), Punjab Piggery Farmers Association, and Punjab Goat Farmers Association. The regular meetings of these association members were held.



Meeting of Progressive Dairy Farmers Association



World Bank team Interacts with Progressive Farmer

- First Dairy show was organized jointly by the GADVASU and the PDFA in the month of March, 2007. The department participated as knowledge partner in the state level cattle show held at Mohali.



Mr. DS Bains, Principal Secretary, Animal Husbandry and Dairy Development, Punjab at the Dairy Show



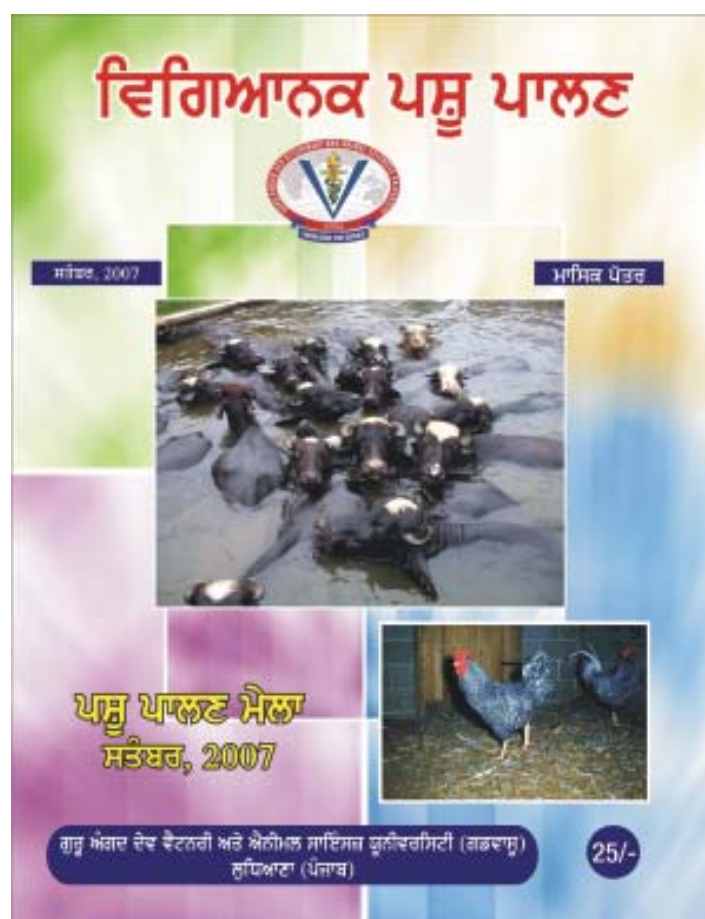
Dr. G.S. Kalkat, Chairman, Punjab Farmer's Commission at Dairy Show



- Animal Husbandry Officers workshop was successfully organized at GADVASU on Dec, 12, 2007, which was attended by delegates (about 500) from Animal Husbandry Department, Dairy Development Department, Fisheries Department, Milk Fed and GADVASU.
- **Technical guidance/transfer:** The faculty delivered extension lectures to the farmers in collaboration with other animal welfare agencies of the state like Dairy Development Department, Department of Animal Husbandry, Nestle, Punjab and Sind Bank and also in the trainings organized by the Kisan Vigyan Kendras and Department of Extension Education, PAU, Ludhiana. On these occasions, demonstrations regarding collection, dispatch and transport of clinical material like blood, mucous discharge and faeces from the animals, correct method of milking, teat dip, computation of ration, silage making, acaricide drug application and heat detection were carried out in the field for farmers.
- **Farmers Advisory Service:** The telephonic helpline in the university is taking care of the queries of livestock owners regarding animal health and management problems. The farmers have also been given consultancy at the university and their queries were answered to postal letters as well.
- **TV/Radio talk:** The faculty of various departments delivered TV/radio talks (38) on the topics assigned by the Directorate of Extension Education from time to time.
- A training programme for the up gradation of beldars/malis as farm workers was conducted from Oct. 16, 2007 to Jan. 4, 2008.
- **Pashu Vigyan Pardarshni:** The faculty participated in Kisan Mela avam Pashu Vigyan Pardarshni at IVRI, Bareilly, UP from Nov. 1-3, 2007.

- **Utility services:**

1. Formulation and organization of various training programmes on demand by the different Govt./Semi-Govt. and private agencies
2. Sale of mineral mixutre
3. Preparation as well as sale and distribution of the following university publications
 - Package of Practices for Livestock Health Management.
 - Vigyanak Pashu Palan (Punjabi monthly magazine).
 - GADVASU Hand-book.
 - GADVASU Calendar.
 - Vet Alumnus.



Vigyanak Pashu Palan (Punjabi monthly magazine)



ESTATE UNIT

The Estate Unit continued to look after the construction of new buildings, renovation of existing buildings, landscaping, security and maintenance. During the year, construction of library building, poultry shed in the Department of Livestock Production and Management, lecture hall in Silver Jubilee Block was initiated through GLADA. The work regarding Poultry Processing Plant and Poultry Shed etc. were also taken in hand through GLADA. Projects for certain new buildings e.g. Vice-Chancellor's residence, new blocks in boys and girls hostels, farmers and scientist hostels etc. are also being taken in hand shortly. The following projects relating to construction/repair/renovation works in GADVASU Campus have been completed by GLADA.

1. Repair/renovation of Extension Block-I in Admn. Block.
2. Construction of passage to interlink different buildings.
3. Construction of boundary wall from milk plant adjoining Sidhwan Canal.
4. Repair and renovation of first floor of administration block.

Construction of bridge over Sidhwan Canal to interlink both campuses of GADVASU has been completed and the construction of roads on both sides of the bridge is nearing completion.



Hon'ble S. Gulzar Singh Ranike, Minister for Animal Husbandry and Fisheries, Dairy Development, Sports and Youth Services and Welfare of SCs and BCs, Punjab inaugurating 'Scientist-Farmer Interface'



Visit of Hon'ble S. Manpreet Singh Badal, Finance Minister, Punjab to GADVASU

