

ANNUAL REPORT

2020-2021



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Annual Report 2020-21

**Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana-141004
(Official publication of GADVASU)**

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PREFACE

It gives me an immense pleasure to present before you the Annual Report of Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana for the period 2020-21. The Annual Report encompasses the wide arrays of various academic, research, extension, and co-curricular activities at the university domain, its affiliated colleges, and at its outstations. Since the inception of the university in 2005, it has primarily focussed on the steady, sustainable, and quality level of standards in areas of teaching, research, and extension related to Veterinary & Animal Sciences. The university ranked 2nd among the state veterinary universities of India for the year 2020-21.



Dr. Inderjeet Singh
Vice-Chancellor

In terms of student enrolment for the year, a total of 1603 students (969 boys and 634 girls) took admission in different graduate and diploma programs offered by the university. As far as infrastructure is concerned, the university is well equipped with modern state of art teaching classrooms with all the cutting-edge technologies for imparting effective teaching and learning to the students. From a research point of view, a total of 96 research and other schemes were operational in the university; out of which 48 were funded by different national level agencies including ICAR, DST, DBT, SERB, etc. Major research projects were Niche Area of Excellence, Climate Resilient Livestock Production, and Canine Research Centre & Networks. On the animal welfare, treatment, and diagnostic front, the university has one of the finest, state-of-the-art University Teaching Veterinary Hospitals, well equipped with modern, ultra-edge equipment and diagnostic laboratories. During the year under consideration, 25550 clinical cases of livestock and pet animals were presented at the University Veterinary Hospital and 16967 clinical samples were tested at the diagnostic laboratory. GADVASU developed significant collaboration(s) with several international institutes during the reporting period.

University has very good extension model for transferring newer technologies to different stakeholders for enhancing the productivity of animals and promoting the processing and marketing of various products through self-help groups. The major components of this model are Pashu Palan Melas, Farmer-Scientist interface, workshops, long and short-term vocational training, publications of technical know-how & various success stories, and instant transfer of advisories through e-extension platforms, etc. Co-curricular activities are part and parcel of this university's calendar.

At GADVASU, the emphasis is on a student-ready approach, where we provide job-oriented quality education, implement need and issue-based research project(s), establish new and strengthen the existing linkages with various stakeholders of Veterinary and Animal Sciences. The focus is to develop linkages with the relevant industries for increasing income through productivity enhancement, value addition, and ensuring the quality and safety of animal-based foods while at the same time ensuring environment protection by using sustainable production systems.

All of our accomplishments (s) would not have been possible without the committed and professional approach, expertise, hardships, and passion of my talented staff. I hope that the Annual Report 2020-21 will serve as a valuable blueprint to various professionals employed in different organization(s) and working in the area of livestock, dairy, and fishery development as well as for other Institutions of Higher Learning in the country.

Vice-Chancellor

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ABOUT THE UNIVERSITY

Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) was established on 9th August 2005 through Punjab Act No. 16 of 2005 at Ludhiana and started functioning from 21st April 2006 initially with College of Veterinary Science which was established in the year 1969 and shifted from Punjab Agricultural University to GADVASU. Since inception, the university has grown remarkably and is already amongst the top-ranked Veterinary and Agricultural Universities across of the country. With the objective to produce highly efficient, trained and skilled human resources with an ultimate aim to give boost to various activities of livestock, dairy and fishery sectors of Punjab, College of Dairy Science and Technology, College of Fisheries, College of Animal Biotechnology and Veterinary Polytechnic for teaching, research and extension in the respective fields were established by the university. One constituent veterinary college at Rampura Phul, Bathinda has also become functional from the academic session 2019-20 to cater for the ever-increasing demands of professionally qualified veterinary graduates in the state. Furthermore, Regional Livestock Research and Training Centres at Kaljharani (Bathinda), Talwara (Hoshiarpur) and Booh (Tarn Taran) were established for catering the region-specific needs of the stakeholders of dairy sector. Three Krishi Vigyan Kendras were established at Tarn Taran, Barnala and Mohali districts of Punjab for the technology assessment, dissemination, refinement and demonstration.

The University has been recognized by the University Grants Commission (UGC) to receive central assistance under the section 12(B) of UGC Act, 1956. The vet varsity has also got accreditation from the UGC and Indian Council for Agricultural Research (ICAR) and has been admitted as a regular member of the Association of Indian Agricultural Universities (AIAU) and Association of Indian Universities (AIU). The ICAR has accredited the university and its four constituent colleges *viz.*, College of Veterinary Science, College of Dairy Science and Technology, College of Fisheries, and College of Animal Biotechnology for a period of 5 years (up to 31.03.2023) with grade 'A'. The School of Animal Biotechnology was upgraded to College of Animal Biotechnology & School of Public Health and Zoonoses to Centre for One Health in the year 2019 and 2021, respectively. Besides, in the year 2021, the Directorate of Human Resource Management was established, with the main motive to process with accelerated emphasis on harnessing of various activities for the continuous growth and development of human resources of the university with greater zeal embarking upon both managerial and operational activities. The ICAR has ranked GADVASU as 2nd amongst the State Veterinary Universities of India for the year 2020-21.

The University was established with the following goals and objectives:

- ✓ To provide adequate supply of well-trained universally competent veterinary, animal husbandry, dairy and fishery professionals including Master's and Doctorate level specialists capable of handling animal health and production aspects according to the needs of the State.
- ✓ To undertake multi-disciplinary research in priority areas to address the problems of veterinary, animal husbandry, dairy and fishery sector(s).

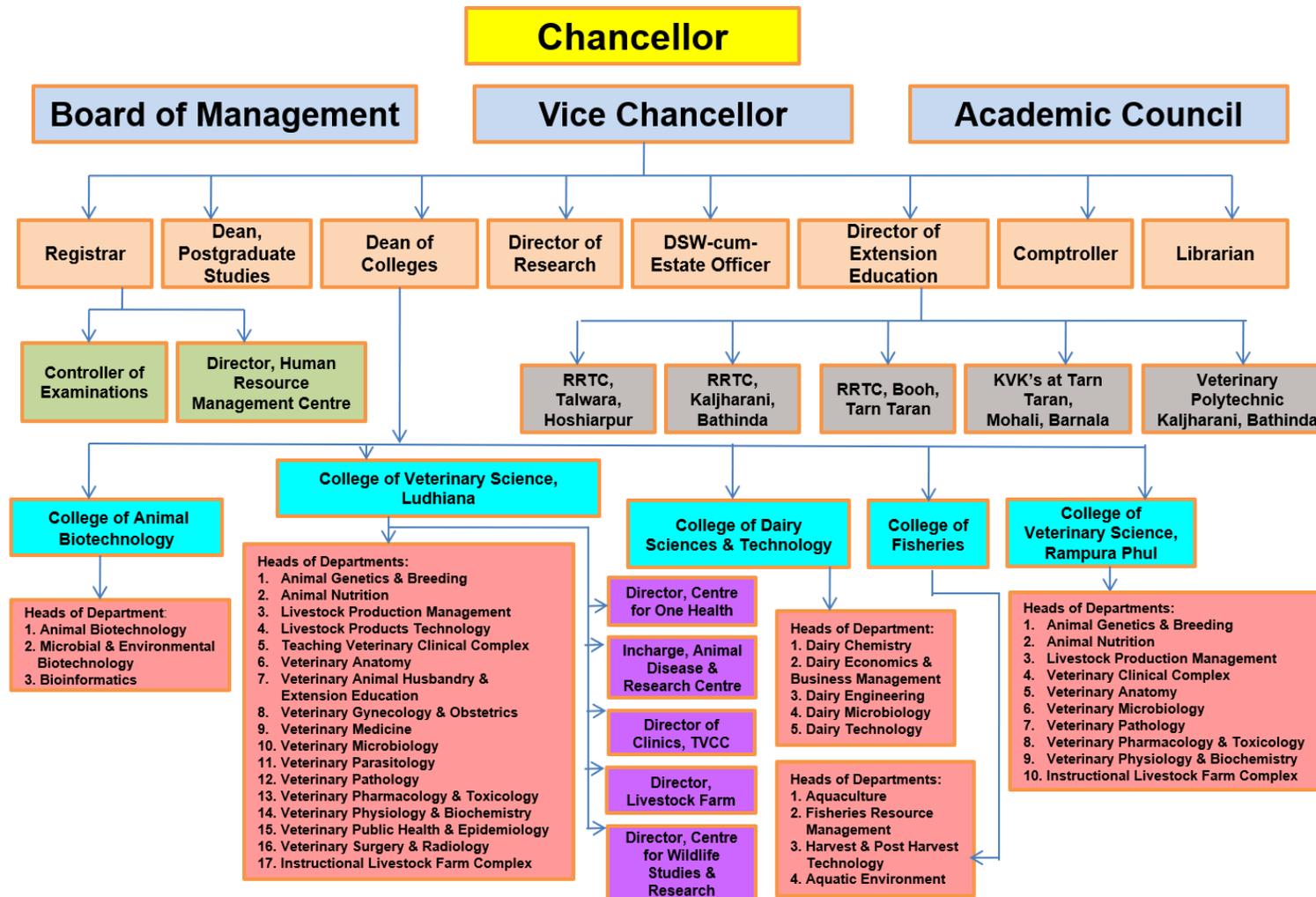


- ✓ To foster faculty development by providing them opportunities to participate in appropriate training programs, conferences, workshops, seminars, symposia, etc. and avail opportunities in exchange programs.
- ✓ To provide continuing professional education in veterinary, animal, dairy and fishery sciences.
- ✓ To provide consultancy, expert opinion and specialist services to livestock owners, government, and other agencies for Livestock Policy Formation.
- ✓ To run Multi-specialty Veterinary Hospital for treatment of animals and to provide clinical training to the students.
- ✓ To encourage cooperation and collaboration with other departments, colleges, universities, and industries, both at national and international levels.
- ✓ To undertake extension education activities to extend the knowledge and technology to the end users, i.e., farmers, industry, government, marketing sector, etc.



ORGANIZATIONAL SETUP

Organogram



FUNCTIONAL SETUP

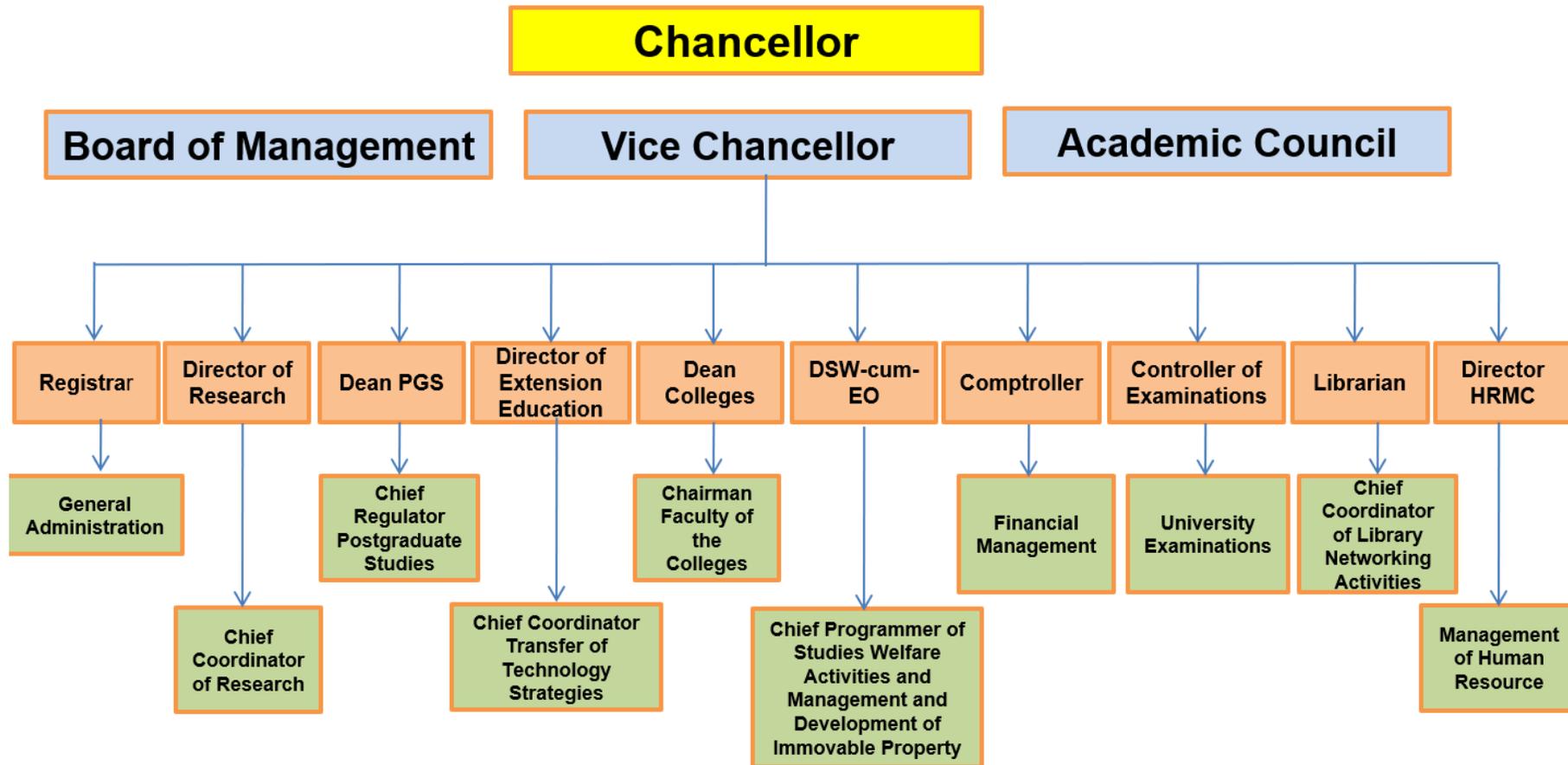
The functioning of GADVASU is governed by the following bodies primarily focussing the education, research and extension activities:

- Board of Management
- Academic Council
- Committee on Students' Welfare
- Research Advisory Committee
- Extension Education Advisory Committee
- Resident Instruction Committee
- Postgraduate Committee
- Board of Studies

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



Functional Setup



ADMINISTRATION BOARD OF MANAGEMENT

S. No.	Member of the Board of Management	Designation
1.	Shri. Banwari Lal Purohit Hon'ble Governor Punjab & Chancellor, Guru Angad Dev Veterinary and Animal Science University Ludhiana, Punjab Raj Bhawan, Chandigarh	Honorary Chairman
2.	Dr. Inderjeet Singh Vice-Chancellor, Guru Angad Dev Veterinary & Animal Sciences University Ludhiana	Working Chairman
3.	Shri. Anirudh Tiwari IAS, Chief Secretary to Government of Punjab, Room No. 26, 6 th Floor, Punjab Civil Secretariat, Sector-1, Chandigarh	Ex-officio Member
4.	Smt. Ravneet Kaur IAS, Special Chief Secretary, Department of Animal Husbandry, Dairy Development & Fisheries, Punjab, Room No. 327, 3 rd Floor, Punjab Civil Secretariat-2, Sector-9, Chandigarh	Ex-officio Member
5.	Shri. D.K. Tiwari IAS, Financial Commissioner, Department of Agriculture and Farmers Welfare, Punjab, Room no. 523, 5 th Floor, Punjab Civil Secretariat-1, Sector-2, Chandigarh	Ex-officio Member
6.	Shri. K.A.P Sinha IAS, Principal Secretary, Department of Finance Punjab, Room no. 10, 8 th Floor, Punjab Civil Secretariat-1, Sector-1, Chandigarh	Ex-officio Member
7.	Dr. B.N. Tripathi Deputy Director General (Animal Sciences), Division of Animal Science, Krishi Bhawan, ICAR, New Delhi	Ex-officio Member
8.	Dr. H.S Kahlon Director of Animal Husbandry, Punjab, Livestock Complex, 2 nd Floor, Sector-68, Near Army Law College, SAS Nagar, Mohali	Ex-officio Member
9.	Shri. Karnail Singh Director, Dairy Development, Punjab, Livestock Complex, 4 th Floor, Sector-68, Near Army Law College, SAS Nagar, Mohali	Ex-officio Member
10.	Dr. Madan Mohan Director and Warden of Fisheries, Punjab, Livestock Complex, 4 th Floor, Sector-68, Near Army Law College, SAS Nagar, Mohali	Ex-officio Member
11.	Dr. J.P.S. Gill Director of Research, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana	Ex-officio Member

12.	Sh. Kamaldeep Singh Sangha IAS (Retd.), Managing Director, Milkfed, Punjab, SCO no. 153-155, Sector 34-A, Chandigarh	Non-officio Member
13.	Dr. Sarabjit Singh Randhawa Veterinary Officer, Masania, 6-Sant Rasila Avenue, Batala and Deputy Director, Animal Husbandry (Additional Charge), Jalandhar	Non-officio Member
14.	Dr. Harpreet Singh Thind Incharge Semen Bank and Quality Control Officer, Semen Bank, Nabha	Non-officio Member
15.	Sh. Surinder Singh Dhindsa S/o Late Sh. Bhagat Singh Rehpa Buffalo Farm, village Rehpa, PO Hakimpur, district SBS Nagar, Punjab	Non-officio Member
16.	Sh. Kanwardeep Singh S/o Sh. Charnjeet Singh Randhawa Fresh Dairy, village Bassarpura, near Batala, district Gurdaspur	Non-officio Member
17.	Sh. Baljinder Singh Boparai 8530, 241 Street Bellerose, New York, NY 11426, USA (4, Urban Estate, Batala, Distt. Gurdaspur)	Non-officio Member
18.	Mrs. Karamjeet Kaur Danewalia W/o Sh. Jasbir Singh Danewalia VPO Danewalia, Satkoshi, tehsil Abohar, district Fazilka (Mailing Adress: H. No. 25-A, Bollywood Green City, Sector- 113, Landran Raod, SAS Nagar, Mohali)	Non-officio Member
19.	Dr. Baljit Singh, FCAHS, BVSC&AH, PhD 3M National Teaching Fellow, Vice-President, Research University of Saskatchewan, Canada, S7N5A2	Non-officio Member
20.	Dr. Harmanjit Singh Banga Registrar, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana	Secretary
21.	Dr. B.S. Dhillon Vice-Chancellor PAU, Ludhiana	Special Invitee

ACADEMIC COUNCIL

S. No.	Member of Academic Council	Designation
1.	Dr. Inderjeet Singh Vice-Chancellor	Chairman
2.	Dr. J.P. S. Gill Director of Research	Member
3.	Dr. Sanjeev Kumar Uppal Dean Postgraduate Studies	Member
4.	Dr. Parkash Singh Brar Director of Extension Education	Member
5.	Dr. Sarvpreet Singh Ghuman Dean, College of Veterinary Science, Ludhiana	Member

6.	Dr. Ramneek Verma Dean, College of Dairy Science & Technology	Member
7.	Dr. Meera D. Ansal Dean, College of Fisheries	Member
8.	Dr. Yashpal Singh Malik Dean, College of Animal Biotechnology	Member
9.	Dr. Manish K. Chatli Dean, College of Veterinary Science, Rampura Phul, Bathinda	Member
10.	Dr. L.D. Singla Professor-cum-Head, Department of Veterinary Parasitology	Member
11.	Dr. Charanjit Singh Randhawa Professor-cum-Head, Department of Veterinary Medicine	Member
12.	Dr. (Mrs.) Varinder Pal Uppal Professor-cum-Head, Department of Veterinary Anatomy	Member
13.	Dr. Sandeep Sodhi Kakkar Sr. Biochemist-cum-Head, Department of Dairy Biochemistry	Member
14.	Dr. R.S. Sethi Professor-cum-Head, Department of Animal Biotechnology	Member
15.	Dr. Satyavan Rampal Director of Students Welfare-cum-Estate Officer	Special Invitee
16.	Dr. A.K. Arora Controller of Examinations	Special Invitee

Secretary: Dr. Harmanjit Singh Banga, Registrar

OFFICERS OF THE UNIVERSITY

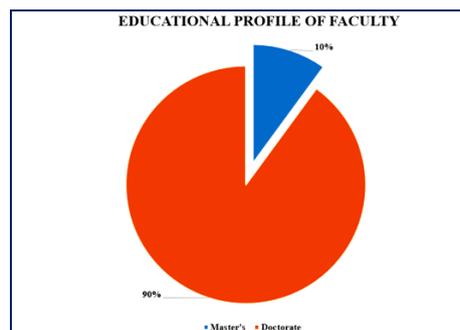
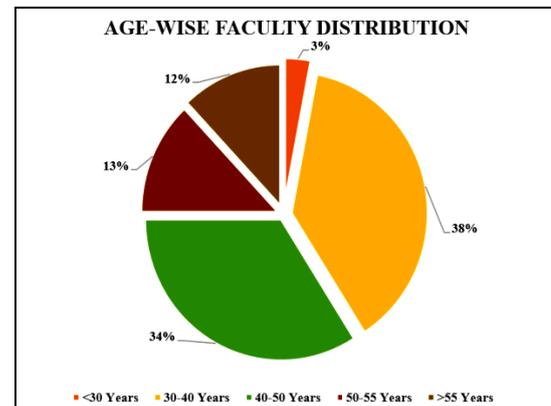
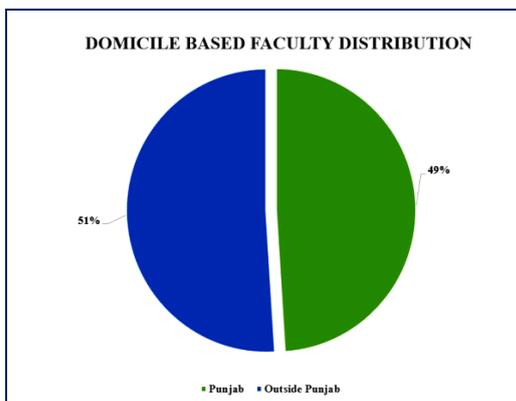
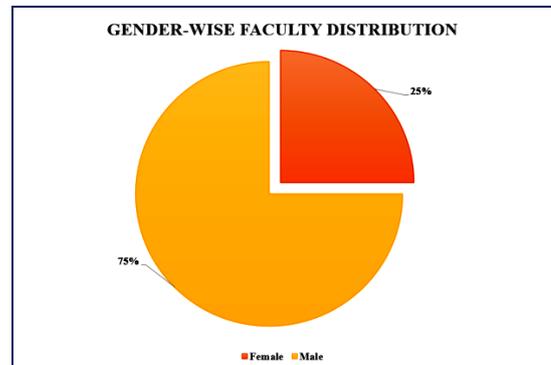
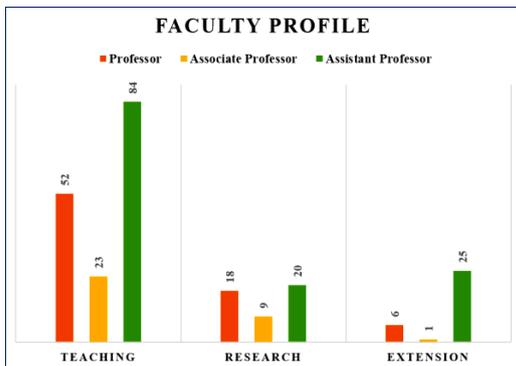
S. No.	Name	Designation
1.	Dr. Inderjeet Singh	Vice-Chancellor
2.	Dr. Harmanjit Singh Banga	Registrar
3.	Dr. Jatinder Paul Singh Gill	Director of Research
4.	Dr. Sanjeev Kumar Uppal	Dean Postgraduate Studies
5.	Dr. Parkash Singh Brar	Director of Extension Education
6.	Dr. Satyavan Rampal	Director Students' Welfare-cum-Estate Officer
7.	Dr. Sarvpreet Singh Ghuman	Dean, College of Veterinary Science, Ludhiana
8.	Dr. Manish Kumar Chatli	Dean, College of Veterinary Science, Rampura Phul
9.	Dr. Meera D. Ansal	Dean, College of Fisheries
10.	Dr. Ramneek Verma	Dean, College of Dairy Science and Technology
11.	Dr. Yashpal Singh Malik	Dean, College of Animal Biotechnology
12.	Dr. Digvijay Singh	University Librarian
13.	Dr. Amarjit Singh	Comptroller
14.	Dr. Anil Kumar Arora	Controller of Examinations
15.	Dr. L.D. Singla	Director, Human Resource Management Centre

FACULTY PROFILE

There are a total of 238 faculty members on the rolls of the university. Among them 76 are Professors or equivalent (two on contract), 33 Associate Professors or equivalent (two on contract) and 129 Assistant Professors or equivalent. One hundred and fifty-nine faculty members (four on contract) are working in teaching schemes, 47 in research schemes and 32 in extension schemes. One-fourth of the faculty belongs to feminine gender, 90% holds doctoral degree and 49% belong to Punjab state. The university had 41% faculty below 40 years of age.

FACULTY STRENGTH

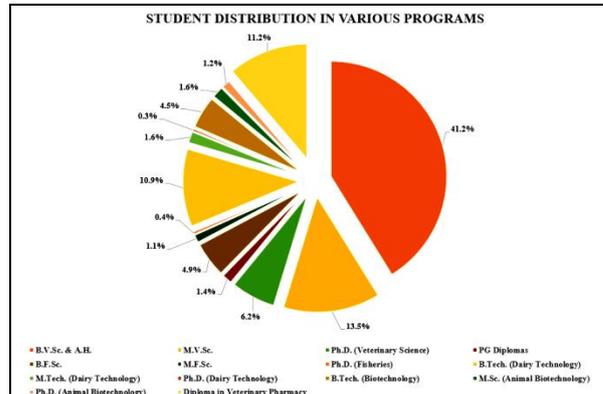
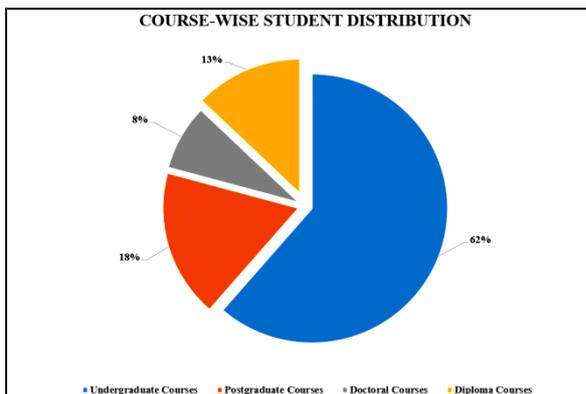
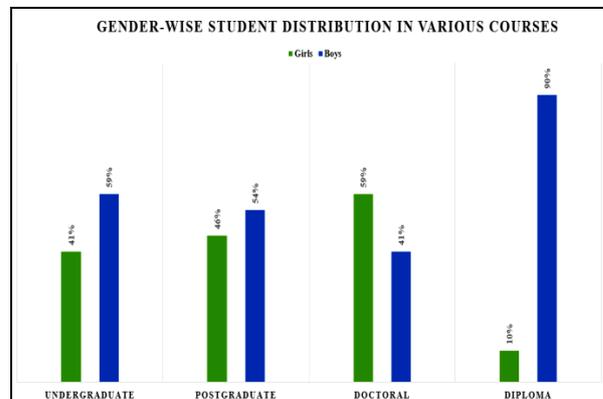
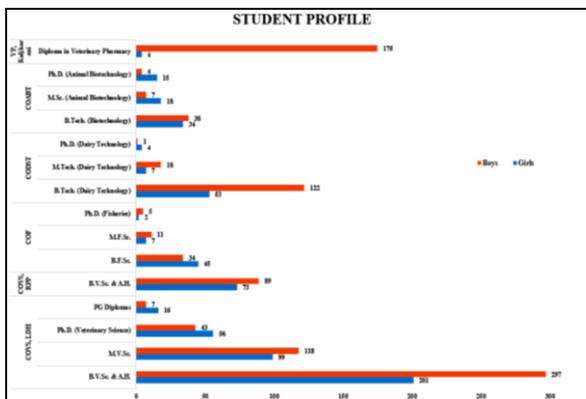
Scheme	Professor	Associate Professor	Assistant Professor	Total
Teaching	52	23	84	159
Research	18	09	20	47
Extension	06	01	25	32
Total	76	33	129	238



STUDENTS' PROFILE

The total strength of students for the year 2020-21 and their gender-wise distribution in various degree/diploma programs offered by various colleges of the university is as under:

College	Degree/Diploma Programs	Girls	Boys	Total
COVS, Ludhiana	B.V.Sc. & A.H.	201	297	498
	M.V.Sc.	99	118	217
	Ph.D. (Veterinary Science)	56	43	99
	PG Diplomas	16	07	23
COVS, Rampura Phul	B.V.Sc. & A.H.	73	89	162
COF	B.F.Sc.	45	34	79
	M.F.Sc.	07	11	18
	Ph.D. (Fisheries)	02	05	07
CODST	B.Tech. (Dairy Technology)	53	122	175
	M.Tech. (Dairy Technology)	07	18	25
	Ph.D. (Dairy Technology)	04	01	05
COABT	B.Tech. (Biotechnology)	34	38	72
	M.Sc. (Animal Biotechnology)	18	07	25
	Ph.D. (Animal Biotechnology)	15	04	19
VP, Kaljharani	Diploma in Veterinary Pharmacy	04	175	179
TOTAL		634	969	1603



FINANCIAL REPORT

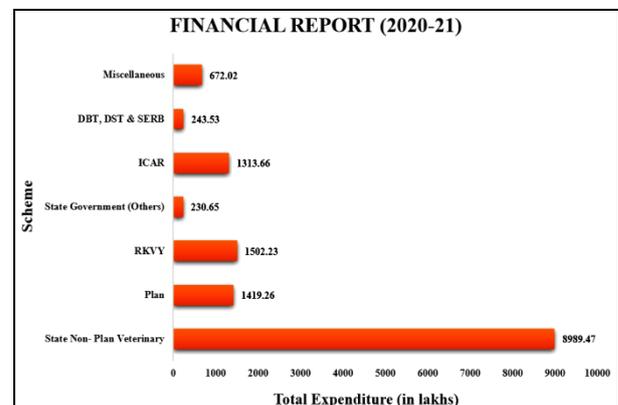
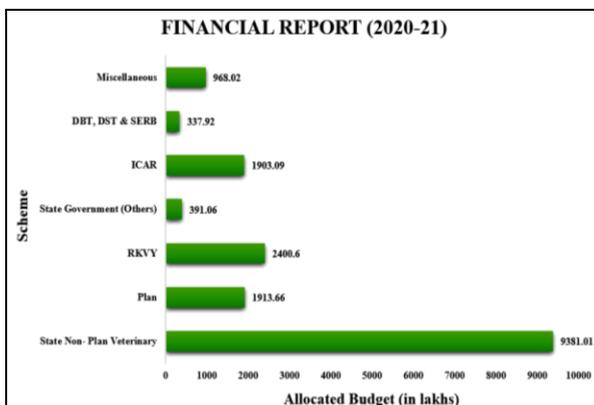
In the financial year 2020-21, the university was allocated a total grant of Rs. 17295.36 lakhs comprising Rs. 9381.01 lakhs under State Non-Plan Veterinary Schemes, Rs. 1913.66 lakhs under Plan Schemes, Rs. 2400.60 lakhs under RKVY Schemes and Rs. 391.06 lakhs under Other State Government Schemes. In addition, the university also received Rs. 1903.09 lakhs under ICAR Schemes/ Projects, Rs. 337.92 lakhs from DBT, DST & SERB Schemes and Rs. 968.02 lakhs from Miscellaneous funding agencies.

The total expenditure of the university for the year 2020-21 was Rs. 14370.82 lakhs, which included Rs. 8989.47 lakhs under State Non-Plan Veterinary Schemes, Rs. 1419.26 lakhs under Plan Schemes, Rs. 1502.23 lakhs under RKVY schemes, Rs. 230.65 lakhs under Other State Government Schemes, Rs. 1313.66 lakhs under ICAR Schemes/Projects and Rs. 243.53 lakhs under DBT, DST & SERB schemes and Rs. 672.02 lakhs under Miscellaneous schemes.

A financial statement indicating budget allocated and amount spent (rupees in lakhs) under various schemes/projects during the financial year 2020-21

S. No.	Scheme	Total Budget Allocated*	Expenditure
1.	State Non- Plan Veterinary	9381.01	8989.47
2.	Plan	1913.66	1419.26
3.	RKVY	2400.60	1502.23
4.	State Government (Others)	391.06	230.65
5.	ICAR	1903.09	1313.66
6.	DBT, DST & SERB	337.92	243.53
7.	Miscellaneous	968.02	672.02
TOTAL		17295.36	14370.82

* Allocated budget includes the budget revalidated, grant received and income generated



ACADEMIC UNITS

There are five constituent colleges of Guru Angad Dev Veterinary and Animal Sciences University *viz.* College of Veterinary Science, Ludhiana, College of Dairy Science & Technology, College of Fisheries, College of Animal Biotechnology and College of Veterinary Science, Rampura Phul. Besides, the university has also established 'Centre for One Health' to initiate the multi-disciplinary set-up in the national and international arena. Three Regional Livestock Research & Training Centres at Kaljharani (Bathinda), Talwara (Hoshiarpur) and Booh (Taran Taran), as well as three Krishi Vigyan Kendras at Booh (Taran Taran), Handiya (Barnala) and Majri (SAS Nagar, Mohali), exist to cater the area specific requirements of the livestock owners. Apart from that, the university also has two affiliated colleges *viz.* Khalsa College of Veterinary & Animal Sciences, Amritsar and Baba Hira Das ji College of Veterinary Pharmacy, Badal, Sri Muktsar Sahib.

College of Veterinary Science, Ludhiana

The mission of the college is to produce quality veterinary graduates, scientists and extension workers to promote better livestock health, by preventing diseases, and increasing production and reproduction, thereby improving the quality of rural life in Punjab. Under the mission, the college carries out undergraduate and postgraduate teaching, research and extension education programmes in various disciplines of livestock production and health. It is recognized by the Veterinary Council of India (VCI) and has been accredited by the Indian Council of Agricultural Research (ICAR) with an overall score of five. The College is an epicentre of regional, national and international excellence in research and learning in animal health and production. It caters to the needs of not only Punjab but its adjoining states as well by carrying out teaching, research and extension education programmes of livestock production and health and has been instrumental in ushering in an era of 'White Revolution' in the state.

The college has 17 departments, and all have excellent teaching and research laboratory facilities and adequate infrastructure for undergraduate and postgraduate teaching and research, along with a well-equipped Veterinary Teaching Hospital to cater to the demands of large and small animal health care. The college also has an Animal Disease Research Centre to provide quick and reliable disease diagnosis and advice treatment to the livestock owners and Directorate Livestock Farms that has an elite dairy herd and poultry farm which provides adequate facilities for teaching and research. In addition, the college also has the first Collaborative Research Centre of India for Veterinary Ayurveda, established in the year 2017 by the Central Council of Research in Ayurvedic Sciences (CCRAS), Ministry of AYUSH, Govt. of India. In 2018, an intramural research project with a budget of Rs. 40 lakhs were awarded by the Ministry of AYUSH to establish a Medicinal Plant Garden at GADVASU for demonstration and to create awareness among farmers and the general public about the use and application of medicinal plants.

The college was also granted a DBT-GADVASU Canine Research Centre and Networks project in the year 2018 in collaboration with TANUVAS with a Project Monitoring Unit at GADVASU. A budget of Rs. 1,38,92,250 (One crore thirty-eight lakhs ninety-two thousand and two hundred fifty only) was sanctioned for three years i.e up to year 2021

The university has bagged a prestigious Institutional Development Plan (IDP) project entitled "Institutional Development Plan for Improved Learning Outcome, Skill and Entrepreneurship at GADVASU" worth Rs. 2447.48 Lakh starting from August 2019. It is an ICAR and

World Bank-sponsored project, under National Agricultural Higher Education Project (NAHEP). The NAHEP has been formulated by ICAR with a total cost of Rs 1100 crores for five years starting from 2017-18. The project is on a 50:50 cost-sharing basis between the World Bank and the Government of India.

College of Veterinary Sciences, GADVASU, Ludhiana is the only veterinary college in India to have three ICAR Centres of Advanced Faculty Training (CAFT) in the Departments of Veterinary Surgery and Radiology, Veterinary Gynaecology and Obstetrics, and Veterinary Pathology. In addition, the departments of Teaching Veterinary Clinical Complex, Veterinary Medicine, Livestock Products Technology and Livestock Production Management have experiential learning projects.

The college offers the following programmes of veterinary education:

- B.V.Sc. & A.H. (5½ years)
- M.V.Sc. (2 years) in 15 disciplines
- Ph.D. (3 years) in 15 disciplines

The programme leading to the award of the B.V.Sc. & A.H. degree is designed to equip the graduates with the knowledge and skills essential for a veterinary career. Earlier it was as per Minimum Standards of Veterinary Education -2008, the programme is divided into three phases and the degree was of five years with six months internship and now as per the Minimum Standards of Veterinary Education 2016 (MSVE-2016) of VCI and now the degree is of 5.5 years with the one-year internship. The successful completion of B.V.Sc. & A.H. programme entitles the graduates to registration with the Punjab State Veterinary Council/Veterinary Council of India as registered veterinary practitioners.

Student intake capacity

Programme of Study	Number of Seats
B.V.Sc & A.H (5½ years)	<ul style="list-style-type: none"> • 60 – For residents of Punjab State and Union Territory of Chandigarh through merit of NEET (UG) - 2020 • 09 - Candidates nominated by the VCI • 16 - Self-financed seats • 15 - NRI seats • 01 – Kashmiri migrants
M.V.Sc. (2 years)	<ul style="list-style-type: none"> • 63 - For residents of Punjab State and Union Territory of Chandigarh • 42 - ICAR nominee • 10 - NRI seats • 02 - Self-financed seats (two in each discipline) • 01 - Kashmiri migrants
Ph.D. (3 years)	<ul style="list-style-type: none"> • 29 - For residents of Punjab State and Union Territory of Chandigarh. • 29 - ICAR nominee 05 - NRI seats • 02 - Self-financed seats in each discipline

Further, the College of Veterinary Science, Ludhiana also offers Post Graduate Diploma and Short & Certificate Courses, as per the details below:

Name of Postgraduate Diploma (PGD)	No. of seats	Eligibility Qualifications*	Course Duration
PGD in Animal Reproductive Biotechnology (Semen & ETT)	04	B.V.Sc. & A.H	01 year (02 Semesters)
PGD in Small Animal Clinical Practice	06	B.V.Sc. & A.H	01 year (02 Semesters)
PGD in Extension and Entrepreneurship Management	12	B.V.Sc. & A.H./ B.F.Sc./ B.Sc. (Agric./ Medical/ Zoology/ Fisheries/ Home Science)/ B.Tech. (Biotech/ Food Technology/ Dairy Technology)	01 year (02 Semesters)
PGD in Feed and Fodder Technology	12	B.V.Sc. & A.H./ B.Sc. Biosciences/ B.Sc. Agriculture	01 year (02 Semesters)
PGD in Laboratory Diagnostics	12	Graduate in any Life Sciences	01 year (02 Semesters)
PGD in Poultry Science	12	B.V.Sc. & A.H/ Graduate in any Life Sciences	01 year (02 Semesters)
PGD in One Health (Distance Learning Programme). On-campus requirement of 5 days per semester	20	Graduate/ Post Graduate in any science, preferably health sciences (Veterinary, Medicine, Dentistry, Alternative Medicine, Nursing, Pharmacy) and Forestry and Environmental Science	01 year (02 Semesters)
PGD in Bovine Clinical Practice	06	B.V.Sc. & A.H	01 year (02 Semesters)
PGD in Equine Clinical Practice	06	B.V.Sc. & A.H	01 year (02 Semesters)

Short and Certificate Courses

Name of Certificate Course (CC)/ Short Course	No. of Seats	Eligibility Qualifications*	Course Duration
Short Course in Veterinary Diagnostic Imaging	2+1†	B.V.Sc. & A.H	6 Weeks
Short Course in Small Animal Anaesthesia	2+1†	B.V.Sc. & A.H	6 Weeks

CC in Veterinary Diagnostic Imaging (Part-Time, On- campus requirement 1 week/ month)	2+1†	B.V.Sc. & A.H	6 Months
CC in Small Animal Anaesthesia (Part-Time, On- campus requirement 1 week/ month)	2+1†	B.V.Sc. & A.H	6 Months
CC in Embryo Transfer Technology in Farm Animals**	6+1†	B.V.Sc. & A.H	6 Months
CC in Semen Handling and Artificial Insemination**	6+1†	B.V.Sc. & A.H	6 Months

*For admission, candidates are considered strictly based on merit/ marks of the qualifying degree. However, preference is given to B.V.Sc. & A. H. graduates for diploma/ certificate courses in the College of Veterinary Sciences, and to fisheries graduates in the College of Fisheries.

†Reserve for NRI/ Foreign Nationals.

**Candidates registering and completing both certificate courses may be awarded a “Diploma in Reproductive Biotechnology (Semen & ETT)”

College of Veterinary Science, Rampura Phul, Bathinda

The College of Veterinary Science, Rampura Phul started functioning from the year 2019 as one of the constituent colleges of the Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana (Punjab). The college has the requisite facilities as prescribed by VCI for the first & second professional B.V.Sc. & A.H. degree program. The college offers a B.V. Sc & A.H (5½ years) programme of veterinary education.

Student intake capacity

Programme of Study	Number of seats
B.V.Sc & A.H (5½ years)	68- for residents of Punjab State and Union Territory of Chandigarh through merit of NEET 12- Self-financed seats 01 - Kashmiri migrants

Centre for One Health

The prime mandate(s) of the Centre are teaching, research and extension activities in the field of zoonoses, milk and meat hygiene, food safety, environmental hygiene and epidemiology. The Centre is working with many prestigious research agencies, including, DBT, UGC, Gates Foundation, ICAR, and ICMR in projects on Zoonoses, Food Safety and Environmental Health. The Centre has many past and ongoing collaboration(s) with reputed foreign institutes like Royal Veterinary College, London; University of Sydney, Australia; University of Saskatchewan, Canada. There are also active ongoing collaborations with medical colleges and hospital(s) to generate evidence-based data for endemic zoonoses and food safety-related issues. The Centre is associated with epidemiological research and awareness drives on many important zoonoses, including brucellosis, tuberculosis, rabies, cysticercosis, hydatidosis, food safety organisms, environment contaminants etc. The Centre for One Health also offers a one-year Post-graduate Diploma program in ‘One Health’ for capacity building amongst the professional(s) of various health sector(s).

College of Dairy Science and Technology, Ludhiana

The College of Dairy Science and Technology was established in the year 2008 at Ludhiana as one of the constituent colleges of the Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana. The major objective of the college is to produce trained human resources through its undergraduate and postgraduate programmes to meet the technical manpower requirements of dairy and food processing industries, government departments and R&D organizations. Development of new technologies in the field of milk processing and dairy products development as well as their transfer to end users is another important objective of the college. Presently, the college is offering a 4-year programme in B. Tech. (Dairy Technology) and a 2-year programme in M. Tech. (Dairy Technology, Dairy Engineering, Dairy Microbiology, Dairy Chemistry) along with M. Sc. (Dairy Economics). The courses offered at the college ensure the overall development of students as highly professional dairy specialists through modern education, research and training in dairy science and technology.

Student intake capacity

Programme	Available seats
B.Tech. (Dairy Technology) (4 years)	34 - for residents of Punjab State and Union Territory of Chandigarh
	06 - Nominees of the ICAR
	03 - Self Financed seats
	02 - NRI candidates
	05- - Candidates from other states 01 – Kashmiri migrants
M.Tech. (Dairy Technology, Dairy Engineering, Dairy Microbiology and Dairy Chemistry)	10 - For residents of Punjab State and Chandigarh 05 - Nominees of the ICAR
M.Sc. Agricultural Economics (Animal Husbandry)	02- For residents of Punjab State and Chandigarh 01- Nominees of the ICAR
Ph.D. (Dairy Technology, Dairy Engineering, Dairy Microbiology)	04- For residents of Punjab State and Chandigarh 03- Nominees of the ICAR
Ph.D. Agricultural Economics (Animal Husbandry)	01- For residents of Punjab State and Chandigarh 01- Nominee of the ICAR

College of Fisheries, Ludhiana

College of Fisheries was established in April 2008. The college was started to develop qualified human resources in fisheries, carry out basic, applied and adaptive research for higher fish productivity and disseminate the developed technologies to farmers and entrepreneurs for commercial adoption. The college is well equipped with both laboratories and farm facilities to carry out teaching, research and extension activities efficiently. The college offers the following programmes

Student intake capacity

Programme	Available seats
B.F.Sc. (4 years)	30-For residents of Punjab and Chandigarh 05 - Nominees of the ICAR 01- Self-financed seats 01 - NRI seats 10 - candidates from other states 01 - Kashmiri Migrants
M.F.Sc. (Aquaculture, Fisheries Resource Management, Aquatic Environment Management, Aquatic Environment Management)	11 - For Residents of Punjab and Chandigarh 05- Nominees of the ICAR
Ph.D. (Aquaculture, Fisheries Resource Management)	06- For Residents of Punjab and Chandigarh 03 - Nominees of the ICAR

Since its establishment in 2008, the college has registered commendable academic growth and has made significant contributions to the development of the fisheries sector of the state through an efficient 'Lab to Land' extension programme.

One-year Diploma: In Inland Fisheries is offered to the sponsored in-service candidates of the State Fisheries Department.

Certificate Courses: Further College of Fisheries provides certificate courses in the following areas:

Name of Certificate Course	No. of seats	Eligibility Qualifications*	Course Duration
CC in Fish Hatchery Management	05	Graduate in any Science Discipline	6 Months
CC in Aquarium Sciences	05	Graduate in any Science Discipline	6 Months
CC in Fish Processing Technology	05	Graduate in any Science Discipline	6 Months
CC in Aqua- Clinics	05	Graduate in any Science Discipline	6 Months

College of Animal Biotechnology, Ludhiana

The Department of Animal Biotechnology was established in February 2008 under the aegis of the Postgraduate Institute of Veterinary Education and Research. In view of the progress made by the department, and the opportunities available in biotechnology, the university established the School of Animal Biotechnology in September 2010 which was upgraded to the College of Animal Biotechnology in the year 2019 with the mandate to produce qualified human resources in various facets of animal biotechnology, integrate and strengthen research in different areas of molecular biology and biotechnology to improve livestock productivity and health.

Presently the college is offering B. Tech. (Biotechnology), M.V.Sc./ M.Sc. (Animal Biotechnology) and Ph.D. (Animal Biotechnology). The M.V.Sc./M.Sc. and Ph.D. programs in Animal Biotechnology follow the course curriculum as recommended by the Indian Council of Agricultural Research for the Animal Biotechnology group.

Student intake capacity

Programme	Available seats
B. Tech. (Biotechnology)	25 - for residents of Punjab State and Union Territory of Chandigarh 02 – NRI seats 05 - Residents from other states 01 – Kashmiri migrants
M.V.Sc./M.Sc. (2 years) Animal Biotechnology (for veterinarians)/ Biotechnology (for non-veterinarians)	02 - for veterinary graduates 04 - Nominee of the ICAR 10- for non-veterinarians 10 – under the DBT postgraduate teaching program
Ph.D. (3 years)	04 - Preference to candidates with master's in Veterinary/ Animal Biotechnology 02 - Nominated by ICAR

Veterinary Polytechnic, Kaljharani (Bathinda)

The university established a Veterinary Polytechnic at Kaljharani, Bathinda in the year 2010 to impart a Diploma in Veterinary Science & Animal Health Technology to produce trained supporting manpower capable of handling livestock health and production. The diploma has been designed for the training of Veterinary Pharmacists to support and complement Veterinary Practitioners in a better way, to provide better care and guided treatment to animals within Veterinary hospitals, Veterinary colleges, Research institutes, etc.

Student intake capacity

Programme	Available seats
Diploma in Veterinary Science & Animal Health Technology (2 years)	80-For residents of Punjab State and Chandigarh 02-For residents of Kaljharani, Bathinda

Placement Cell

The Placement Cell of the university acts as a liaison office between the students and the recruiting agencies. The placement cell's role begins with organizing students' resumes and offering technical guidance tailored to their interests and talents, helping them choose their career paths. The main objectives of the Placement Cell include:

- To create a database of the probable recruiters including industries and different organizations.
- To act as a liaison unit for plugging the gap between industry and fresh professionals to

speed up the process of recruitment.

- To organize informative seminars to make the students aware of the opportunities abroad and for their preparation for the qualifying examinations.
- To create a database of the alumni who have achieved a landmark in the society.

The Placement Cell of the university is putting efforts for the on-campus and off-campus placement of the university students. During the period under report, various vacancies advertised by recruiting agencies were circulated among the eligible candidates using the university website, email and social media. The placement committee also organized placement awareness camps during Pashu Palan Mela of the university. The placement cell also provided placement data to the Directorate, Employment Generation and Training, Punjab from time to time.

During the period under report, the placement cell organized campus placements for undergraduate and postgraduate students of the College of Veterinary Science and College of Dairy Science and Technology. The recruiting agencies that participated were Milkfed, Verka, and Nestle, India. In addition, various vacancies advertised by recruiting agencies were circulated among the eligible candidates using the university website and social media. The details of placements of passed-out students during 2020-21 are as below:



S. No	Name of the University/ College/Faculty	Location & District	Number of students passed out	CAU/ SAU	Central Govt.	State Govt./ Corporate	PDF/ Foreign	Pvt/ Others*
1	College of Veterinary Sciences	Ludhiana	173	13	02	46	15	97
2	College of Fisheries	Ludhiana	21	02	--	04	--	04
3	College of Dairy Science & Technology	Ludhiana	33	--	--	--	--	24 [#]
4	College of Animal Biotechnology	Ludhiana	09 (04Ph.D and 05 M. Sc)	02	--	--	--	07 (01 pursuing Ph.D and 06 preparing)
5	Veterinary Polytechnic	Kaljharani, Bathinda	92	--	--	--	--	42
	Total		328	17	02	50	15	174

*Includes students joined higher studies or preparing for higher studies, joined private institutions and self-employment or providing consultancy services

(13 (Verka), 4 Nestle, 1 Amul, 1 IDBI bank, Total= 19. Along with it 05 students are taking higher education (1 NDRI, 4 GADVASU), The Remaining students are preparing for competitive exams.

IPR cell

The IPR Cell is the entity within GADVASU that provides the day-to-day management of the University-owned intellectual property and implementation of these regulations with tasks such as but not limited to receiving and maintaining disclosure of invention files, interfacing with the external agency in the patent application process, and encouraging the faculty to file disclosures of invention. Additionally, the IPR Cell is the entity primarily responsible for technology transfer tasks, such as negotiating license agreements with prospective commercialization partners. The objectives of the IPR Cell are:

- To access and facilitate the inventive work for the creation of intellectual property.
- To generate awareness among the faculty, students, creator/group of creators and societies regarding the value of their ideas/IPK/Genetic wealth.
- To help such group/groups for submission of proposals for creation and protection of IP.

Nodal Cell, ICAR

The university has established a Nodal Cell to coordinate various activities of the Education Division of the ICAR and the university under the scheme “Strengthening and Development of Higher Education in India.” The ICAR nodal cell functions as a Single Window System and provides all the requisite information to the Agricultural Education Division of ICAR. The Dean, Postgraduate Studies, Dr. Sanjeev Kumar Uppal has been designated as the Nodal Officer.

Human Resource Management Centre

The Human Resource Management Centre was established in 2021. The Human Resource Management Centre at Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) came into existence after the approval of the recommendations of the academic council made in the 61st meeting during the 49th meeting of the Board of Management held on 19.02.2021. The main motive of setting up of HRM centre is to process with accelerated emphasis on harnessing various activities with greater zeal embarking upon both Managerial and Operational activities

Teaching

Admissions in undergraduate and postgraduate programmes in academic session 2020-21

Programme	Boys	Girls	Total
B.V.Sc. & A.H. (COVS, Ludhiana)	54	49	103
B.V.Sc. & A.H. (COVS, Rampura Phul)	41	39	80
B.F.Sc.	09	12	21
B.Tech.(Dairy Tech)	30	12	42
B. Tech. (Biotechnology)	07	09	16
M.V.Sc./M.F.Sc./M.Sc./M. Tech.	66	66	132
Ph.D.	17	28	45
Diploma in Veterinary Science & Animal Health Technology (Veterinary Polytechnic, Kaljharani)	82	02	84
Any other Degree/Diploma	16	07	23
Total	322	224	546

Passed out students in academic session 2020-21

Programme	Boys	Girls	Total
B.V.Sc. & A.H. (COVS, Ludhiana)	62	25	87
B.F.Sc.	06	06	12
B.Tech.(Dairy Tech)	25	13	38
B. Tech. (Biotechnology)	11	08	19
M.V.Sc./M.F.Sc./M.Sc./M. Tech.	55	44	99
Ph.D.	07	09	16
Diploma in Veterinary Science & Animal Health Technology (Veterinary Polytechnic, Kaljharani)	87	02	89
Total	253	107	360

College of Veterinary Science, Ludhiana

Academics and Teaching:

The total number of students admitted in the College of Veterinary Science for the session 2020-21 was 242 which included 103 in B.V.Sc. and A.H., 103 in M.V.Sc./ M.Sc. and 36 in Ph.D. programme. During the period under report, 174 students passed out from the college which included 87 undergraduate students, 79 M.V.Sc. students and 08 Ph. D. scholars.

Courses Taught

The students graduating for B.V.Sc. & A.H. programme were offered courses as per Minimum Standards of Veterinary Education Degree Course (B.V.Sc & A.H.) Regulations 2016 of Veterinary Council of India. Postgraduate students were offered courses in their respective major, minor and supporting fields as approved by the Dean, Post Graduate Studies.

Scholarships / Fellowships

Scholarship	Undergraduate Students	Postgraduate Students	Doctorate Students
University merit scholarship	50	36	19
National Talent Scholarship	08	25	-
Dr G S Khush Foundation Scholarship	08	-	-
ICAR- Junior Research Fellowship	-	01	-
ICAR-Senior Research Fellowship	-	-	03
ICMR-JRF	-	-	02
India Afghanistan fellowship	-	02	
India- Africa Fellowship	-	-	02

Internship

- A batch of 96 students of B.V.Sc. & A.H. (2015 Batch) completed their compulsory six-month internship programme successfully. These students were trained in procuring and interpretation of clinical samples for diagnosis of animal diseases, hands-on-training on farm management, nutrition and economics of livestock, hands-on-training on handling, physical examination, diagnosis and treatment of animal diseases, learning of routine diagnostic procedures like abdominal catheterization, X-ray, USG, C-section, FNAC etc.
- Another batch of 85 Students (2016 Batch) had registered for one year internship programme in March 2021.

Teaching Veterinary Clinical Complex

The college has a well-established Teaching Veterinary Clinical Complex. The complex has a Primary Unit and a Specialized Unit to treat large animals. New Multispecialty Veterinary Hospital has been established for small animals with state-of-the-art facilities. The hospital has the facility for indoor wards for small and large animals and separate rooms for the attendants. The hospital is being supported by a clinical diagnostic laboratory and radiographic unit.

The number of clinical cases registered for various treatments and clinical samples examined in the Hospital during the fiscal year under study have been depicted in the following table

Clinical Cases Registered		Clinical Samples Examined	
Small animals	19832	Pathology	9509
Large animals	5718	Parasitology	2857
Total	25550	Biochemistry	4601
		Total	16967

All India Study Tour: Due to the prevailing national lockdown owing to the COVID-19 pandemic, no study tour was possible. Accordingly, the students were exempted from the study tour.

Thesis/Dissertation awarded to Postgraduate students (2020-21)

	College of Veterinary Science		College of Fisheries		College of Dairy Science & Technology		College of Animal Biotechnology	
Degree	Ph.D	M.V.Sc	Ph.D	M.Sc	Ph.D	M.Tech	Ph.D	M.Sc/M.Tech
No.	08	79	02	09	-	04	04	05
Total	87		11		04		09	

Theses / Dissertations Details:

S. No.	Year	Name of the student (Major Advisor)	Name of the Department	Thesis/Dissertation Title
College of Veterinary Science, Ph. D.				
1.	2020	Dinesh Kumar (Dr. N. Mehta)	Livestock Products Technology	Development of nanoemulsion loaded composite biodegradable films for the extension of storage stability of fiber enriched pork patties.
2.	2020	Shweta Raghav (Dr. V. Uppal)	Veterinary Anatomy	A comparative study on skin and hair of domestic animals.
3.	2020	Losa Rose F (Dr. T. S. Rai)	Veterinary Microbiology	Studies on the protective potential of outer membrane vesicles of <i>Brucella abortus</i> in mice.
4.	2020	Najeeb Ul Tarfain (Dr. N. S. Sharma)	Veterinary Microbiology	Cloning and expression of putative immunogenic gene(s) of <i>Brucella abortus</i> as potential diagnostics.
5.	2020	Harneet Kour (Dr. S. Chhabra)	Veterinary Medicine	Studies on canine endocrinopathies with special reference to diabetes mellitus.
6.	2021	Tassew Mohammed Ali (Dr. R. Narang)	Animal Genetics & Breeding	Genetic and phenotypic evaluation of crossbred dairy cattle for performance traits with associated meteorological factors.
7.	2021	Munish Kumar Bedi (Dr. P. Singh)	Veterinary Gynaecology & Obstetrics	Evaluation of graphene oxide as a cryoprotectant for freezing of bovine semen.
8.	2021	Sheetal Dogra (Dr. S.S. Randhawa)	Veterinary Medicine	Diagnostic and therapeutic studies on chronic gastrointestinal disorders in dogs
College of Veterinary Science, M.V. Sc.				
9.	2020	Varun Bhardwaj (Dr. J. S. Lamba)	Animal Nutrition	Nutritional evaluation of <i>Moringa oleifera</i> as an alternate protein source in broilers.
10.	2020	Ankita (Dr. J. S. Hundal)	Animal Nutrition	Effect of supplementing <i>Embllica officinalis</i> (Amla) pomace in total

				mixed ration (TMR) on the performance of lactating buffaloes.
11.	2020	Jujhar Singh Sidhu (Dr. R. S. Grewal)	Animal Nutrition	"Effect of conjugated linoleic acid (CLA) supplementation during transition period on the performance of crossbred cows.
12.	2020	Lakhvir Singh (Dr. U. Singh)	Animal Nutrition	"Nutritional evaluation of rice gluten meal and rice distillers dried grains with solubles with or without enzymes for broilers.
13.	2020	Charandeep Singh (Dr. A. P. S. Sethi)	Animal Nutrition	Development and evaluation of dog food incorporated with vegetable and fruit waste.
14.	2020	Prabhjinder Singh (Dr. J. S. Hundal)	Animal Nutrition	Effect of supplementing spent <i>Aloe vera</i> in total mixed ration (TMR) on the performance of lactating cows.
15.	2020	Amanjot Singh Dhaliwal (Dr. R. S. Grewal)	Animal Nutrition	A study on the feeding of prilled fat on the performance of lactating crossbred cows.
16.	2020	Amardeep Kaur (Dr. A. P. S. Sethi)	Animal Nutrition	"Development and Evaluation of dog food using dried distillers grains with soluble and starch industry byproducts."
17.	2020	Manpreet (Dr. J. Kaur)	Animal Nutrition	Nutritional evaluation of rice gluten meal as an alternate protein source in the diet of goats.
18.	2020	Mohneet Kaur Sadhal (Dr. U. Singh)	Animal Nutrition	Development and evaluation of dog food using soy and pulses byproducts."
19.	2020	Ajinkya R Chakor (Dr. J. Lamba)	Animal Nutrition	Effect of supplementing dried citrus juice pulp in total mixed ration on the performance of lactating buffaloes.
20.	2020	Himanshu Mehta (Dr. N. Kashyap)	Animal Genetics & Breeding	Study on abnormal lactation length in crossbred cattle.
21.	2020	Kadimetla Sheha (Dr. S. K. Dash)	Animal Genetics & Breeding	Association of insulin-like growth factor-1 expression with growth parameters in IBL-80 and native cross poultry varieties under heat stress.
22.	2020	Rohit Gupta (Dr. S. K. Sahoo)	Animal Genetics & Breeding	Modeling lactation curve for genetic evaluation of crossbred cattle.
23.	2020	Karman Kour (Dr. G. Kaur)	Veterinary Microbiology	A study on <i>in-vitro</i> cross-neutralisation assay for indentifying antigenic relationship of Canine Parvovirus types.

24.	2020	Arshdeep Kaur (Dr. A. K. Arora)	Veterinary Microbiology	"Studies on the prevalence of methicillin resistant <i>Staphylococcus aureus</i> in pet animals.
25.	2020	Shikha Chaudhary (Dr. T. S. Rai)	Veterinary Microbiology	"Studies on antimicrobial resistance genes in <i>Klebsiella</i> species from different sources.
26.	2020	Sumeet Singh (Dr. D. Narang)	Veterinary Microbiology	Studies on the evaluation of "Defined skin test antigens" in diagnosis of bovine tuberculosis in buffaloes.
27.	2020	Arpit (Dr. M. Chandra)	Veterinary Microbiology	.Studies on antimicrobial resistance genes in <i>Escherichia coli</i> from poultry.
28.	2020	Eshan Kaushal M (Dr. N. S. Sharma)	Veterinary Microbiology	Studies on prevalence risk factors and antibiotic resistance of bacteria isolated from diarrhoeic dogs with special emphasis on <i>Escherichia coli</i> .
29.	2020	Parikshit M (Dr. G. Kaur)	Veterinary Microbiology	Isolation and molecular characterization of Canine Parvovirus.
30.	2021	Harnoor Kaur (Dr. G. Filia)	Veterinary Microbiology	Diagnosis of bovine tuberculosis in cattle and buffaloes using molecular and immunological approaches.
31.	2020	Gurpal Singh (Dr. V.Sangwan)	Vety. Surgery & Radiology	Clinical study on the outcome of colic surgery in equine.
32.	2020	Devinder Pal Singh (Dr. A. Kumar)	Vety. Surgery & Radiology	Clinical study on the use of diode LASER for the excision of superficial growths in canine.
33.	2020	Sehajbir Singh Randhawa (Dr. P.Verma)	Vety. Surgery & Radiology	Clinical studies on endoscopic evaluation of upper gastrointestinal tract disorders in canine.
34.	2020	Sunil Kumar (Dr. A. Anand)	Vety. Surgery & Radiology	Study on the access to pulp cavity in incisors, canine and carnassials teeth in dogs.
35.	2020	Amandeep Kaur (Dr. Tarunbir Singh)	Vety. Surgery & Radiology	Studies on the functional and radiological assessment of canine tibia fracture fixation by titanium-LCP system.
36.	2020	Jasleen Kaur (Dr. N. Singh)	Vety. Surgery & Radiology	To study the reconstruction of large skin defects following tumour resection by using subdermal skin flaps in dogs.
37.	2020	Kavitha E (Dr. N. Singh)	Vety. Surgery & Radiology	Studies on different fluid therapy protocols after gastrointestinal tract surgeries in dogs with special reference to echocardiography.
38.	2020	Ravi Singh	Vety. Surgery	Clinical studies on thoracic

		(Dr. J. Mohindroo)	& Radiology	radiography in dogs with special reference to fabrication of animal positioners.
39.	2020	Vinod Kumar Shukla (Dr. A. Kumar)	Vety. Surgery & Radiology	Evaluation of ultrasonography as diagnostic and prognostic modality in cows and buffaloes suffering from caecal dilatation.
40.	2020	Amarbeer Singh Aulakh (Dr. P. Singh)	Veterinary Gynaecology & Obstetrics	Effect of altrenogest feeding vis-à-vis ovsynch regimen in prepubertal buffalo heifers.
41.	2020	Arundeeep Singh (Dr. S.S. Dhindsa)	Veterinary Gynaecology & Obstetrics	Hormonal intervention to augment postpartum fertility in dystocia affected buffaloes.
42.	2020	Suresh Kumar Pothireddy (Dr. M. Honparkhe)	Veterinary Gynaecology & Obstetrics	Fertility response following estradoublesynch and progesterone based ovsynch protocols in delayed pubertal buffalo heifers.
43.	2020	Harjap Kaur (Dr. S. P. S.Ghuman)	Veterinary Gynaecology & Obstetrics	Effectiveness of melatonin treatment to improve post-partum fertility of lactating buffaloes.
44.	2020	Paramveer Singh Sangha (Dr. M. Honparkhe)	Veterinary Gynaecology & Obstetrics	Studies on pesticide residues in relation to endocrine profile and semen quality in crossbred breeding bulls.
45.	2020	Deepak Sharma (Dr. P. Singh)	Veterinary Gynaecology & Obstetrics	Effect of ice recrystallization inhibitors on post thaw semen quality in breeding buffalo bulls.
46.	2020	Mehak Preet Kaur (Dr. N. Singh)	Veterinary Gynaecology & Obstetrics	Distribution of lipid droplets and <i>in vitro</i> maturation of oocytes in sahiwal cows.
47.	2020	Sukhjinder Kaur (Dr. A. K. Singh)	Veterinary Gynaecology & Obstetrics	Effect of flaxseed supplementation on reproductive performance of sows.
48.	2020	Padma M Leela (Dr. B. K. Bansal)	Veterinary Medicine	Influence of physiological variables on electrical conductivity of buffalo milk and its reliability in mastitis detection.
49.	2020	Gourav Kamboj (Dr. S. Chhabra)	Veterinary Medicine	Diagnostic and therapeutic approaches in recumbent dairy cattle and buffaloes.
50.	2020	Lakhan Sachdeva (Dr. D. K. Gupta)	Veterinary Medicine	"Study on comparative efficacy of alternative medicines in bovine mastitis
51.	2020	Meenu Bala (Dr. S. Turkar)	Veterinary Medicine	Study on effect of obesity on blood pressure in dogs.
52.	2020	Surbhi Gupta (Dr. S. Chhabra)	Veterinary Medicine	"Studies on prevalence, diagnosis and therapeutic management of acral lick dermatitis in dogs."

53.	2021	Abdul Hamid Sadaqat (Dr. C. S.Randhawa)	Veterinary Medicine	Diagnostic and Therapeutic studies on idiopathic gastrointestinal stasis in dairy animals.
54.	2021	Puneet Singh (Dr. S. S.Randhawa)	Veterinary Medicine	Prevalence of foot lameness and its relationship with udder health in sahiwal dairy cows.
55.	2021	Harshla (Dr. S. T. Singh)	Veterinary Medicine	Efficacy of antepartum supplementation of <i>Tinospora sinensis</i> (Giloy) stem powder on transition period health and metabolism in buffaloes and passive immune transfer, health and growth in calves.
56.	2020	Debolina Dattaray (Dr. S. K. Sharma)	Veterinary Pharmacology & Toxicology	Evaluation of mancozeb induced toxicity and its amelioration by <i>Tridaxprocumbens</i> in rats.
57.	2020	Shahwej Beg (Dr. M. K. Lonare)	Veterinary Pharmacology & Toxicology	<i>In vivo</i> toxicological evaluation of interactive effect of carbendazim and imidacloprid.
58.	2020	Sunita Kumawat (Dr. V. K. Dumka)	Veterinary Pharmacology & Toxicology	Evaluation of mancozeb induced subacute oral toxicity in rats.
59.	2020	Amritpal Singh (Dr. S.P.S. Saini)	Veterinary Pharmacology & Toxicology	Preparation, characterization and pharmacodynamic studies of cefovecin nanoparticles
60.	2020	Sumeet Kumar (Dr. R. Kaur)	Veterinary Pharmacology & Toxicology	<i>In vitro</i> cytotoxic and genotoxic evaluation of mancozeb and its amelioration with <i>Tridaxprocumbens</i> .
61.	2020	Bashetti Prafullata (Dr. N. D. Singh)	Veterinary Pathology	Studies on effect of <i>p</i> -coumaric acid on acute lung injury induced by lipopolysaccharide in mice.
62.	2020	Priyanka (Dr. C. K. Singh)	Veterinary Pathology	Study of Plastination for preservation and interpretation of pathological lesions in bovine tissues.
63.	2020	Raksha Suresh (Dr. A. P. S. Brar)	Veterinary Pathology	Histopathological and immunohistochemical studies on bovine calf diarrhoea
64.	2020	Ravneet Kaur Sran (Dr. V. Mahajan)	Veterinary Pathology	Patho-Epidemiological studies on important reproductive tract affections of small ruminants.
65.	2020	Sukhjinder Singh (Dr. S.Deshmukh)	Veterinary Pathology	Studies on toll like receptor 4 (TLR4) expression in chicken respiratory tract following experimental infection with <i>avibacterium paragallinarum</i> sero

				vars A, B and C.
66.	2020	Kriti Singh (Dr. S. Kaur)	Vety. Public Health & Epidemiology	Characterization of <i>Listeria spp.</i> from poultry meat and retail meat shop environment.
67.	2020	Hanul Thukral (Dr. P. Dhaka)	Vety. Public Health & Epidemiology	Epidemiological study on aflatoxin M1 in bovine milk samples from Punjab and its possible association with rumen liquor parameters.
68.	2020	Ravneet Kaur Walia (Dr. S. Kaur)	Vety. Public Health & Epidemiology	Occurrence of <i>Listeria Spp.</i> in ready to eat meat products and suspected human abortion cases.
69.	2020	Simranjot Kaur (Dr. J. S. Bedi)	Vety. Public Health & Epidemiology	Aflatoxin M1 in market milk and milk products: human exposure assessment and risk characterization.
70.	2020	Rahul Dev (Dr. R. Singh)	Vety. Public Health & Epidemiology	Studies on risk of listeriosis from carabeef and slaughter house environment.
71.	2020	Manvi (Dr. S. Kaur)	Vety. Public Health & Epidemiology	Prevalance and antimicrobial resistance profiling of <i>Staphylococcus aureus</i> isolated from pork samples in Punjab.
72.	2020	Navkiran Kaur (Dr. H. K. Verma)	Vety. & Animal Hus. Ext. Edu.	Management practices of Nili Ravi buffalo farming in different agroclimatic zones of Punjab.
73.	2020	Aman Deep Singh (Dr. R. Kasrija)	Vety. & Animal Hus. Ext. Edu.	Economic viability and prospects of stall-fed vis-à-vis extensive goat production in Punjab.
74.	2020	Umesh Kumar Choudhary (Dr. J. Singh)	Vety. & Animal Hus. Ext. Edu.	Management practices of sahiwal cattle followed by farmers in Punjab.
75.	2020	Paramveer Singh Sallan (Dr. P. Singh)	Vety. & Animal Hus. Ext. Edu.	A study on manufacturing and use of pellet feed in dairy rations.
76.	2020	Prabal Gautam (Dr. J. Singh)	Vety. & Animal Hus. Ext. Edu.	Role of dairy farming in the livelihood security of marginal and small farmers of Punjab.
77.	2020	Ravneet Kaur (Dr. S. K. Kansal)	Vety. & Animal Hus. Ext. Edu.	Study on information sources and their utilization pattern among dairy farmers of Punjab.
78.	2020	Tegdeep Singh (Dr. Y. S. Jadoun)	Vety. & Animal Hus. Ext. Edu.	A study on entrepreneurial behavior among dairy farmers of Punjab.
79.	2020	Kanwar Pal (Dr. A. Sharma)	Livestock Production Management	Resource use efficiency and welfare of grower-finisher pigs under different heat stress mitigation strategies.
80.	2020	Vikram Pachisia	Livestock	Supplementation of bhumi amla

		(Dr. R.K. Gupta)	Production Management	<i>(Phyllanthus Niruri L.)</i> as an alternative to antibiotics in broiler production.
81.	2020	Alice Moudgil (Dr. D. S. Malik)	Livestock Production Management	Estimation of labour and water utilisation during different seasons at organized goat farm.
82.	2020	Bipanpreet Singh (Dr. D. Kaur)	Livestock Production Management	Feasibility assessment of semen preservation of beetal buck reared under stall-fed conditions of Punjab.
83.	2020	Daud Masih (Dr. W. R. Vishwanath)	Livestock Products Technology	Development of functional pasta incorporated with chicken meat and microencapsulated docosahexaenoic acid powder.
84.	2020	Apeksha Jangir (Dr. O. P. Malav)	Livestock Products Technology	Development of extended shelf life low-fat functional pork nuggets with bacteriocins.
85.	2020	Amandeep Rajan (Dr. N. Mehta)	Livestock Products Technology	Studies on development and quality evaluation of palmarosa essential oil nanoemulsion for storage stability of pork nuggets.
86.	2020	Manminder Kaur (Dr. N. Mehta)	Livestock Products Technology	Development of blended essential oil nanoemulsion for storage stability of pork patties.
87.	2020	Dilmanpreet Sandhu (Dr. A. Gupta)	Veterinary Anatomy	Comparative anatomical and echocardiographic studies on heart of buffalo, sheep and goat.

College of Dairy Science and Technology

During the session 2020-21, the total numbers of students admitted in various programmes were 54 that included 42 in B. Tech. (Dairy Technology), 11 in M. Tech. (Dairy Technology) and 01 in Ph.D. Among all the students, 37 were male while 17 were female. During this period 38 students successfully completed their graduation and five students did their post graduation.

Courses Taught

The undergraduate students were offered courses as per the recommendations of 5th Deans' Committee constituted by ICAR, New Delhi. The B. Tech. students were offered 137 credits of teaching courses and 35 credits of Practical training/ Field work. Postgraduate students were offered courses in their respective major, minor and supporting fields as approved by the Dean, Post Graduate Studies.

Scholarships/Fellowships

Scholarship	Undergraduate Students	Postgraduate Students	Doctorate Students
University merit scholarship		06	
National Talent Scholarship	02	06	-
Dr G S Khush Foundation Scholarship	05	-	-
Post Matric Scholarship	14	01	-
Merit-cum-Means Scholarship for Professional and Technical	05	-	-
Inspire Fellowship	-	-	01
Central Sector Scheme of Scholarship for college and University students.	-	-	01

All India Study Tour: Due to prevailing national lockdown owing to Covid-19 pandemic, no study tour was possible. Accordingly, the students were exempted

Theses / Dissertations

College of Dairy Science & Technology, Master's				
S. No	Year	Name of the student (Major Advisor)	Name of the Department	Thesis/Dissertation Title
1	2020	Simran Sharma (Dr. V. Singh)	Agricultural Economics(AH)	An economic evaluation of production and marketing of goat farming in Punjab.
2	2020	Jagnoor Singh (Dr. H. Panwar)	Dairy Microbiology	Evaluation of anti-oxidative potential of candidate probiotic <i>Lactobacillus</i> strains of indigenous origin.
3	2020	Navjot Kaur (Dr. I.P. Kaur)	Agricultural Economics(AH)	Economic and marketing status of pig farming in Punjab.
4	2020	Nivedita (Dr. I.P. Kaur)	Agricultural Economics(AH)	Economics of rearing buffaloes in Punjab state with especial emphasis on male calves.

College of Fisheries

Academics and Teaching:

During the academic session 2020-21, twenty nine students were enrolled to the degree programmes included twenty one students in B.F.Sc., five students in M.F.Sc. and three students in Ph.D. During this period twelve undergraduate students and eleven postgraduate students were successfully attained their degrees.

Courses Taught

The undergraduate students were offered courses as per the recommendations of 5th Deans Committee constituted by ICAR, New Delhi. A total of 70 courses were offered to B. F. Sc.

students. Postgraduate students were offered courses in their respective major, minor and supporting fields as approved by the Dean, Post Graduate Studies.

Scholarships / Fellowships

Scholarship	Undergraduate Students	Postgraduate Students	Doctorate Students
University merit scholarship	13	06	01
National Talent Scholarship	04	02	-
Dr G S Khush Foundation Scholarship	02	-	-
Mata Ind Kaur Award	02	-	-

All India Study Tour: Due to prevailing national lockdown owing to Covid-19 pandemic, no study tour was possible. Accordingly, the students were exempted

Theses / Dissertation

College of Fisheries, Ph.D.			
Year	Name of the student (Major Advisor)	Name of the Department	Thesis/Dissertation Title
2020	Sarabjeet Kaur (Dr. P. Singh)	Fisheries Resource Management	Ecological studies on river Sutlej with respect to physico-chemical parameters, plankton diversity and heavy metal concentrations along its course in Punjab."
2020	Injeela Khan (Dr. V.I. Kaur)	Aquaculture	Growth performance and meat quality of Pangas Catfish (<i>Pangasianodon hypophthalmus</i>) fed on fish silage and linseed oil supplemented diets.
College of Fisheries, Master's			
2020	Amit (Dr. A. Pandey)	Aquaculture	Effect of dietary supplementation of probiotic bacteria (<i>Lactobacillus plantarum</i>) on survival, growth and health status of common carp, <i>Cyprinus carpio</i> (L.).
2020	Mohd Umar Arshad (Dr. A. Pandey)	Aquaculture	Effect of ginger (<i>Zingiber officinale</i>) supplemented diets on growth, health status flesh quality of common carp, <i>Cyprinus carpio</i> (L.).
2020	Supriya Kamboj (Dr. S. N. Datta)	Fisheries Resource Management	Ecological studies of selected stretches of river beas in Punjab.

2020	Nandaraj Yumnam (Dr. G. Tewari)	Fisheries Resource Management	Ecological health assessment of river Beas at different stretches in Punjab.
2020	Amandeep Singh (Dr. Shanathanagouda A.H.)	Fisheries Resource Management	Investigation of the effect of pesticides Malathion and 2, 4-Dichlorophenoxyacetic acid on common carp (<i>Cyprinus carpio</i> L., 1758)."
2020	Amarjot Singh (Dr. S. O. Khairnar)	Aquaculture	Efficacy of moringa leaf powder supplemented diets on growth and physiological responses of Nile tilapia (Gift) <i>Oreochromis niloticus</i> .
2020	Mohnit Singh (Dr. S. O. Khairnar)	Aquaculture	Evaluation of moringa leaf powder as a dietary supplement for enhancing growth and reproductive potential in black molly, <i>Poeciliasphe nops</i> .
2021	Basmeet Kaur (Dr. Naveen Kumar B.T.)	Aquatic Environment Management	Identification of novel vaccine candidates in the <i>Aeromonashydrophila</i> <i>biofilm</i> antigens.
2021	Shiwam Dubey (Dr. Anuj Tyagi)	Aquatic Environment Management	Isolation and characterization of lytic phages to reduce the risk of vibrio parahaemolyticus infection in aquaculture environment.

College of Animal Biotechnology

Academics and Teaching:

Total number of students enrolled for the session 2020-21 was 31 which included 16 students in B. Tech (Biotechnology), 10 students in M.V.Sc. / M.Sc. and 5 in Ph.D. programmes. During this academic year under consideration 19 students graduated in B. Tech while 6 students each successfully completed their Master's and doctorate degree. A total of 62 courses were offered during the year which included 50 courses for undergraduates, eight courses for postgraduates and four courses for doctorate students.

Scholarships / Fellowships

Scholarship	Undergraduate Students	Postgraduate Students	Doctorate Students
University merit scholarship	14	03	01
DBT-Postgraduate Teaching Programme Scholarship	-	03	-

Theses / Dissertations

College of Animal Biotechnology, Ph.D.			
Year	Name of the student (Major Advisor)	Name of the Department	Thesis/Dissertation Title
2020	Gurvinder Kaur (Dr. Ramneek)	Biotechnology	Pulmonary expression of key genes associated with oxidative stress in response to 2, 4-dichlorophenoxyacetic acid with and without LPS exposure in mice.
2020	Rajveer Kaur (Dr. R. S. Sethi)	Biotechnology	Pulmonary expression of key genes associated with oxidative stress in response to fipronil with and without LPS.
2021	Barinder Singh (Dr. D. Deka)	Biotechnology	Molecular characterization of canine distemper virus field isolates and establishment of a CDV rescue system.
2021	Ekts Bhardwaj (Dr. Dipak Deka)	Biotechnology	Development of an antigen capture enzyme-linked immunosorbent assay (AC-ELISA) for diagnosis of classical swine fever.
College of Animal Biotechnology, M.V.Sc. / M.Sc			
2020	Cammey (Dr. S. S. Sodhi)	Biotechnology	Differential expression profiling of the myogenic regulatory factor genes in the postnatal <i>longissimus dorsi</i> muscle of indigenous and Large White Yorkshire (LWY) breed of pigs.
2020	Shivangi (Dr. J. S. Arora)	Biotechnology	Study on Polymorphism of GDF9 Gene in Beetal Goats in Punjab.
2021	Aakriti Pathania (Dr. R. S. Cheema)	Biotechnology	Association of lactate dehydrogenase C4 polymorphism with sperm function and energy metabolism in dogs.
2021	Aanchal Sharma (Dr. R. S. Sethi)	Biotechnology	Pulmonary expression of ERBB3, MMP9, RB1 and NF- κ B1 following exposure to cypermethrin in mice.
2021	Himani Taneja (Dr. D.Deka)	Biotechnology	Seroprevalence and evolutionary analysis of <i>Peste des petits ruminants</i> (PPR) virus in Punjab.

College of Veterinary Science, Rampura Phul

It is a newly established, constituent college of GADVASU, Ludhiana, started functioning from October 1, 2019.

Academics and Teaching:

The total number of students admitted in the College of Veterinary Science, Rampura Phul for the session 2020-21 was 80 including 41 boys and 39 girls in B.V.Sc and AH programme.

Courses taught

The students graduating for B.V.Sc. & A.H. programme were offered courses as per Minimum Standards of Veterinary Education Degree Course (B.V.Sc & A.H.) Regulations, 2016 of Veterinary Council of India. To the 1st and 2nd professional of B.V.Sc. & A.H. students, total eight courses of 40 credit hours were offered.

Veterinary Polytechnic Kaljharani, Bathinda

GADVASU established Veterinary Polytechnic & Regional Research and Training Centre (VP & RRTC) at Village Kaljharani, District Bathinda in the year 2010. Veterinary Polytechnic was established to impart education in Diploma in Veterinary Science and Animal Health Technology to support the veterinary services through trained para-veterinary staff. The trainees after completing diploma course become eligible to coordinate and work under the supervision of registered veterinary practitioners to provide better healthcare to animals in Veterinary Hospitals, Veterinary Colleges, Research and Training Institutes, Cooperative Sector and Non-Government Organizations. Majority of pass out students have been appointed in the Department of Animal Husbandry. The remaining are absorbed in Cooperative Sector, GADVASU, Private sector and some Non-Government Organizations.

Academics and Teaching: During the session 2020-21, a total of 84 students (82 boys and 2 girls) admitted in Diploma in Veterinary Science and Animal Health Technology and 89 students (87 boys & 2 girls) were passed out.

Courses Taught : A total 19 course with 47 credit hours of theory and 15 non credit hours of practical training were offered in diploma programme.

Scholarships / Fellowships:

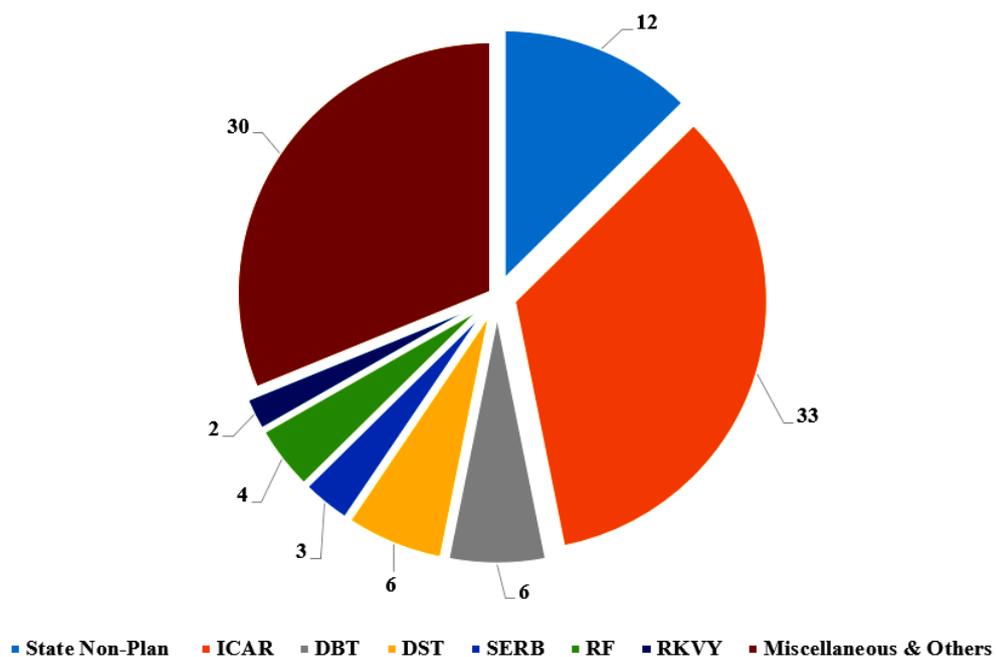
Scholarship	Diploma students
Post Matric Scholarship	30 : SC 02: BC

RESEARCH

Undertaking need-based research on various aspects related to production and health of different species of livestock, poultry and fisheries constitute an integral part of the research mandate of the university. During the year 2020-21, a total of 76 research project proposals were submitted to various funding agencies, like Department of Biotechnology, Department of Science and Technology including SERB, Indian Council of Agricultural Research including NASF & NICRA, Central Council for Research in Ayurvedic Sciences, National Bank for Agriculture and Rural Development and many other state, national and international agencies. During the year 2020-21, a total of 96 research schemes were operational in the university as detailed below:

S. No.	Funding agency	Number
1.	State Non-Plan	12
2.	ICAR	33
3.	DBT	06
4.	DST	06
5.	SERB	03
6.	RF	04
7.	RKVY	02
8.	Miscellaneous & Others	30
TOTAL		96

OPERATIONAL RESEARCH PROJECTS (2020-21)



RESEARCH HIGHLIGHTS

A. College of Veterinary Science

1. Directorate of Livestock Farms

(i) **Cattle Breeding:** An improvement was recorded in all the milk production traits under the Crossbreeding Project for genetic improvement of cattle maintained at the University Dairy Farm. The average 305-day milk yield and peak yield were 4457 kg and 21.95 kg, respectively. The average 305-day milk yield and complete lactation yield of the elite herd being used for production of future cross-bred bulls was 4774.40 kg and 5334.10 kg, respectively. The maximum lactation milk yield of a cross-bred cow at the farm was recorded as 10,373 kg. The average age achieved at first calving in cross-bred cattle was 26.5 months. Four breeding bulls/male calves and 29,085 doses of cross-bred cattle semen (frozen and liquid) were supplied to the Gaushalas, dairy farmers and other dairy development agencies of the state.



**Progeny of elite crossbred animals
produced from nominated mating**



**Progeny of elite crossbred animals
produced from nominated mating**

Cattle-Field Progeny Testing: The Directorate of Livestock Farms, GADVASU, Ludhiana is one of the centres in the country to conduct All India Co-ordinated Research Project (AICRP) on field progeny testing program of cross-bred cattle. The project is running with the collaboration of Central Institute for Research on Cattle, Meerut under aegis of the Indian Council of Agricultural Research (ICAR). A total of 1,62,087 artificial inseminations (AI) have been done using 334 test bulls with an average conception of 44.5 per cent since the inception of the project in the year 1994. A total of 138 villages were covered by the 32 AI centres in Ludhiana district of Punjab under the project. In the year 2020-21, a total of 7579 AI have been done using 25 test bulls, and conception rate was 50.6 per cent. Under the project, 3440 successful calvings were recorded; of which 1719 female progenies were registered in the database for future performance recording. The average first lactation 305-day milk yield of the cross-bred progenies in adopted villages increased from about 3000 kg (in 2006) to 3816 kg (in 2020) by supplying high-quality semen of test bulls (about 26% improvement). The project has resulted in greatly lowering the age at first calving of the cross-bred cattle from 1191 days to 833 days (about 30% improvement since inception). The Field Progeny Testing Project has a major role in changing the scenario of dairy farming in adopted villages in Ludhiana district by providing technical knowhow, germplasm and

motivation to the farmers. The supply of high pedigreed male calves, semen of high genetic potential test bulls and progeny tested bulls to the farmers in adopted villages has helped in improving their economic condition. The improvement in both milk yield as well as age at first calving is highest in the field operational area of GADVASU amongst all the testing centres in the country for cross-bred cattle. Under SC-SP head of the projects, so far around 250 farmers have benefitted.



Animal welfare camp for SC SP beneficiary

(ii) Buffalo Breeding:

(a) Murrah: The genetic improvement of buffaloes is being done through progeny testing of bulls. The AICRP on buffalo breeding is operational since 1971. The best buffalo bulls were selected based on performance of daughters produced at GADVASU, Ludhiana; NDRI, Karnal; CIRB, Hisar; CCS HAU, Hisar & IVRI, Izatnagar and villages around Hisar, Ludhiana and Karnal. The average 305-day milk yield of the general herd of buffaloes was 2614 kg with a complete lactation milk yield of 2708 kg. The average 305-day milk yield, complete lactation milk yield and peak yield of elite herd, used for the production of future young sires was 3413 kg, 3743 kg and 20.08 kg, respectively. The maximum 305-day milk yield and day peak yield for individual animal was recorded as 4025 kg and 28.7 kg, respectively in the herd.

Bull No. M 2357 from this center ranked 1st at the national level among all the progeny tested bulls in Set No. 14. In the current Set (19th), five buffalo bulls were selected for progeny evaluation at the national level under the Network Project. A total of 59,746 semen doses were supplied to the dairy farmers and other dairy development agencies for improvement of Murrah buffalo population in Punjab. Thirty-eight buffalo breeding bulls/bull calves were also made available to the progressive dairy farmers/semen banks. Additionally, frozen semen of test bulls was provided to 28 AI Centres covering 110 villages adopted under the Field Progeny Testing Programme of Network Project and the daughters born were ear-tagged for recording of their milk production in future. During 2020-21, 7991 AI were undertaken with 53.5 per cent conceptions. A total of 3878 calvings with 1883 female calves

occurred and during the current year the data of milk yield of 286 daughters had been recorded.



Test Murrah bull of XIVth set of Network Project



Progeny of elite Murrah buffaloes produced from nominated mating

(b) Nili Ravi: Nili Ravi breed of buffalo is considered to be one of the major milch breeds of Asia. Under the ongoing conservation plan adopted by the Ministry of Animal Husbandry and Dairying, Government of India, the Nili Ravi breed has been earmarked for Punjab. Under the ongoing conservation and improvement project on Nili Ravi buffaloes, the animals were procured from their native breeding tracts for their up-gradation and genetic improvement.

The present herd strength of Nili Ravi buffaloes is 141 with 90 breed-able buffaloes. The average 305-day and complete lactation milk yields were 2473 kg and 2511 kg, respectively. Buffalo No. 2667 produced 3571.0 kg milk in 305-day lactation length with a peak yield of 20.7 kg, which is comparable to the best yield of any of the buffalo breeds. Under the foremost priorities of dissemination of germplasm, 12 breeding bull/bull calves were supplied for the improvement of Nili Ravi buffalo population in Punjab.



Bull no.:507 with Dam's best lactation yield:4268 kg and Peak yield:21.5 kg



NR2835 with peak Yield:18.8 kg, 305 day milk yield:3530.6 kg

(iii) ETT: During the report period, ovum pick-up (OPU) based *in vitro* embryo production facilities were strengthened and used for propagation of Sahiwal cows as per the mandate of Department of Animal Husbandry Dairying and Fisheries, Government of India. Under this, a total of 70 OPU were conducted, 567 cumulus-oocyte complexes (COCs) were retrieved, 365

were subjected to *in vitro* maturation (IVM), *in vitro* fertilization (IVF) and *in vitro* culture (IVC) resulting in the production of 52 blastocysts. In addition, 42 transferable embryos were produced by conventional superovulation and embryo collection. A total of 09 *in vitro* and 25 *in vivo* produced embryos were transferred to the synchronized recipients and 15 pregnancies were established. The remaining embryos were frozen for future use.



Six Sahiwal calves produced from an elite cow by ETT

(iv) Poultry

(a) Broiler Breeding: Directorate of Livestock Farms, GADVASU, Ludhiana is one of the centres in the country for AICRP on Poultry breeding. Under the project, coloured broiler (IBL-80) has been developed at the University. It has the potential to attain average 6-week body weight of 1700g with a feed efficiency of 1.9 and the mortality of less than five percent. During the current year, about 84,279 broiler germplasm has been supplied benefitting approximately 400 poultry farmers from across the state. The farm has also collected Punjab Brown local germplasm from district Gurdaspur and is focusing on its conservation and improvement through genetic selection.



IBL-80



Punjab Brown

(b) Layer Breeding: At the Poultry Research Farm of GADVASU, two coloured layer breeds, Rhode Island Red (RIR), Punjab Red and one variety Desi Cross (Punjab Gold) and an indigenous breed Kadaknath are being maintained as parent stock. The RIR stock was introduced by procuring hatching eggs from Central Avian Research Institute, Izatnagar and Central Poultry Development Organisation, Chandigarh and Bhuvneshwar in 2001-02. Further, brown shelled eggs were produced by Punjab Red layer poultry stock which was maintained at the university. The efforts were made to increase the population size of the stock in the university farm and to popularize the stock among farmers and government agencies. During the current year, a total of 82,110 layer germplasm was supplied which included day old chicks, hatching eggs and adult breeding birds. Under the layer breeding, indigenous poultry breeds like Kadaknath, Desi Cross are also maintained for the desi egg production and crossbreeding program to enhance the immunity and hardiness of commercial birds.



Desi Cross (Punjab Gold)



Kadaknath

(c) Quail Breeding: On an average body weight of 5-week commercial crosses was around 190 g. A strain of quails with white plumage has also been developed under the name “**Punjab White Quail**”. The average egg weight is about 12 g and these eggs are used for the preparation of pickles. As quails are less susceptible to common diseases of poultry, therefore there is no need of vaccination against common poultry diseases. The university supplies quail eggs and 5-week-old birds, and during this year approximately 3000 chicks and 1500 adult birds were supplied. Quail section of the directorate of Livestock farms is developing facilities to impart training on quail husbandry.

2. Department of Animal Genetics and Breeding:

Heat Stress effects in Crossbred Cattle: The relationship of Temperature Humidity Index (THI) with different production and reproduction traits was established in crossbred cattle along with the growth and lactation curves. The Quadratic and Gompertz models followed by Cubic and Logistic models gave best fit and reliable description to the growth curve characteristics of crossbred dairy cattle. The milk productions are susceptible to the negative impacts of heat stress when Temp, THI and adjusted THI are over 21°C, 68 units and 71 units, respectively.

Risk factors of abnormal Lactations in Crossbred Cattle: It was observed that in crossbred cattle, 72.64 per cent of total lactations fell in the normal lactation length range i.e., 180-483 days. The lactation length was further classified and was found to be of short lactation (5.67%), prolonged lactation (7.36%), extremely short lactation (8.86%) and extremely prolonged lactation (6.02%). The lactation length was significantly ($P < 0.05$) affected by parity, period and season of calving, abortions, metritis, repeat breeding, weakness, fever, diarrhea, udder swelling, mastitis, lameness, foot and mouth disease, and brucellosis.

Lactation Curves in Crossbred Cattle: The polynomial regression function was found statistically to be the best lactation curve model for predicting first lactation monthly test-day milk yields in HF crossbreds. Further, the equation $Y = 685.70 + 44.31 \cdot 36D + 50.82 \cdot 96D + 65.53 \cdot 156D + 85.16 \cdot 216D$ was identified as best for predicting the 305-day milk yield based on monthly test day milk. The Least Square Quotient (LSQ) method was the best for estimation of breeding values of sires based on actual and predicted first lactation 305-day milk yields for better accuracy and stability.

Molecular aspects of Heat Tolerability in Broiler crosses: In poultry, the native cross chicken was found to be more heat tolerant with respect to IBL-80 as the heat stress led to lowered growth, carcass traits, and meat quality. Moreover, it was found that heat stress also affected the IGF-1 expression at mRNA level. The complete Growth Differentiation Factor 9 (GDF9) gene (~4kb) for RIR and Desi cross 1 (Punjab Gold) have been sequenced and characterized. A total of four SNPs were found out of which three were novel and one was previously reported. All polymorphism were significantly ($P > 0.05$) associated with egg production at 40 week of age and egg production at 52 week of age, while body weight at 20 week of age and body weight at sexual maturity significantly affected by E1-16[G>A] SNP. Age at sexual maturity was found to be associated significantly ($P > 0.05$) with E1+144[G>A], of AA genotype.

3. Department of Animal Nutrition

Wheat silage for dairy animals: Four wheat cultivars viz. PBW 725, Unnat PBW 343, HD 2967, HD 3086 were harvested at the head (head was fully emerged from the stem) and the milk stage (kernel formation occurs); ensiled in low density polypropylene bag for 45 days. It was observed that all wheat cultivars exhibited good ensiling characteristics at both phenological stages of maturity. Improved nutritive profile, better feeding values, higher *in vitro* potential and good fermentation characteristics at head stage projected PBW 725 and HD 2967 cultivars as more recommendable. However, comparative performance of PBW 725 made it most advisable for ensiling at head stage under Indian conditions. Further, silage of PBW 725 (at head stage) contained 92.6 per cent organic matter (OM), 9.7 per cent crude protein (CP), 42.7 per cent neutral detergent fibre (NDF) digestibility, 61.3 per cent OM digestibility, 6.7 per cent Lactic acid, 63.7 per cent TDN with Fleig score of 105.6 showing it to be highly beneficial to feed the dairy animals in the same way as maize silage.

Evaluation of dog food:

Twenty-two dog feed samples from various processing industries when analysed *in-vitro* revealed that irrespective of level of rice gluten, digestibility of dry matter (DM) and organic matter (OM) was highest ($p < 0.01$) in extruded food and lowest in raw food. The digestibility of crude protein (CP) in extruded food was higher ($p < 0.05$) than raw food, but comparable with boiled food. The EE digestibility was similar in raw and extruded food but higher ($P < 0.01$) than boiled food that might be because of liquification of fat in boiling water. Overall, the digestibility of nutrients was higher in extruded food. Irrespective of the techniques used for processing of food, the digestibility of DM and OM was the best ($P < 0.01$) in extruded food containing 15 per cent rice gluten. Further *in-vitro* studies confirmed that feeds formulated at GADVASU matches with best available commercial dog diets. Nutritional interventions showed significant ($P \leq 0.05$) improvement in body condition score and dogs lost 9 per cent of their body weight during the study period without affecting the haematological and biochemical parameters.

4. Department of Livestock Production Management:

- i. It was observed that good semen preservation techniques improved the efficiency of reproductive buck by 18 times, wherein, addition of 15 per cent Egg Yolk Plasma (Extender) along with fructose was a better semen preservative than the commercial Ovixcell extender. Addition of 6 per cent glycerol to Tris-citric acid—egg yolk plasma extender acted as a very good semen cryoprotectant when compared to Dimethylformamide and it can easily replace the commercially available extender Bioxcell™ (IMV) for buck semen preservative.
- ii. In another study it was observed that a single labour can manage 50-60 goat unit effectively provided separate labour engaged for milking. Similarly, the water requirement was highest in lactating animal shed followed by adult animal male shed.
- iii. In pigs, it was seen that shallow wallowing drainable tank was a better heat mitigation strategy than sprinkler as it improved the growth performance, feeding efficiency, carcass traits, welfare and better economic returns.
- iv. It was found that *Phyllanthus niruri* L. supplementation in broiler feed was a very good alternative to antibiotics for growth promotion and it can be recommended for organic poultry farming as the overall growth performance of 0.5 per cent *Phyllanthus niruri* L. supplemented group was at par with that of the antibiotic supplemented group and it also enhanced the immunity levels.

5. Department of Livestock Products Technology:

- (i) Development of protein rich pasta with incorporation of chicken meat and microencapsulated docosahexaenoic acid (DHA) powder was attempted and it was found that 30 per cent chicken meat and 1.5 per cent DHA powder could be successfully used for pasta preparation. The developed functional pasta incorporated with chicken meat (30%) and DHA

powder (1.5%) could be stored at $20-30\pm 5^{\circ}\text{C}$ temperature under ambient atmospheric conditions for 60 days without any marked loss in physico-chemical, colour, textural, microbiological and sensory qualities. The cost of production of developed pasta was 128 Rs/kg as compared to less nutritious control pasta with a production cost of 72 Rs/kg.



Control pasta



Developed functional pasta

(ii) Encapsulation of natural essential oils *i.e.*, Blended essential oil and Palmarosa essential oil for the enhancement of preservative and processing functionality of meat products like pork nuggets and pork patties were carried out using various wall materials. It was found that the encapsulated agents were able to control oxidative, sensory and microbial deterioration much better than crude forms for a sustained period of time.

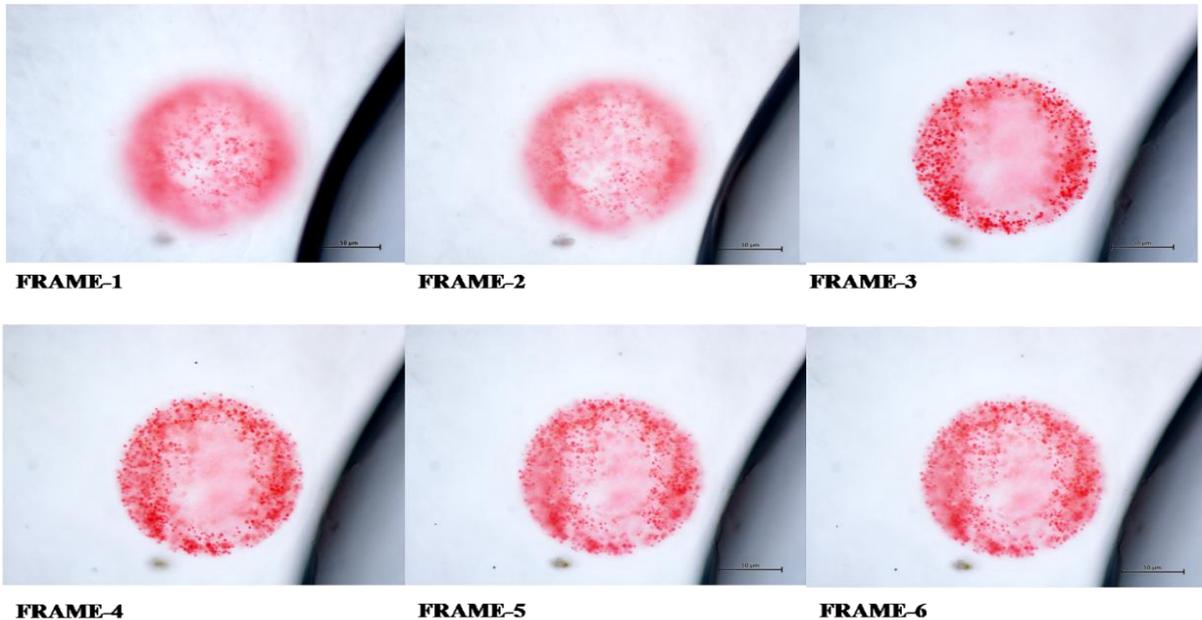
(iii) A study was conducted on development of bioactive biodegradable films infused with bacteriophages and nanoemulsion for the extension of storage stability of fibre enriched chicken nuggets and it was concluded that biodegradable films infused with bacteriophages could be used for storage stability extension of meat and meat products.

(iv) Development of different categories of pet foods by utilizing various slaughter industry by-products such as liver, heart etc. was attempted and their acceptability studies were carried out. Thirty per cent incorporation level of liver powder was selected for the development of dog biscuits. The developed dog biscuits can be successfully stored at ambient temperature under both aerobic and modified atmosphere packaging up to 80th day without any marked loss in physico-chemical, microbiological and sensory qualities.

6. Department of Veterinary Gynaecology and Obstetrics

- i. Effect of flaxseed supplementation on metabolic profile and reproductive performance of Large White Yorkshire prepubertal finishing gilts was undertaken. The pigs were fed flaxseeds at 0.5 and 1.0 percent of dry matter from 120 days until 240 days of age. It was

- concluded that flaxseeds at 1.0 per cent gave statistically better results in terms of reduction of cholesterol levels, linear increase in IGF-1 level, daily body weight gain, time of puberty and expression of estrus. In addition, the number of piglets in gilts fed flaxseeds at 1 percent of DM was more than 0.5 per cent, but the increase was not significant.
- ii. The seminal fluids of cross-bred bulls were evaluated for pesticide residues for organochlorines (heptachlor epoxide, chlordane, fipronil, lindane, methoxychlor, op-DDT, and endrin); organophosphates (chlorpyrifos, dichlorovos, ethion, monocrotophos, malathion, parathion-methyl, profenphos, phorate, triazophos, quinalphos, and phosalone) and synthetic pyrethroids (cypermethrin, permethrin, deltamethrin, and cyalothrin) using gas chromatography and none of the sample was having any residue of these pesticides. The finding was attributed the fact that fodder was cultivated at the stations itself and there was minimal usage of pesticide on the fodder. The per cent viability of sperms was significantly higher ($p < 0.05$) in fresh as compared to post-thaw semen. The per cent abnormality of sperms was significantly lower ($p < 0.05$) in fresh than post-thaw semen and per cent hypo-osmolality swelling (HOST) decreased in post thaw semen when compared to fresh semen.
 - iii. Fertility response was observed in delayed pubertal buffalo heifers following estradoublesynch and progesterone based ovsynch protocols and it was detected that both estradoublesynch and CIDR+Ovsynch protocols were equally good in inducing fertility in these heifers by inducing ovulatory estrus & thereby pregnancy. Hence, estradoublesynch and progesterone based ovsynch protocol can be effectively employed to induce ovulatory estrus and to improve pregnancy rates in such buffalo heifers.
 - iv. Evaluation of cryo-protective effect of graphene oxide, a single carbon chain molecule with properties similar to natural anti-freeze proteins, on cryo-survival of Murrah buffalo bull spermatozoa revealed its cryo-protectant properties when supplemented in semen extender resulting in improved post-thaw semen quality parameters like motility, plasma membrane integrity, viability and morphological abnormalities.
 - v. Sodium dodecyl sulphate supplementation at the rate of 0.125 per cent to Tris Egg Yolk Glycerol Extender enhanced the sperm motion kinetics as well as functional parameters, like post thaw total motility, rapid progressive motility and plasma membrane integrity and viability thereby improving the freezability of buffalo bull semen.
 - vi. Distribution of lipid droplets (LDs) and *in vitro* maturation of oocytes in Sahiwal cows was studied by administering estradiol 17β and was concluded that when administered @ 2.5 mg, estradiol 17β was effective in synchronizing the emergence of follicular wave and the wave emergence was affected by the ovarian status at the time of estradiol administration and quantity of LDs.



Quantity and distribution of Lipid Droplets (LDs) in culturable oocyte of Sahiwal

- vii. Hormonal interventions to augment the postpartum fertility in dystocia affected buffaloes were carried out and it was concluded that early first postpartum oestrus expression and increased post-dystocia fertility can be achieved with prostaglandin treatment (PGF 2α : Cloprostenol, 500 μ g IM) on day 7 and gonadotropin releasing hormone (GnRH: Buserelin acetate 20 μ g, IM) on day 14 postpartum in dystocia affected buffaloes.

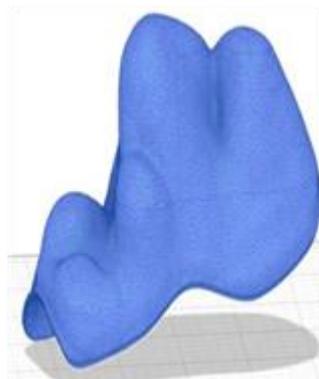
7. Department of Veterinary Surgery and Radiology

- i. Development and clinical application of biomaterials for root canal treatment and crown therapy in dogs was initiated. A dental operation theatre was established and designing and fabrication of novel smart dental trays, culture sensitivity testing, designing and fabrication of dental crowns for strategic teeth by additive manufacturing followed by their morphological analysis and compressive property testing was undertaken. A novel product in the form of two sets of adjustable dental trays were indigenously fabricated for maxilla having lateral movement and one set for mandible having forward – backward or drawer type of movement. It was observed that single adjustable dental tray was successful in taking record of negative impressions in varying breeds and different age groups as these trays were adjustable in accordance to the shape of skull type and could snugly fit into the dental arcade.

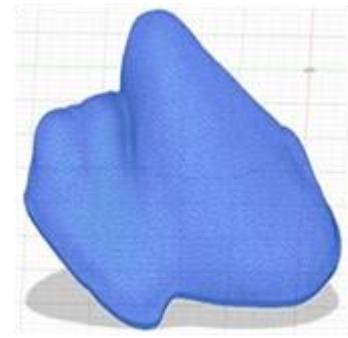
Approach to single and multiple rooted strategic teeth was established which helped in establishing site of entry to pulp cavity from crown part of teeth for root canal treatment. As crown therapy is a predictable option for missed and abraded tooth so fabrication of 3D metal crowns (stainless steel 17-4-PH SS, alloy of various metals by CAD/CAM technology) were done to substitute fractured or abraded tooth, to protect weakened tooth from breaking, to apply a cap after root canal therapy and to strengthen malformed tooth. Morphological analysis illustrated that porosity and surface roughness in case of metal printed prototypes was less and controlled in comparison to natural tooth. Compressive property testing revealed that fracture resistance point in case of metal printed crown was significantly more in comparison to natural tooth.



Canine

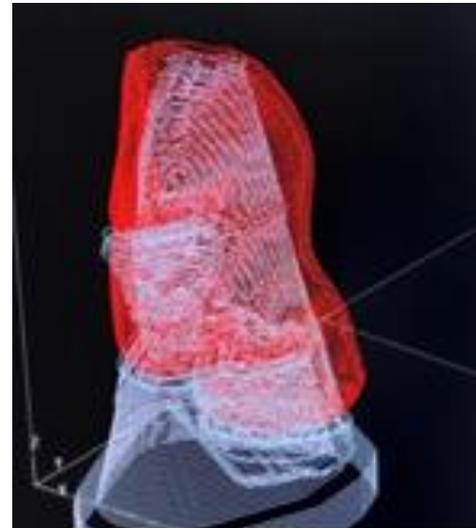
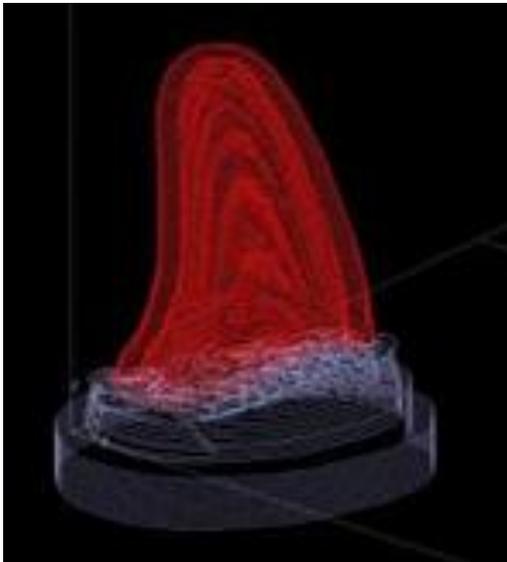


Mandibular PM4

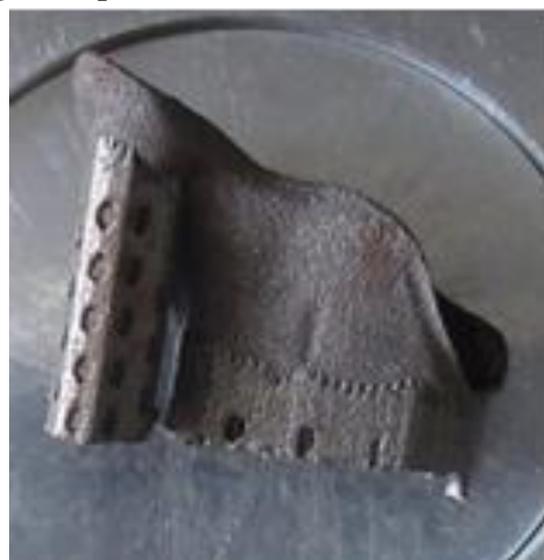


Maxillary PM4

Generation of a STL (Standard Triangle Language) file viewed on dedicated CAD (Computer aided design) software like Geomagic Design X and 3DXpert



Slicing orientation of Computer Aided Designing (CAD) files before assigning the command for printing in 3D printer software



Crowns after Metal 3D printing with honey comb like support material



Mandibular M1



Maxillary PM4

Finishing of Mandibular M1 and Maxillary PM4



Application of Mandibular M1 and Maxillary PM4 on die stone model to judge their congruency



Dental crowns with stainless steel for canine teeth fabricated using CAM/CAD technology

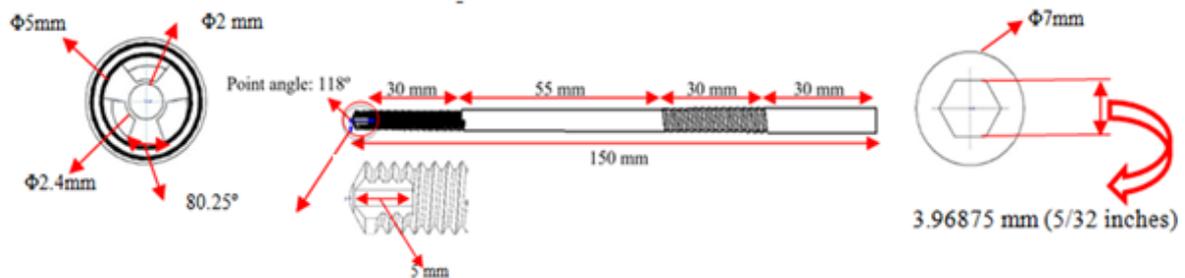
ii. Development of novel suture materials and implants for canine arthropathies

Indigenously collected suture materials viz. Nylon Fish line monofilament, Nylon fish line braided, and commercially available sutures like polyamide and polyester were tested on the basis of their physical and mechanical parameters and were used clinically after sterilization with ethylene oxide. Toggle pin implant, TPLO plates, TTA cages, SOP plates, Suture screws, sleeves, angled plates were developed locally. These materials are in clinical use in canines.

iii. Designing and evaluation of various configurations of threaded intramedullary pins for canine long bone fractures

Innovative Profile and 3D printing of Intramedullary pins using thermoplastic (ABS) and Metal (stainless material) for canine femur bone - A Framework:

Based on radiographic dimensions of the femur of dog, the computer aided designing (CAD) model was made with the help of the conceptual design and Solid works software. The model was then converted into stereo lithography (STL) file format for 3DP of IM pin. The pins were initially printed by a thermoplastic-based FDM printer by using ABS material and later with DMLS process (metal printer).



Framework / design of double threaded pin for metal printing

Out of various ABS pin types (uniform versus tapered) and thread profiles (cortical and cancellous) printed, the pins were preliminarily selected for metal printing using 3D (Additive Manufacturing) technology.

- The customized blunt tipped self-tapping end threaded intramedullary pins (both stainless steel and titanium) provided adequate and comparable holding of distal bone fragment (similar to sharp tipped conventional end threaded pins) and offered less complications (piercing the distal bone fragment and consequently harming the distal joint), particularly in cases of young growing dogs.
- End threaded (sharp or blunt tipped) pins reduced the complication of proximal pin migration but did not prevent collapse of the proximal bone fragment (because of poor holding by smooth proximal portion of the pin) particularly in heavier breed of dogs.
- Intramedullary Pins / Implants made from titanium were light in weight than stainless steel, thus provided better stability and reduced the implant related complications.



**Conventional End –
Threaded Pin (SS) –
Trocar tipped**

**Customized End –
Threaded Pin (SS) –
Self-tapping and blunt
tipped**

**Customized End –
Threaded Pin (Titanium)
– Self-tapping and blunt
tipped**

iv. Studies on the functional and radiological assessment of canine tibia fracture fixation by Titanium LCP system was carried out and it was concluded that stainless steel pin and titanium plate combination being a rigid construct, provided better bending and axial stability, that was helpful in minimizing the complications of plate bending and implant failure.



Photograph showing a primary stabilization of the bone fragments by intramedullary pinning



Photograph showing intra-operative stabilization with titanium LCP

v. Subdermal skin flaps were found to be suitable technique for management of both benign and malignant tumours in dogs. It was found that various subdermal skin flap techniques viz. single pedicle advancement flap, bipedicle advancement flap, rotational flap and transpositional flap were suitable for repairing the large skin defects created after 2 cm wide excision of tumours.



**Advancement
flap**



**Rotational
flap**



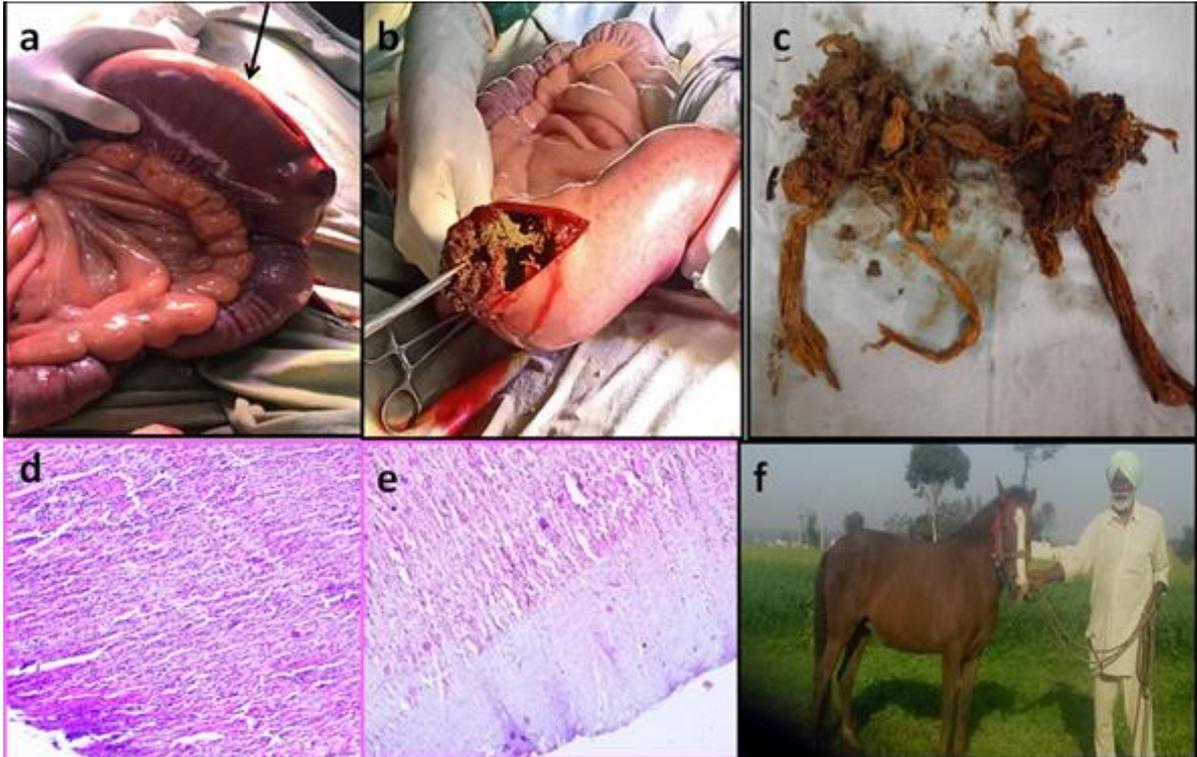
**Transpositional
flap**



**Bipedicle
advancement flap**



vi. A clinical study conducted in equines concluded that if the animal is presented for surgery well in time, the surgery in colic bears very good short term and excellent long-term outcome both in strangulating and non-strangulating type of colic.



The obstructive foreign bodies, etiology of colic, being extracted from intestine of horse

vii. The excision technique for superficial growths using a diode LASER was standardised and used in clinical cases in canines. It was concluded that it was associated with minimum intraoperative haemorrhages and postsurgical wound related complications with acceptable scar and cosmetic appearance of healed wounds. Diode LASER (at 980 nm wavelength) was recommended as a safe alternative surgical tool at 8W and 10W for the excision of superficial growths of size < 5cm and 5-10 cm, respectively in dogs.



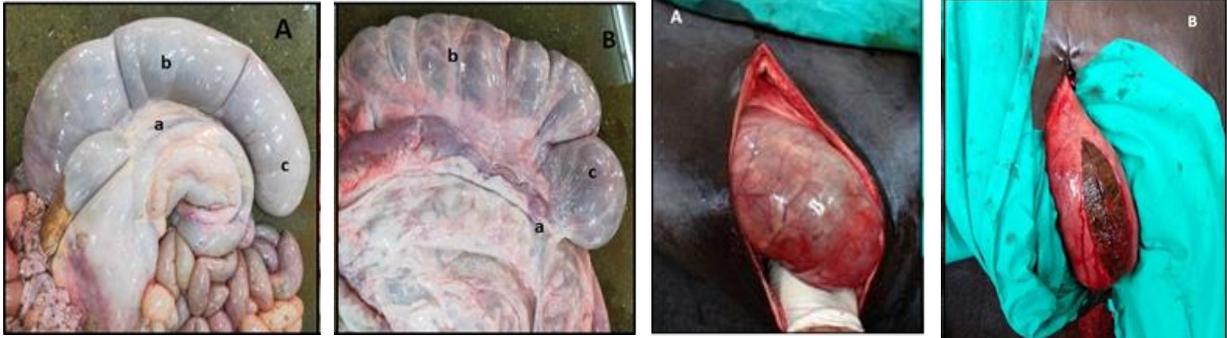
Photograph showing standardization of LASER for full thickness skin incision of 3 cm each created using various power settings (6, 8, 10 and 12 watt).



Photograph showing mild charring on the incised skin margins following excision of mass from thigh region in Labrador retriever

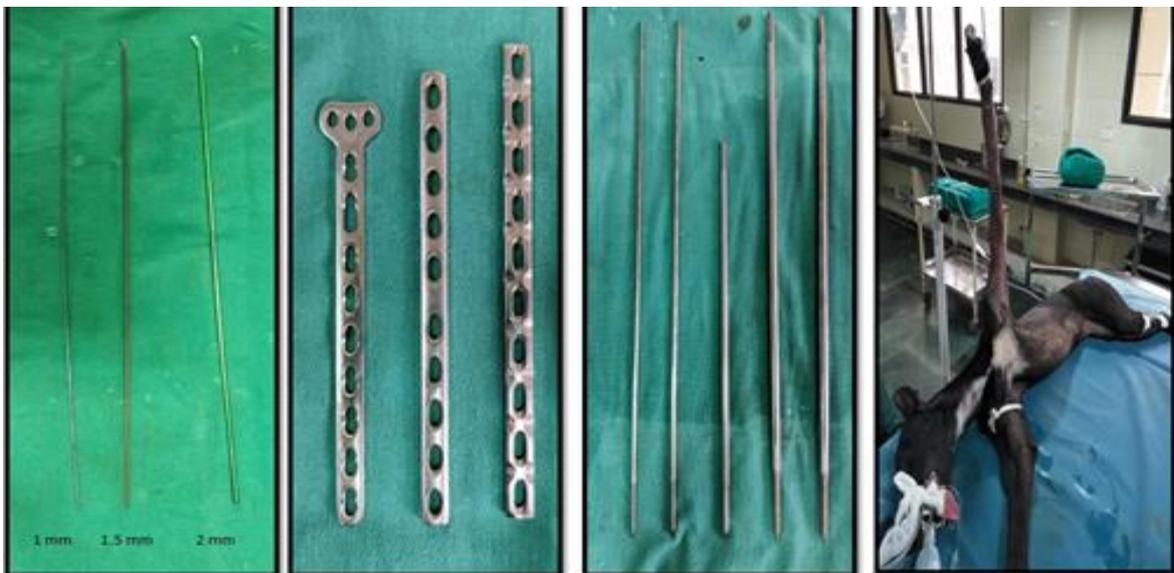
viii. Evaluation of ultrasonography as diagnostic and prognostic modality in cows and buffaloes suffering from caecal dilatation was done and was concluded that dilated caecum in buffalo was difficult to exteriorize from surgical site as compared to cows due to gross and

microscopic differences in caecum. Scanning of dilated caecum, at 11th ICS or cranially required surgical intervention. Severe ileus of small intestines, increased peritoneal fluid with fibrin, dilated duodenum and pylorus with intraluminal fluid were poor prognostic indicators for caecal dilatation.



The dilated caecum being exteriorized for evacuation in case of caecal dilatation in buffalo

ix. Evaluation of titanium elastic nails for the management of radius ulna and femoral fractures in dogs revealed distal radius ulna fractures in dogs repaired using titanium nails lead to early and bigger bridging callus and better carpal joint mobility as compared to bone plating but had delayed full weight bearing on the operated limb. As compared to distal radius-ulna fractures, titanium nails were assessed better for the stabilization of supracondylar or distal third femur fractures in dogs in terms of ease of implant placement and overall functional outcome. The TENS was recommended as superior fracture fixation technique to single end threaded stainless steel pin for the stabilization of supracondylar or distal third femur fractures and alternative technique for radius-ulna fractures in young dogs.



Titanium elastic nails of various sizes

Bone plates

End threaded (stainless steel) pins

Application of traction on the fractured limb using hanging limb technique

x. Studies on different fluid therapy protocols like crystalloid therapy (NSS + DNS), parenteral nutrition (65% resting energy requirement) and parenteral nutrition (100%

resting energy requirement) was used after gastrointestinal tract surgeries in dogs with special reference to echocardiography and no apparent changes in echocardiographic parameters were observed in any of the therapy both in preoperative and postoperative phases.

- xi. Phacoemulsification and IOL using +41 D PMMA foldable intraocular lens was found useful for surgical management of cataract in dogs. Non diabetic animals had more success rate of surgery as far as restoration of vision is concerned as compared to diabetic animals with fewer post-operative complications.
- xii. Clinical studies on endoscopic evaluation of upper gastrointestinal tract disorders in canine was conducted and was concluded that endoscopy is very sensitive for esophageal affections followed by gastric affections *i.e.*, upper gastrointestinal affections, whereas radiography and ultrasonography are more sensitive for gastric and intestinal affections.



Normal oesophagus

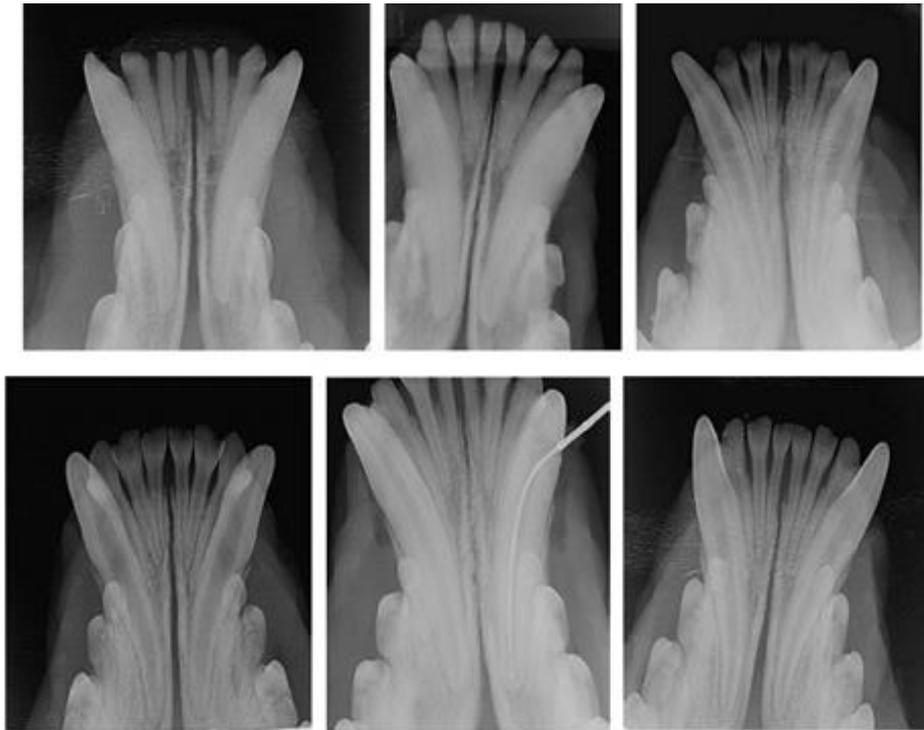


Foreign body in oesophagus



Endoscopic biopsy punch

- xiii. The working length in incisors, canine, maxillary fourth premolar, mandibular first molar teeth were evaluated by the radiographic method and by use of Reborn Endo RPEX 6 electronic apex locator. The radiographic method was found to be more appropriate for determination of the working length in comparison to the electronic apex locator. After accessing the cavity, root canal was performed with zinc oxide eugenol as a sealing agent and gutta-percha points for the three-dimensional fillings of the prepared root canal. Glass ionomer as an intermediate layer before the final restoration with the composite and this technique gave excellent results.



**Variation in size of pulp cavity of mandibular canine teeth in different age of dogs.
Lateral approach to pulp cavity in mandible canine tooth for root canal treatment**

8. Department of Veterinary Medicine

- The cause of idiopathic gastrointestinal stasis were identified in cattle and buffaloes. Vagal indigestion, nephritis, cholangio-hepatitis and focal peritonitis were the major causes. It was concluded that renal and liver function should form an integral part of laboratory database in cattle and buffaloes suspected for idiopathic gastrointestinal stasis.
- Pulse Doppler and Color flow doppler Echocardiography was done to determine blood flows at different valves in healthy dogs.
- Obesity was reported as a risk factor for hypertension in dogs.
- Blood pressure was found to be highly correlated with Body Condition Score and Body Mass Index.
- Overweight/obese dogs were more prone to hypertension risk and fell under moderate risk category (Systolic Arterial Pressure 160-179 mm Hg).
- Overweight/obese dogs with renal disease were more hypertensive than normal weight diseased dogs.



**Blood pressure measurement in obese dog by
Oscillometer**



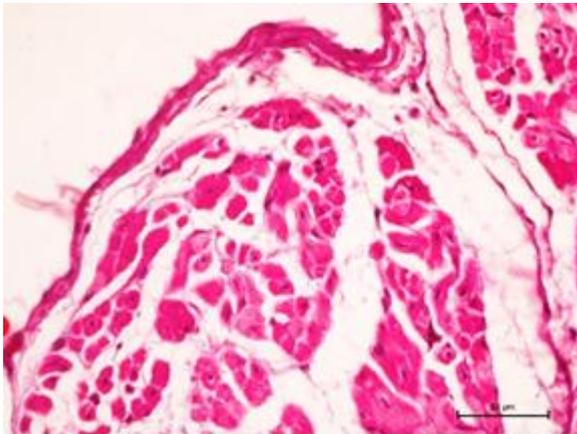
**Blood pressure measurement in obese dog by
Doppler**

- Evaluation of udder health in buffaloes showed that specific subclinical mastitis affected 13 per cent of quarters studied. The mean quarter milk somatic cell count (SCC) was 174.40×10^3 cells/ml, somatic cell score (SCS) of 1.72, and electrical conductivity (EC) was 3.83 mS/cm. The parity showed no significant effect on the milk SCC whereas the EC decreased ($p < 0.05$) with the advancing parities. In general, the pH, SNF, protein, and lactose contents were found significantly higher in older buffaloes. There was higher mean SCC ($p < 0.05$) in strippings milk (55.61×10^3 cells/ml; SCS 1.61) than in quarter foremilk (QFM) (38.20×10^3 cells/ml; SCS 1.48) in healthy quarters.
- **Current culture sensitivity pattern of clinical mastitis in state:** A total of 1068 quarter foremilk samples from 324 dairy animals (774 samples from 256 cows and 294 samples from 68 buffaloes) brought by visiting dairy farmers throughout the state were subjected to culture sensitivity testing so as to undertake the rational therapy of mastitis. Overall, 51.64 per cent quarters were bacteriologically positive. The organisms isolated from the affected quarters of cows and buffaloes comprised of coagulase negative staphylococci (58.37%), coagulase-positive staphylococci (35.83%), *Pseudomonas* & Gram-negative spp. (2.17%), *Streptococcus* spp. (2.32%), *Corynebacterium* spp. (0.58%) and others (0.73%). Drug sensitivity revealed, in overall, Ceftriaxone-tazobactam as the most effective drug (87.54%) followed by ceftriaxone-salbactam (84.19%) and enrofloxacin (76.52%). On the other hand, least effective drugs were ampicillin (29.96%) followed by penicillin (32.11%).
- **Use of alternative medicines in udder fibrosis cases:** Homoeopathic therapy (Phytolacca 200c and Calcarea Fluor 200c @ 10 drops each tid PO \times 2-3 weeks) and Mastilep Gel therapy was applied topically bid \times 2-3 weeks. Homoeopathy treatment in mild fibrosis cases showed a significant ($p < 0.05$) fall in CMT score and EC on d7 to d30. In moderate and severe fibrosis cases, a significant decline in CMT score, EC and pH on d7 to d30, compared to d0 was noted. The mean recovery days were 16.33, 23.57 and 27.38 with recovery percentage of 83.36, 76.24 and 68.38 percent in mild, moderate and severe cases, respectively. The therapy had a positive impact on milk yield.
- **Transfusion of blood and its components in dogs with hematological disorders:** Transfusion of whole blood or pRBCs resulted in highest improvement in surgery/trauma group followed by gastrointestinal diseases and haemoprotozoan infections, while the minimum improvement was noticed in pancytopenia group. Mean increase of 2.29

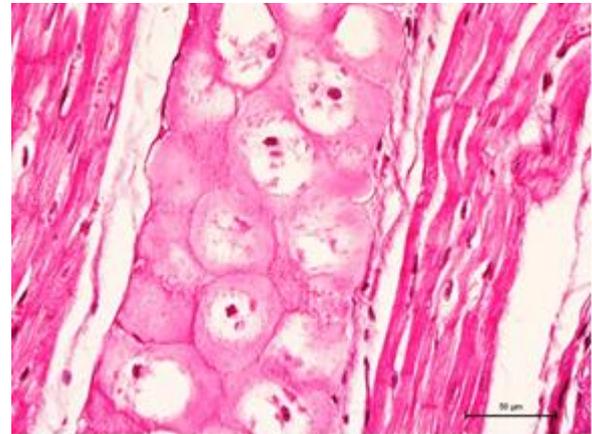
g/dL in Hb level and 8.29 per cent in PCV level was recorded after whole blood transfusion, and that of 2.64 g/dL in Hb level and 8.48 percent in PCV level was observed after transfusion of pRBCs. Mean platelet count increase of 13.50×10^3 was recorded in thrombocytopenic dogs one hour after transfusion of platelet rich plasma. Transfusion of plasma proved to be more beneficial in enhancing survival in canine parvoviral enteritis as compared to dogs suffering from chronic liver disease and acute hepatitis.

9. Department of Veterinary Anatomy:

- Echocardiographic and comparative anatomical studies on heart of buffalo, sheep and goat revealed that echocardiographical values were more than biometrical and micrometrical values in buffalo, sheep and goat, but negligible difference was found between biometrical and micrometrical data.



Photomicrograph of right atrium of sheep showing arranged myocardium. H & E X 400



Photomicrograph of right ventricle of sheep showing endocardium and loosely Purkinje fiber. H & E X 400.



Echocardiogram showing the thickness of left atrium wall at diastole in buffalo

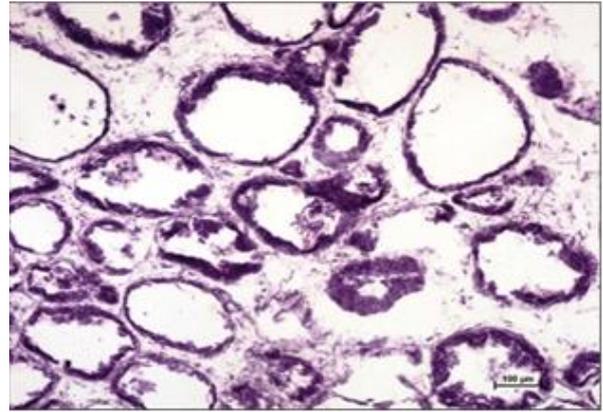


Echocardiogram showing thickness of left atrium wall at systole in goat

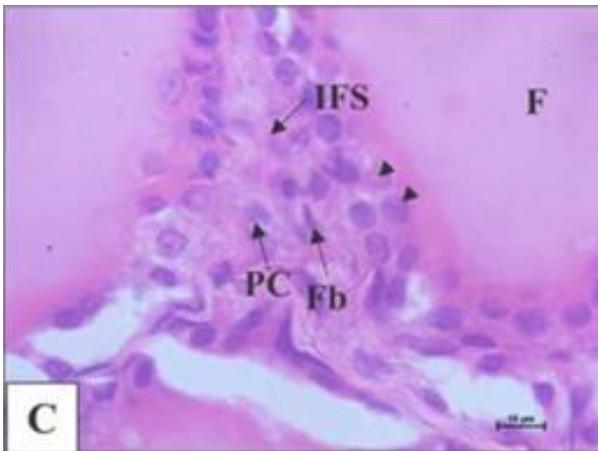
- Histomorphochemical and ultrastructural variations in thyroid gland of buffalo, sheep and goat were studied and was found that the follicular cells of sheep and goat contained lesser number of secretory vesicles as compared to the buffalo. The parafollicular cells of sheep had highest number of secretory granules followed by goat and least in buffalo. But the size of secretory granules was highest in buffalo followed by sheep and goat.



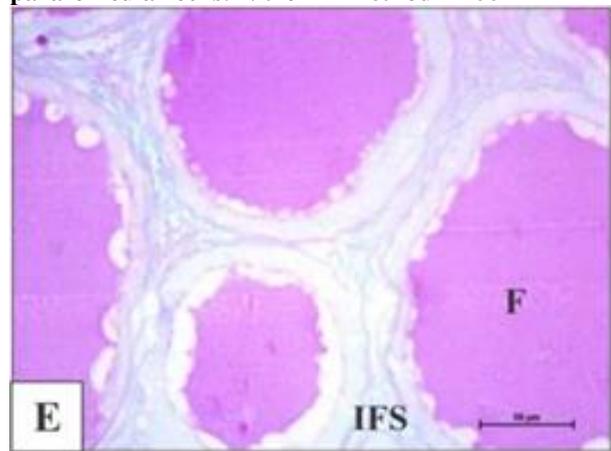
Thyroid gland (TG) and isthmus (I) of buffalo



Thyroid gland of sheep showing activity of NADPH-diaphorase in follicular cells and parafollicular cells. Nitro BT method x 100



Thyroid gland of buffalo showing fibroblasts (Fb) and parafollicular cells (PC) in inter colloid of follicles and alcian blue reaction in follicular space (IFS) and cuboidal cells interfollicular space. PAS-AB X 400



Thyroid gland of buffalo showing PAS reaction in in follicular epithelium. H & E x 1000

10. Department of Veterinary Microbiology

i. Canine Parvovirus: The study regarding antigenic types of CPV revealed presence of CPV 2a isolates from dogs of Punjab, Assam, Madhya Pradesh, Haryana, Delhi, Chandigarh, Jammu and Rajasthan. The prevalence rates for CPV from the respective districts were 73.45, 80.55, 54.54, 93.75, 66.66, 74.28 and 16.66 per cent by nested PCR assay. The antigenic typing by real-time PCR assay indicated positivity for CPV 2a followed by CPV 2 and CPV 2b. It was further reported that titre of serum 2a at which it can neutralize virus CPV 2b was 4096 and the titre of the serum 2b at which it can neutralize virus CPV 2a was 2048. The titre of serum for homologous virus type was higher than the other virus strains.

ii. Escherichia coli in Poultry: It was found that in 70 per cent of the samples from healthy poultry birds *E. coli* was isolated. The *E. coli* isolates were tested against 20 different antibiotics to understand their sensitivity and resistance pattern and majority of *E. coli* isolates were found resistant to penicillin, methicillin, ampicillin/ sulbactam, fusidic acid(100%), erythromycin (94.28%), streptomycin (91.43%), furazolidone (82.85%), doxycycline (68.57%), nalidixic acid (65.71%), enrofloxacin (62.85%), tetracycline (60%),

chloramphenicol(60%), ciprofloxacin (54.23%), trimethoprim (51.42%), co-trimoxazole (48.58%), neomycin (31.42%), ceftriaxone (25.71%) and sensitive to gentamicin, colistin (91.43%) ceftriaxone (71.43%), neomycin (68.58%), co-trimoxazole (51.42%), amikacin (45.72%), trimethoprim (45.72%), enrofloxacin (37.15%), doxycycline (31.43%), tetracycline (31.43%), furazolidone (17.15%), naldixic acid (11.42%), chloramphenicol (5.71%), streptomycin (2.85%). The results of antibiotic resistance pattern when compared with genotypic resistance indicated that 12 per cent of the strains were having antibiotic resistant genes and was exhibited by their resistance pattern.

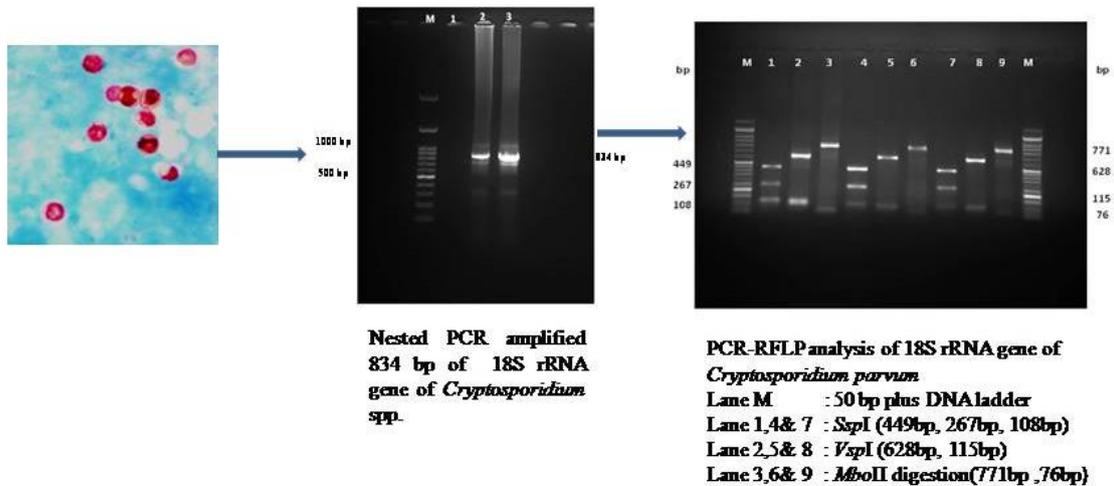
iii. Detection of bovine Tuberculosis: Of the various diagnostic tests employed for detection of *Mycobacterium bovis*, a slight degree of agreement was seen between comparative intradermal tuberculin test (CITT) and gamma interferon assay (IFN- γ); fair degree between CITT and defined skin antigen test (DST) and moderate degree between DST and IFN- γ assay. Around 9.3 per cent (49/525) animals were found positive by CITT, 11.17 per cent (19/170) by DST, 14.1 per cent (16/113) by IFN- γ assay and 5.38 per cent (12/223) by PCR assay targeting *esxA* (ESAT-6), *esxB* (CFP-10) and *espC* (Rv3615c) gene.

iv. Isolation of *Klebsiella pneumoniae* from cattle and buffaloes and their MDR pattern: Samples consisting of bovine mastitis milk and faeces, dairy cattle farm premises, chicken cloacal swabs and litter and water from poultry farms and were processed for isolation and identification of *Klebsiella* species and 21.4 per cent were found to be positive for *Klebsiella pneumoniae*. The prevalence of *Klebsiella pneumoniae* in mastitis milk, faecal samples and environmental samples from dairy farms was 9.0, 29.6 and 28.5 per cent, respectively. Similarly in poultry farms was 18.1 per cent and 35.7 per cent in cloacal swabs and from environmental samples respectively. The *K. pneumoniae* isolates were resistant to at least 3 or more drugs, each from different group of antibiotics, and thus 100% of the isolates were Multi Drug Resistant (MDR). The isolation of Multi-Drug Resistance strains of *Klebsiella pneumoniae* is alarming and indicative of irrational use of antibiotics in treating animal diseases, as the organism tends to acquire resistance genes rapidly through horizontal gene transfer.

v. Protective potential of outer membrane vesicles (OMVs) of *Brucella abortus* in mice: Studies on protective potential of outer membrane vesicles (OMVs) of *Brucella abortus* in mice were performed with encouraging results as revealed by humoral immune response and cellular immune response and it was concluded that OMVs possess immunogenic properties and produces humoral and cell mediated immunity and have the potential to produce protection in the challenged mice.

11. Department of Veterinary Parasitology

i. Prevalence, risk factors and molecular characterization of *Cryptosporidium* species in dairy calves of central plain zone of Punjab: An overall prevalence of *Cryptosporidium* species in dairy calves in central plain zone was 23.75% based on modified Zeihl Neelsen staining of faecal smears. The significant risk factors associated with infection were location, age, faecal consistency and management. Molecular characterization of nested PCR amplicons with profiling with restriction enzyme was also carried out indicating *Cryptosporidium parvum* as the only species prevalent in cattle and buffalo calves.



ii. Development, standardization and application of multiplex PCR assay for detection of *Babesia gibsoni*, *B. vogeli*, *Ehrlichia canis* and *Hepatozoon canis* infections in dogs: A multiplex PCR assay using custom designed primers targeting *B. gibsoni*, *B. vogeli*, *E. canis* and *H. canis* with an internal amplification control revealed the prevalence as 8.9, 1.1, 2.6 and 5.1 per cent along with concurrent infection of *B. gibsoni* & *H. canis* (0.4%), *B. gibsoni* & *E. canis* (0.4%), *E. canis* & *H. canis* (0.3%) and *B. gibsoni* & *B. vogeli* (0.1%). Various risk factors viz. age, breed, season and location were non-significantly associated with the prevalence of these haemoparasites except for sex for *B. gibsoni* infection that revealed significant association by both the assays and breed & location that revealed a significant association for *B. gibsoni* infection by multiplex PCR assay.

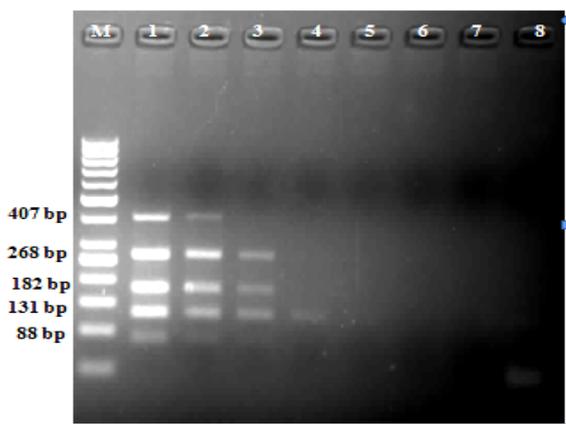


Fig: Effect of primer dilution on multiplex PCR assay
 Lane M: 50 bp marker
 Lane 1: Primer mixture for haemoparasites (*H. canis*, *E. canis*, *B. gibsoni* & *B. vogeli* - used at 10 pmol/ μ L) and IAC (canine Actin gene was used as at 5 pmol/ μ L)
 Lane 2-7: Two-fold serial dilutions of the respective primers
 Lane 8: Negative control
 *The positive controls for the respective parasites were used at 100 pg/ μ L.

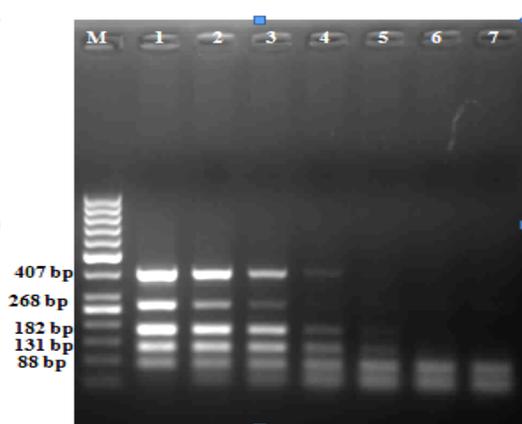


Fig: Sensitivity of multiplex PCR assay
 Lane M: 50 bp marker
 Lane 1-7: Ten-fold serial dilutions of the respective parasite control DNAs
 *The positive controls for the respective parasites were used at 100 pg/ μ L.

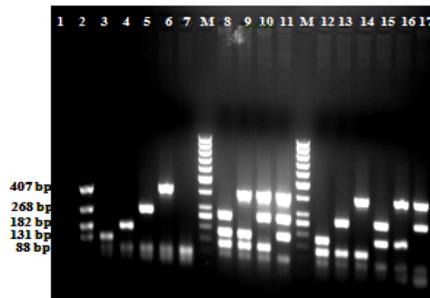


Fig: Specificity of multiplex PCR assay
Lane M: 50 bp marker
Lane 1: Negative control
Lane 2: All parasite DNA (*H. canis*, *E. canis*, *B. gibsoni* & *B. vogeli*) & IAC (canine Actin)
Lane 3: *B. vogeli* DNA & IAC (canine Actin)
Lane 4: *B. gibsoni* DNA & IAC (canine Actin)
Lane 5: *E. canis* DNA & IAC (canine Actin)
Lane 6: *H. canis* DNA & IAC (canine Actin)
Lane 7: IAC only (canine Actin)
Lane 8: *E. canis*, *B. gibsoni* & *B. vogeli* DNAs & IAC (canine Actin)
Lane 9: *H. canis*, *B. gibsoni* & *B. vogeli* DNAs & IAC (canine Actin)
Lane 10: *H. canis*, *E. canis* & *B. gibsoni* DNAs & IAC (canine Actin)
Lane 11: *H. canis*, *E. canis* & *B. gibsoni* DNAs & IAC (canine Actin)
Lane 12: *B. gibsoni* & *B. vogeli* DNAs & IAC (canine Actin)
Lane 13: *E. canis* & *B. vogeli* DNAs & IAC (canine Actin)
Lane 14: *H. canis* & *B. vogeli* DNAs & IAC (canine Actin)
Lane 15: *E. canis* & *B. gibsoni* DNAs & IAC (canine Actin)
Lane 16: *H. canis* & *B. gibsoni* DNAs & IAC (canine Actin)
Lane 17: *H. canis* & *E. canis* DNAs & IAC (canine Actin)
*The positive controls for the respective parasites were used at 100 pg/ μ l.

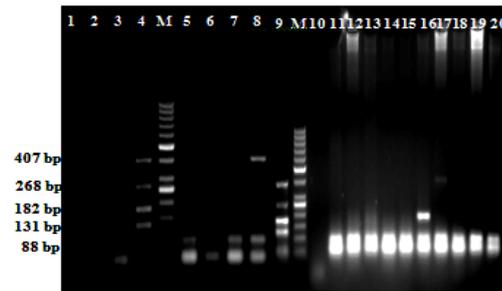
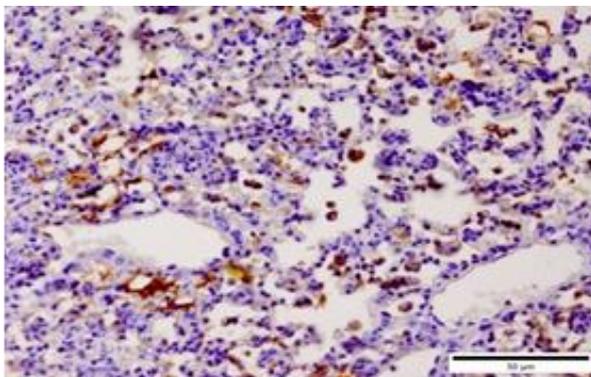


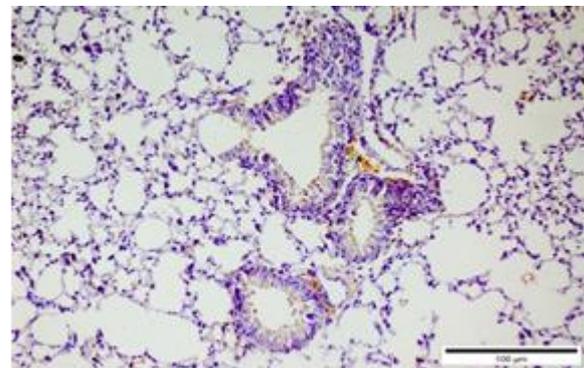
Fig: Field evaluation of multiplex PCR assay
Lane M: 50 bp marker
Lane 1, 2, 5-8, 11-20: Field samples
Lane 3, 10: Negative control
Lane 4, 9: Positive control

12. Department of Veterinary Pathology

i. Epithelial –mesenchymal transition in lung injury: Epithelial- mesenchymal transition in acute and chronic lung injury in laboratory animals was studied. The lung injury was partially ameliorated with tradition Chinese herbal medicines baicalein, salvianolic acid B and p-coumaric acid. The results were analysed by gross, histopathology, ultrastructural pathology, immunohistochemistry etc.

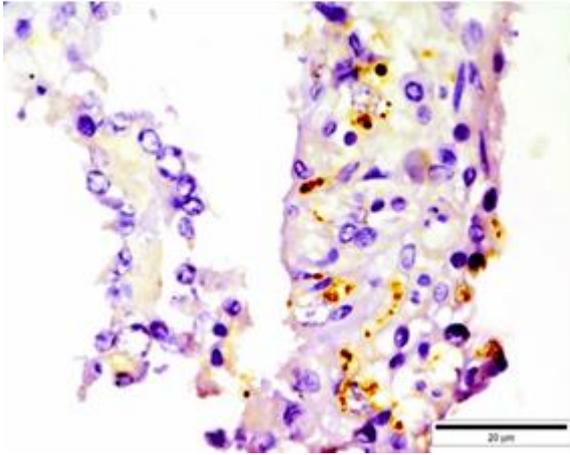


LPS induced oxidative stress depicted by iNOS

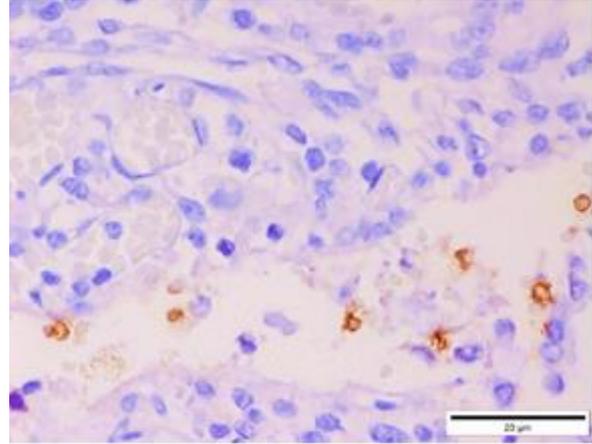


Amelioration by PCA @ 100mg/kg body weight

ii. Intestinal samples from diarrheic calves revealed presence of *E. coli* (K99), *Clostridium perfringens*, *Salmonella* spp., Bovine rotavirus, *Cryptosporidium* spp. and *Eimeria* spp. by immunohistochemistry. Histopathological scoring was done based on 9 parameters viz., villi: crypts ratio, desquamation of epithelium, congestion, muscularis mucosae intact/absent, crypt hyperplasia, crypt destruction, fibrosis, severity of inflammation and depletion of Peyer's patches (only in ileum) to quantify the damage caused by enteropathogens. Histopathological changes in ileum were found to be more profound than jejunum. Check for repetitive reporting



Photomicrograph of intestine showing immunoreactivity to rota viral antigen at the tip of intestinal villi



Photomicrograph of intestine showing immunoreactivity for *Cryptosporidium* oocyst and other developmental form

13. Department of Veterinary Pharmacology and Toxicology

i. Toxicity studies on insecticides in livestock: Studies suggested that mancozeb fungicide at 500 mg/kg body weight produced a pronounced toxicological insult in the exposed animals and might be detrimental to the human and animals.

ii. Development of Medicinal Plant Garden for Veterinary Ayurveda Research at GADVASU, Ludhiana: Demonstrative medicinal plant garden devoted to Veterinary Ayurveda for the sensitization of students, farmers, and common man about the use, benefits, and importance of medicinal plants in their day-to-day veterinary practices and create awareness about our ancient indigenous system of veterinary Medicine. Systemic plantation of about 118 species of medicinal plants that included trees, herbs, shrubs, climbers, and grass in the plantation beds were planted.

iii. Development of nursery for the cultivation of selected medicinal plants at GADVASU, Ludhiana: The nursery for medicinal plants was developed with 2320 saplings comprising of Ashwgandha, Guduchi, Jambira, Kumari, Nirgundi, Shatavari etc.

iv. Clinical evaluation of efficacy of “AYUSH V-24” (a coded Ayurvedic formulation) in the management of selected gastrointestinal illness in ruminants: Clinical efficacy of AYUSH-V-24 (a coded formulation) in the management of simple indigestion in ruminants was tested and was concluded that in simple indigestion of cattle this formulation was having an equivalent efficacy as that of the standard drug with excellent recovery rate and animal health.

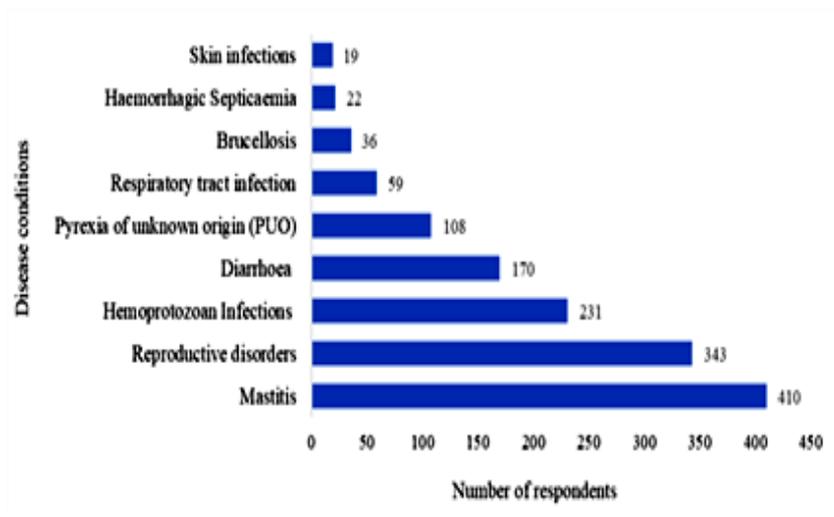
v. Clinical evaluation of efficacy of ayurvedic formulation for augmentation of milk production in ruminants: Polyherbal supplementation was tested in milching animals by feeding twice a day along with their scheduled diet, for 45 days and animals were observed for another 30 days post-treatment. Milk protein (%) and total solids (%) in treatment group showed significant improvement ($p \leq 0.05$) over time; Somatic cell count and electrical conductivity significantly declined ($p \leq 0.05$) in milk of buffaloes in treated group as compared to control group.

14. Department of Veterinary Physiology and Biochemistry

- Ovum pick-up *in vitro* fertilization (OPU-IVF), an *in-vitro* embryo production technology for Sahiwal cattle has been established and >50 OPU sessions have been executed with total recovery of >500 oocytes.
- A first OPU-IVF pregnancy of elite Sahiwal embryo in HF surrogate has been established.

15. Centre for One Health:

- A cross-sectional survey about knowledge, attitude, and practices among veterinarians for risk factors associated with treatment failure indicated that out of a total of 466 respondents, the majority had average knowledge (69.5%), neutral attitude (93.2%), and moderate practice (51.3%) scores toward judicious antibiotic usage. Veterinarians reported mastitis (88.0%), reproductive disorders (76.6%), and haemoprotozoan infections (49.6%) as the top three disease conditions that require antibiotic usage.



Major disease conditions requiring antibiotic use in bovines in India

***(Question: Top 03 disease conditions that require antibiotic use in bovines. Each veterinarian was asked to choose up to three disease conditions).**

- In order to generate mass awareness among veterinarians, the Centre for One Health designed an "Awareness booklet on Antimicrobial Resistance" and mobile based App having relevant information. In addition, 02 workshops were also conducted among field vets regarding the awareness and diagnostics on antimicrobial resistance.
- Aflatoxin M₁ (AFM₁) was found positive in 58 per cent pooled milk samples with the mean level of 0.917 mg/L, while 50.8 per cent and 36.5 per cent samples were found above the legal limits set by European Commission (EC) and Food safety and standard authority of India (FSSAI), respectively for AFM₁ in milk.
- For determination of oxytetracycline and erythromycin, high performance liquid chromatography and for chloramphenicol, enzyme immunoassay was used in Honey samples. Oxytetracycline and erythromycin with concentrations above maximum tolerance limits were detected in 24 per cent and 2 per cent samples, respectively. None of the samples contained chloramphenicol residues.
- Conduct the survey studies on 'Antibiotic usage and Antimicrobial resistance' among the Veterinarians of Punjab using Google Forms online technology.

- The cross-sectional surveys on dairy farm biosecurity management practices have been conducted across all the districts of Punjab covering 210 dairy farms. A farm biosecurity scoring protocol for small, medium, and large farms has been developed by consulting relevant stakeholders (academicians, veterinarians, subject matter specialists, and farmers). A questionnaire on animal farm biosecurity for farmers was developed and administered to assess the knowledge, attitudes, and practices (KAP) about the concept of dairy farm biosecurity among farmers of Punjab.
- Study on the prevalence and molecular characterization of the *Echinococcus* spp in pigs, sheep and goats in Punjab was performed. Overall prevalence was 6.8 per cent (115/1689) and highest in sheep (9.0%). Sequence analysis revealed clusters of G1 and G3 strains among the sequenced DNA samples collected from sheep, goat and pig. Cost Benefit Analysis of two strategies conducted to estimate their benefit towards controlling cystic echinococcosis in India for 20 years of implementation indicated that both strategies [(1) deworming in dogs plus vaccination in livestock and (2) deworming in dogs plus educational campaign] had positive Net Present Value (NPV). The Control Strategy II had a higher NPV (Rs. 831.7 billion) than the Control Strategy I (Rs. 289.4 billion).
- A water quality analysis and the correlation between Faecal Indicator Bacteria, multiple physiochemical parameters and a viral marker in recreational waters were studied. Around 32.0 per cent of analysed surface water samples were positive for human adenovirus (HAdV, qPCR), 16.0 per cent for bovine adenovirus (BAdV, nested PCR) and 11.0 per cent for porcine adenovirus (PAdV, qPCR). Although, both canals and river showed a stable and significant positive correlation between bacteriological parameters (coliform and enterococci) and between biological oxygen demand (BOD) and chemical oxygen demand (COD), regression analysis revealed no significant correlations between concentration of enterococci count to a concentration of AdVs, unlike coliform that showed sporadic but significant correlation with PAdV and no correlation with HAdVs/BAdVs. The study thus gives a case of how quantifying both physiochemical, Faecal Indicator Bacteria and adenoviral markers in surface water can improve water quality evaluation and help tailor Central Pollution Control Board India programs for impaired water bodies in the future.
- *Listeria* spp. could not be detected in ready to eat meat products collected from different retail shops of Punjab state indicating that such products undergo hygienic processing and are fit for consumption in the region of study.

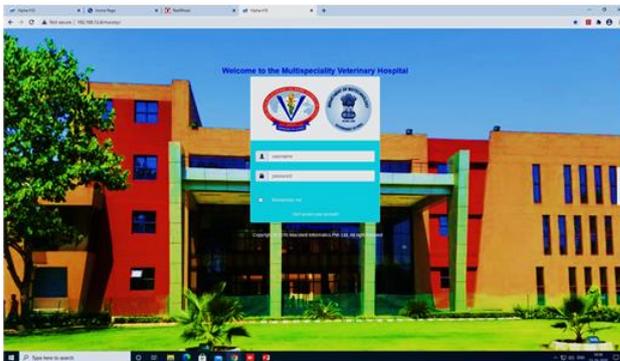
16. Animal Disease Research Centre:

- A total of thirteen outbreaks of different bacterial, viral, parasitic diseases and toxicities were attended and successfully controlled during 2020-2021. Disease data from the state was provided to NIVEDI for developing database for forecasting of infectious diseases. Routine diagnostic tests for the diseases like tuberculosis, Johne's disease and brucellosis was carried out to make the farmers aware of diseases and take necessary precautions to prevent the same.
- Faculty members also provided services in Clinical diagnostic laboratory/Clinical Microbiology laboratory of Multispecialty Small Veterinary Hospital for rapid and confirmatory diagnosis of small animal diseases, farm animal diseases and for other research activities of university.

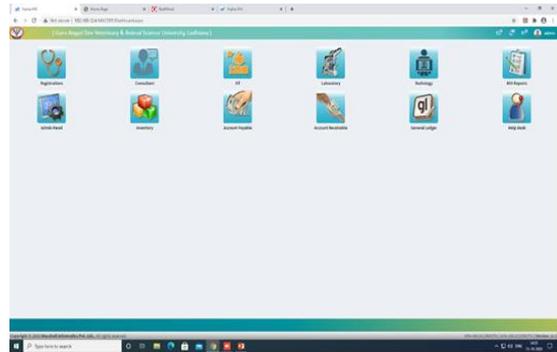
17. Department of Teaching Veterinary Clinical Complex

Teaching Veterinary Hospital Database Management System: A web-based Teaching Veterinary Hospital Database Management System has been customized and operationalized in GADVASU Teaching Veterinary Hospital. For efficient working of the system, various modules have been developed including:

- Dashboard
- Registration and Bar Code generation: Animal Owner & Animal
- Billing: Consultancy, Laboratory, Radiology, Service/Procedure/Package
- Consultant: Department workbench, Vaccination & Deworming, Animal Health Record & Prescription (Electronic Management System)
- Laboratory: Pathology, Biochemistry, Microbiology, Toxicology, Public Health, Animal nutrition
- Radiology: X-ray, Ultrasound, Echo, Endoscopy, ECG
- Operation Theatre: OT schedule, OT entry
- Admin Panel: Include masters (Service, Doctor/Staff, State/City, User, Breed, Species, Lab reference values, Diagnosis, Vaccination, EMR, Anaesthesia), Service charge Setup, Consultancy charge setup, Utility (role management, user setup)
- Reports: Number and type of cases presented, Common diagnosis, Number of tests/radiology/services provided, Hospital collections
 - Inventory: Medicine list generator
 - Management information system for quick visualization and analysis of hospital data
 - Helpdesk: Change password, backup, logout
- Dedicated server room for managing hospital data has been established.
- Workstations have been installed at different sections of the hospital and connected with the server through intranet facility of the university.



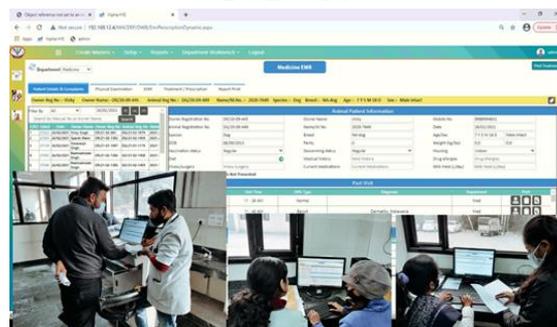
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Dashboard



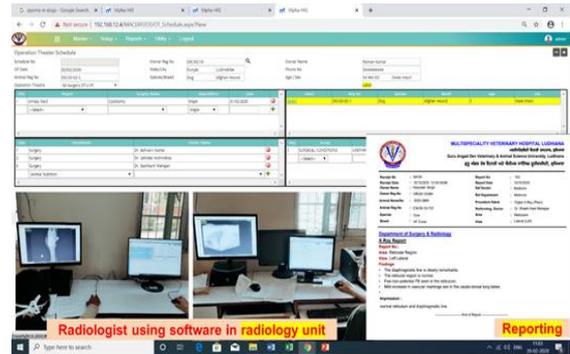
Registration and bar code generation



Clinicians and students using software in O.P.D.



Laboratory reporting



Radiology reporting

B. College of Dairy Science & Technology (CODST)

1. Dairy Technology

i. Ready to drink concoction of milk tea:

A ready to drink concoction of milk tea was developed that exhibited instantability, higher solubility, natural tea colour and taste with high sensory scores. Black Tea' bioactive components were extracted by optimizing brewing technique which showed significant ($p \leq 0.05$) variation based on time and technique of brewing. Additionally, a strong ($p \leq 0.01$) positive correlation was observed in TPC, TFC, vitamin C, DPPH, TF, TR/TF, BI and brightness.



Instantiation, reconstitution and natural tea colour of ready to drink concoction of milk tea

2. Dairy Engineering

i. **Solar driven ice bank tank (IBT):** IBT for milk cooling at dairy farms was developed which utilizes thermal fluids to harness solar energy and helped in fabrication of hydridized ice bank tank to generate cold water for dairy industry. It has a refrigeration capacity of 2-3 tonnes and works as miniature vapour absorption system for milk cooling at dairy farm.



Solar-Thermal fluids driven hybridized Ice bank tank for milk cooling

ii. Mechanization of mozzarella cheese manufacturing at cottage scale: The unit is designed for a capacity of 125 litres of milk with a yield of 13 kg of mozzarella cheese. The unit mechanizes the process of mozzarella production resulting in uniform product and reduction in contamination and popularizing the manufacturing of mozzarella cheese at small scale.

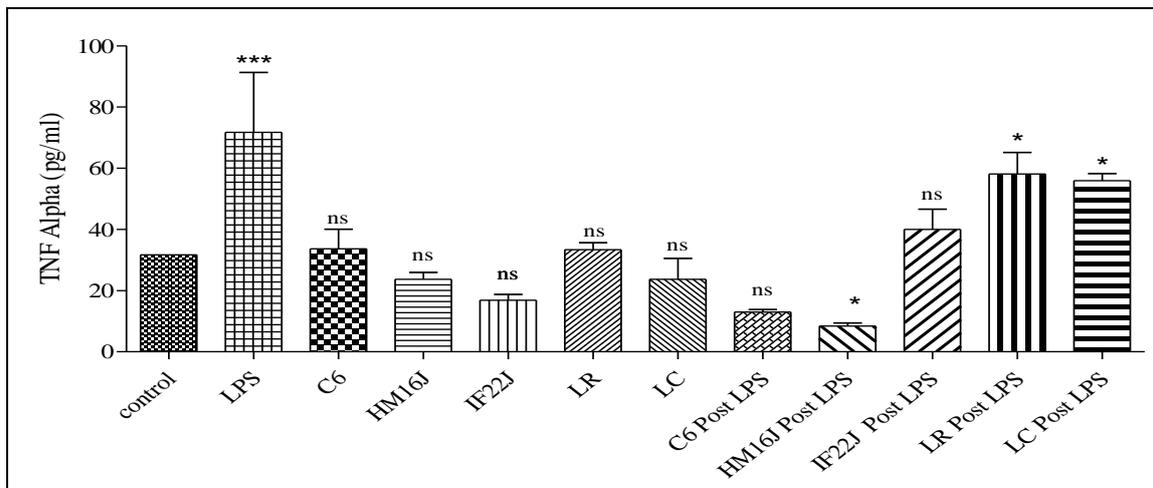


Prototype for mozzarella cheese manufacture at cottage scale - designed and fabricated at CODST

3. Dairy Microbiology

i. Designer food for management of type-2 diabetes and targeting gut hormone modulatory potential of probiotics: *Lactobacillus* strains of bacteria qualifying for probiotic and safety characteristics were isolated from human milk, goat milk, healthy human infant faecal samples, fermented milk products etc. The strains were screened for their gut hormone (GLP-1, GIP, PYY) secretion and expression potential from intestinal cells using specialized STC-1pGIPneo cells along with their DPP-4 and alpha-glucosidase inhibitory potential. In addition, their anti-oxidative and anti-inflammatory potential was also determined. Shortlisted strains were used for development of a Synbiotic Designed Food i.e., curd along with prebiotic having low glycemic index. The fermented curd whey further displayed gut hormone modulatory potential *in vitro*. This technological intervention will be of high significance to society and will have high commercial value when tested *in vivo*.

ii. Evaluation of anti-oxidative potential of candidate probiotic *Lactobacillus* strains of indigenous origin: A total 46 different bacteria isolates were isolated from human milk, goat milk, infant faeces and curd samples out which 10 bacterial isolates were screened using morphological and biomolecular identification methods with final confirmation using MALDI-TOF. The isolates were analyzed for anti-oxidative potential using DPPH, FRAP and ABTS scavenging activity and *L. delbruekii* C6, *L. fermentum* HM16J and *Enterococcus faecalis* IF22J constantly exhibited moderate to high antioxidant activity. HM16J and C6 *Lactobacillus* isolates showed anti-inflammatory action and can be used as potential anti-oxidants in pharmaceutical and in food after validating probiotics potential, anti-oxidant efficacy under *in vivo* conditions and safety assessment.



Effect of different *Lactobacillus* bacterial cells and lipopolysaccharides on TNF alpha expression from pGIP/Neo STC-1 cell line

4. Dairy Chemistry

- Beetroot fortified yoghurt with beetroot juice concentration of 5 per cent and 7.5 per cent was found to be having best antioxidant levels and was beneficial for the health. The natural pigment betalains present in beetroot can be used as natural colorant in food industry instead of synthetic colorant.

5. Dairy Economics and Business Management

i. Economic and marketing status of pig farming in Punjab: The total cost incurred for pig rearing in large pig farms was Rs. 3,67,250 followed by medium and small pig farms with Rs. 2,03,500 and Rs.1,14,000 respectively. The net returns per farm from pig farming were found to be maximum in large farm and with the major chunk of expenditure was on feed

ii. Economics of rearing buffalo in Punjab with special emphasis on male calves: The net returns was positive (Rs. 2365) when buffalo calves were reared for a minimum period of 6-9 months and Rs. 3155 for period of 9-12 months. The main reason for culling of buffalo male calves was poor weight gain while that for disposal of buffaloes were repeat breeding (32%), fluctuating milk prices (25%) and reproduction related problems. It was found that reducing

the age at first calving was very important so as to minimize the cost of rearing of buffalo at farm level through scientific management practices through quality feeding.

iii. Economic evaluation of production and marketing of goat farming in Punjab: The goat farming provided 50 per cent and 44 per cent of farm income in organized and traditional farms respectively, with overall net return/goat/month as Rs. 325 and Rs. 392, respectively. The marketed surplus of goat milk was 78.58 per cent in organized and 69.08 per cent in traditional farms. The main production problems faced by organized goat farmers were costly concentrate feed while for traditional goat farmers, it was lack of fallow land for grazing. Less price of goat milk, fluctuating prices and lack of proper market were important delimiting factors in marketing.

C. College of Fisheries (COF)

A. Inland Saline Water Aquaculture

i. Socio-Economic and quality analysis of shrimp farming in south-western Punjab: Socio-economic and quality analysis of shrimp farming in inland saline areas of south west districts of Punjab viz., Fazilka (7-16ppt), Sri Muktsar Sahib (9-16ppt) and Mansa (12-15 ppt) revealed that over 50% of shrimp farmers were <35 years age, with graduation level education, >10 acres total land holding, including 2-5 acres land under shrimp farming for last 2-3 years. Abiding to the pandemic resilience recommendations issued by GADVASU (delayed stocking in June/July, restricted to 1.0-1.5 PL acre⁻¹), 66.7 per cent farmers harvested 2.6- 3.5 tonnes (t) shrimp acre⁻¹ crop⁻¹ of 100 to >120 days (FCR < 1.2), with net income ranging from 3-5 lakhs (26.7%) to >5 lakhs (60%) and benefit-cost ratio (BCR) of >1.0 recorded in case of 43.3 per cent farmers (23.3% - BCR>1.25). In terms of Mg²⁺/Ca²⁺ ratio and K⁺ concentration ppt⁻¹ salinity; productivity; and income, the 3 districts ranked as Sri Muktsar Sahib > Fazilka > Mansa (P≤0.05). Concentrations of heavy metals and pesticides were below permissible levels (BPLs) in shrimp reared in all the districts. In respect to microbial load (TPC and presumptive *Vibrio* count), shrimp from Fazilka was the safest, while shrimp from other districts needed critical monitoring and post-harvest management to ensure consumer safety. Further, district ranking in terms of shrimp flesh quality (highest protein content) was Fazilka > Sri Muktsar Sahib > Mansa (P≤0.05).

B. Aquaculture Nutrition

i. High protein duckweed culture through manuring management: Culture technology for producing protein rich duckweed biomass was standardized by using different manures like cow dung (CD), poultry droppings (PD), combinations of CD+PD, vermicompost (VC) and *Azolla* compost (AC), to enhance its nutritive value for utilization in fish feed as protein resource. As compared to crude protein (CP) content (DM basis) of duckweed (18.02%) manured with CD, significantly higher CP content was recorded in duckweed manured with AC, VC, PD and CD+PD combination viz., 19.89, 20.94, 26.4 and 25.52 per cent, respectively. Among all tested manures, highest biomass and CP content was found in PD manured duckweed followed by CD+PD, VC, AC and CD manured duckweed.



Duckweed culture with different manures and harvested duckweed biomass

ii. Nutritionally rich organic binder for pellet fish feed: Protein rich aquatic weed known as “Duckweed” (*Spirodela polyrhiza*) was tested successfully as a potential binder in pellet fish feed manufacturing, with add on economic benefits in terms of enhanced pellet stability, improved storage life and contribution to feed nutritive value.



Duckweed paste as binder in pelleted fish feed

iii. Herbal feed additives: With an objective to develop eco-friendly fish feeds for enhanced productivity and disease resistance, efficacy of growth promoting immuno-stimulating herbal supplements (Ginger and *Moringa*) was evaluated in different fish species. Feed supplementation with ginger powder @ 1.5% revealed ginger to be one of the potential natural nutraceutical product that can be incorporated at an appropriate level i.e., 1.5 per cent (15 g kg⁻¹ diet) as an effective growth promoter and as an immunostimulant for prophylactic treatment in Indian carp *Labeo rohita*. Also, fish fed with moringa leaf powder incorporated feed (12.5%) fed @ 4 per cent BW, thrice daily resulted in improved survival (8%) and growth (20.39 %).



Ginger rhizome

Ginger powder

Ginger powder supplemented feed

Moringa leaf & powder

Fish sampling

iv. Utilization of non-conventional feed resource in fish feed formulation: With an objective to develop cost effective fish feeds for enhanced production, productivity and net

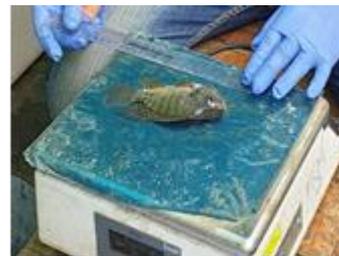
profitability without compromising with health status, some of the potential non-conventional ingredients were utilized by replacing conventional feed ingredients in different fish species. De-oiled castor seed cake was used for low cost grow out feed for Genetically Improved Farmed Tilapia (GIFT), *Oreochromis niloticus*, deoiled castor (*Ricinus communis* L.) seed cake (DCC) was added in fish meal @ 50- 200g/kg feed (5-20%) and was found that it can be incorporated in GIFT feed up to 20 per cent inclusion level for higher economic returns. Similarly, orange peel powder @ 1.5 per cent led to enhanced net weight gain (34.40%), highest fish survival (97.78%) improved flesh quality in terms of protein content (12.69% improvement) and health status, as compared to control.



Experimental set up



DCC incorporated feeds



GIFT reared on DCC incorporated feed



Orange peels



Orange peel powder

C. Intensive Aquaculture Technologies

Biofloc Aquaculture System (BFAS)

i. Standardization of stocking density of high value Pangas catfish in BFAS:

A biofloc based preliminary aquaculture trial was conducted to evaluate the survival and growth performance of high value pangas catfish (*Pangasius hypophthalmus*) with varying stocking densities (40-60/m³). At stocking density of 50/m³, enhanced survival (6%) and growth rate (33%) was achieved along with improved FCR (0.85).



Biofloc production system



Biofloc measurement



Fish reared in BFAS

ii. Efficacy of carbon source in Biofloc system: Different carbon sources (jaggery, molasses, sugarcane bagasse and rice bran) were evaluated in BFAS for culture of amur carp, *C. carpio haematopterus*. Fish reared in all the carbon sources showed enhanced survival (80%), with no significant difference in fish growth, however in BFAS with molasses as carbon source, remarkable FCR (1.16) improvement was observed.

Aquaponics System: An automated aquaponics system for vertical farming was established in collaboration with Centre for Development of Advanced Computing (C-DAC), Mohali, Ministry of Electronics and Information Technology (MeitY), Government of India (GOI), for developing regionally viable package of practices for optimized economic output. Successful preliminary trial (4 months) was conducted by integrating three food fish species (pangas catfish, GIFT tilapia and common carp) in aquaculture unit and winter season vegetables (lettuce, spinach, fenugreek, coriander) in hydroponics unit. Survival of all the fish species was more than 90 per cent and amongst vegetables, Spinach and Lettuce performed best in terms of production.



Automated Aquaponics System at COF in collaboration with C-DAC, Mohali



Vegetables (lettuce & spinach) and Pangas catfish produced in Automated Aquaponics System

D. Aquaculture Technology Innovations:

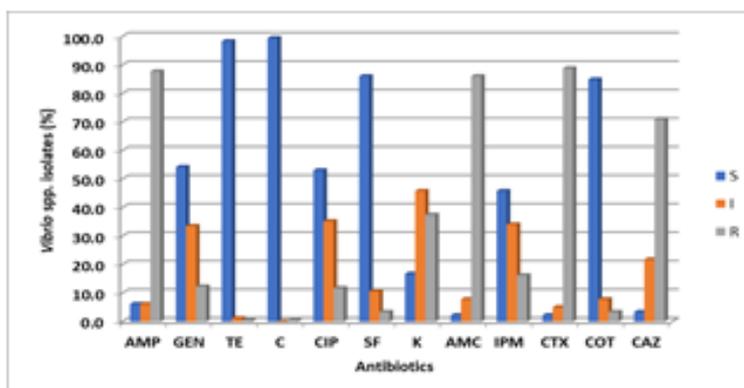
i. Portable conical hatchery for Pangas catfish breeding: A portable conical hatchery (cost- approximately Rs 20,000/-) was designed, fabricated and successfully tried for breeding of pangas catfish *Pangasianodon hypophthalmus* having water and air injectors (3 ft diameter, 5ft long, with incubation capacity of 1.2-1.5 lakh egg). As compared to traditional hatchery, hatching rate was improved (30%) with 60-65 per cent water saving.



E. Aquaculture Health Management

i. Prevalence and antimicrobial resistance of potentially pathogenic vibrios in inland saline shrimp culture:

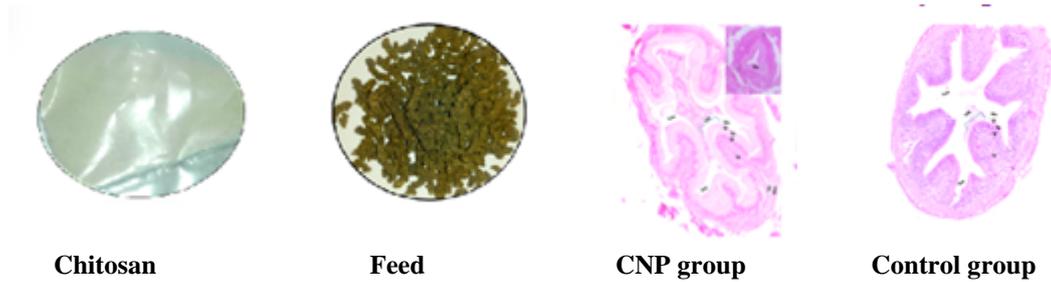
Antimicrobial testing for the very first time in non-coastal inland saline shrimp culture farms against 12 antibiotics revealed that among all *Vibrio* and *V. parahaemolyticus* isolates highest resistance was observed against cefotaxime (91.6%), ampicillin and amoxiclav (90.9%) respectively. Also, high (>50%) resistance was observed against ampicillin, amoxiclav, cefotaxime and ceftadizime. Among all the *Vibrio* isolates, 95.8 per cent isolates were resistant to 2 or more antibiotics, whereas 87.4 per cent isolates were resistant to 3 or more antibiotics. It suggests that multidrug resistant *Vibrio* in the environment could act as the reservoirs of antibiotic resistance genes.



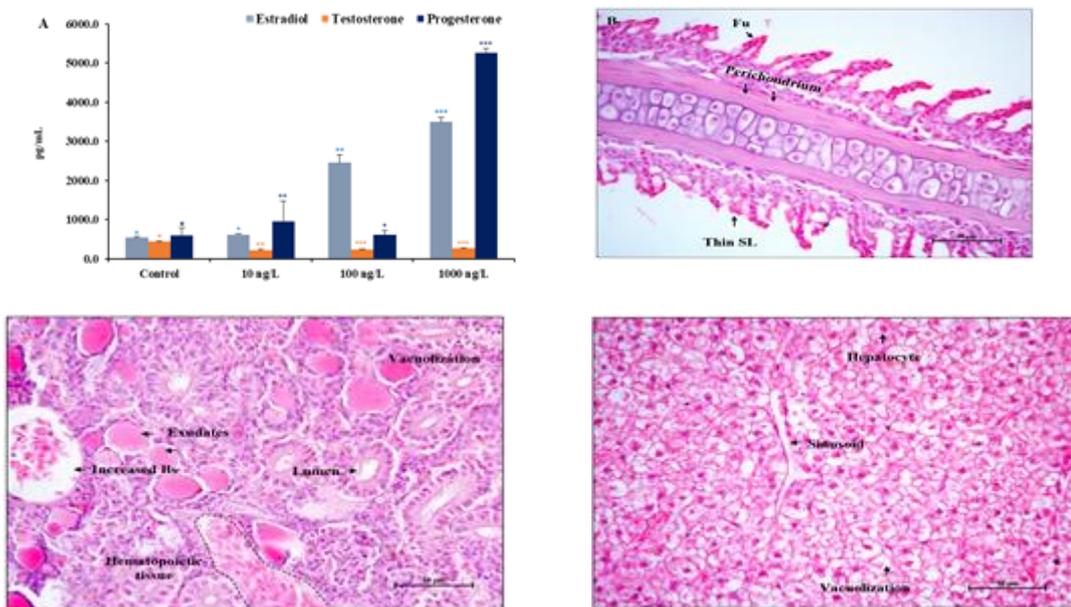
Antimicrobial susceptibility patterns of *Vibrio* isolates from inland saline water areas against 12 antibiotics. Sensitive (S), Intermediate (I) and Resistant (R) interpretations against each antibiotic were made as per as per Clinical Laboratory Standards Institute (CLSI) guidelines. AMP – Ampicillin, GEN – Gentamicin, TE – Tetracycline, C – Chloramphenicol, CIP – Ciprofloxacin, SF – Sulfisoxazole, K – Kanamycin, AMC -Amoxiclav, IPM – Imipenem, CTX – cefotaxime, COT - Co-trimoxazole, CAZ – Ciftazidime

ii. Nanoparticle based novel oral biofilm recombinant vaccine model for aquaculture:

Chitosan fed @ 1.5g/kg diet showed significantly increased immune response (respiratory burst, myeloperoxidase and lysozyme activity) along with higher resistance against pathogenic *Aeromonas hydrophila* and *A. veronii* infection in rohu fishes. Chitosan nanoparticles (CNP) when incorporated in diet @ 1g/kg feed significantly increased villi height compared with control along with goblet cells in mucosa layer hence, better absorption capacity of the intestines.

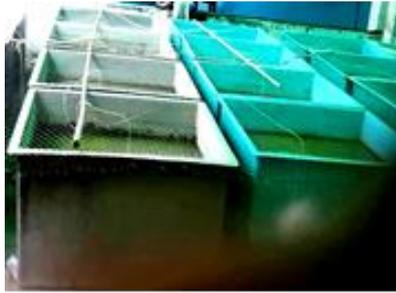


iii. Biomarkers for environment impact assessments: Bisphenol-A (BPA), a ubiquitous endocrine disrupting chemical (EDC), revealed various physiological changes like damage to gills, hepatic and kidney tissues of the common carp *C. carpio*, suggesting its toxicity. BPA perturbs aromatase enzyme isoforms, vitellogenin and complement-3 expressions, serving as early and end point measures of its toxicity.

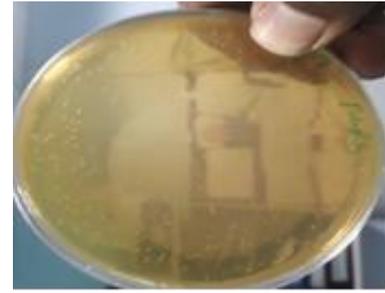


Plasma estradiol, testosterone and progesterone levels and representative micrographs showing histological changes in gills, kidney and liver of *Cyprinus carpio* exposed to BPA for 28 days

iv. Probiotic Application: *Lactobacillus plantarum* FLB1 (probiotic from gut of *L. rohita*) feeding @ 10^9 cfu g^{-1} in feed enhanced growth; improved hematological/serum biochemical parameters (total protein, albumin, globulins) and non-specific immune response (increased lysozyme and respiratory burst activity) indicating improvement in overall health status of fish.



Experimental setup for probiotic feed trial



Probiotic culture

v. Surveillance of freshwater and saline water fish and shellfish diseases in Punjab: During 2020-21, non-infectious (white muscle, cramping, loose shell, black mouth etc.) and infectious (*Enterocytozoon hepatopenaei* (EHP) shrimp disease were reported in the shrimp farms; bacterial (*Aeromonas hydrophila*) and parasitic diseases (*Larvae* and *Argulus*) in fish farms from 4 districts of Punjab. After proper screening, for disease management, farmers were advised to take up appropriate preventive/remedial measures and biosecurity protocols

Non infectious diseases



Loose Shell



Cramping



Black Mouth

Infectious diseases



Black Gill



EHP



Argulosis

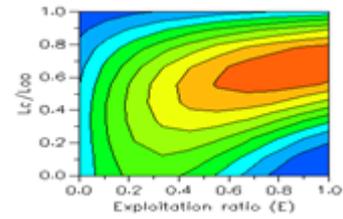
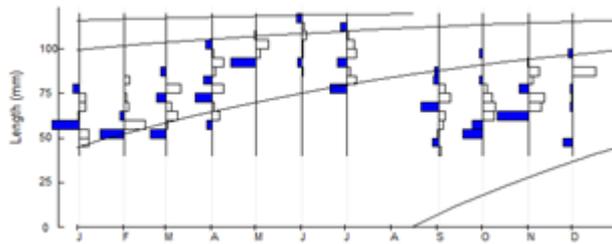
F. Fisheries Management in Natural Resources

i. Population dynamics of *Puntius sophore* (Hamilton, 1822) of river Sutlej in Punjab:

The length-frequency data of 579 specimens of *P. sophore* captured from different stretches of river Sutlej were collected fortnightly from Tajpur fish market and Haibowal fish market (Devnagar).

- Asymptotic length (L_{∞}) from von Bertalanffy growth equation was found as 123.5 mm, whereas Fulton's condition factor (K), age at length zero (t_0) and growth performance index (ϕ') was recorded as 1.18 yr^{-1} , -0.7672 yr^{-1} and 4.241, respectively. The estimated natural mortality coefficient *i.e.*, 1.25 yr^{-1} was greater than fishing mortality (1.03 yr^{-1}).
- Prediction of the maximum length from extreme values at 95% confidence interval was calculated as 112.48-138.24 mm. The recruitment pattern of *P. sophore* showed peaks

during May and June. It was concluded that *P. sophore* stock was under-exploited and stock may be considered to be exploited optimally.

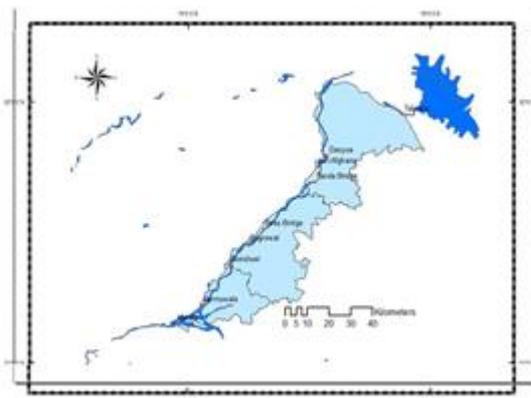


Von Bertalanffy restructured growth curve of *P. sophore* superimposed on the restricted length frequency histogram with normal length-frequency histograms. Lines superimposed on the histograms link successive peaks of growing cohorts as extrapolated by the model

Yield isopleths diagram (Recruit analysis knife-edge)

ii. Riverine health assessment

Beas: Seasonal and temporal variations along the downstream course of the river (Talwara to Harike) was observed and all the water quality parameters recorded were within the limits as recommended by PPCB and CPCB at all the stretches throughout the study period. It was recorded that the overall ecological health of river was good enough to support aquatic life, the stretch from Gagrewal to Harike (Dolphin hotspot) appeared to be affected with detrimental (above permissive levels) of BOD, pesticide residues, fecal coliform etc. and hence, conservation strategies are warranted.



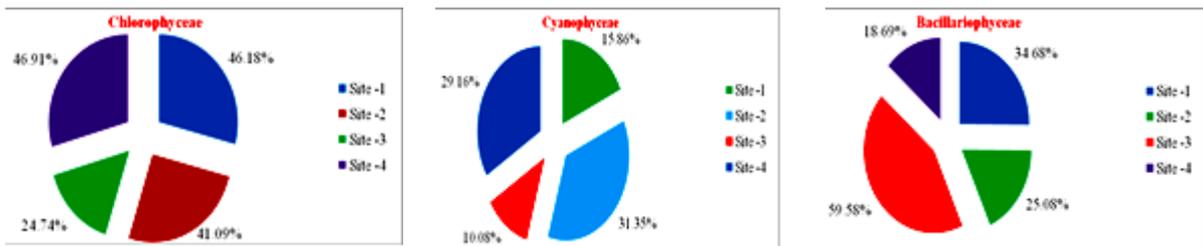
Map showing the sampling spots along the River Beas

A view of the River Beas

Water Sampling

Sutlej: Ecology of the river was studied to see the effect of industrial effluents and other wastes in Buddha Nallah discharge on the planktonic diversity and biology of commercially important fish species (*Cyprinus carpio*, *Labeo rohita*, *Wallago attu* and *Aorichthys seenghala*) on seasonal basis. Four spots (S-1 to S-4) from the entry of river into the state (at Ropar Headworks in district Ropar) up to its confluence with river Beas at Harike Pattan

(District Tarn Taran) were selected for the study. The overall water quality was found to be good at all Site 1, 2 and 4. Site 3 was not fit for fish health and was hindering in fish reproductive physiology which might be attributed to higher pollution load after the mixing of Buddha Nallah into it at village Wallipur Kalan. Also there was high population of bacillariophyceae indicating high pollution load with acidic pH at the site. Site 2 was the best due to higher population of cyanophyceae which can be attributed to direct discharge of Phillaur sewage at Site-2, which might have led to nutrient rich conditions at this site.



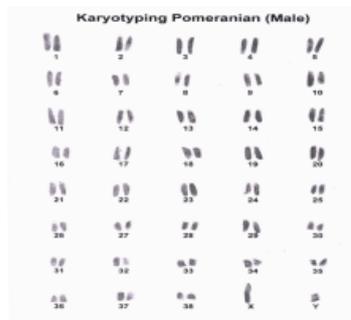
Distribution of phytoplankton population in selected stretches of River Sutlej

D. College of Animal Biotechnology (COABT)

i. Karyotype album on dogs: One karyotype album on ten exotic and one indigenous (Indian Pariah) breed of dogs was developed. Whole-genome of Gaddi breed was sequenced for the first time in the world.



Karyotype (G- Banding) of Pit-Bull male



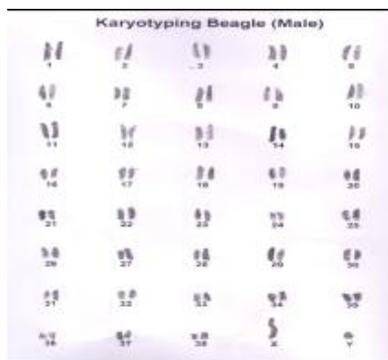
Karyotype (G- Banding) of Pomeranian male



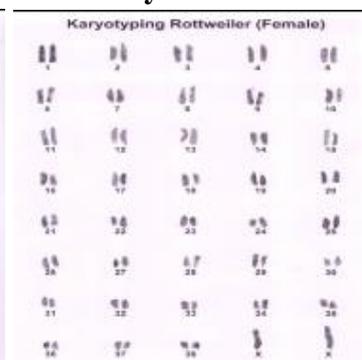
Karyotype (G- Banding) of Greyhound male



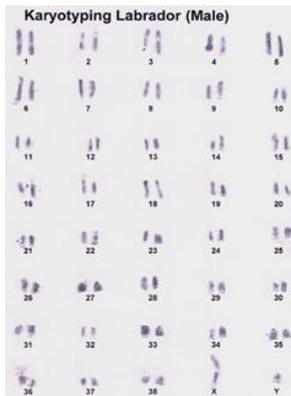
Karyotype (G- Banding) of American Bully male



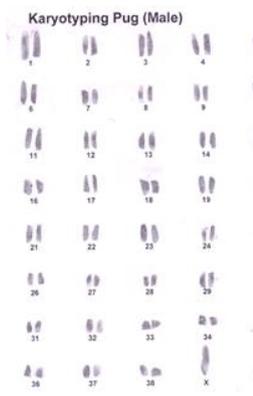
Karyotype (G- Banding) of Beagle male



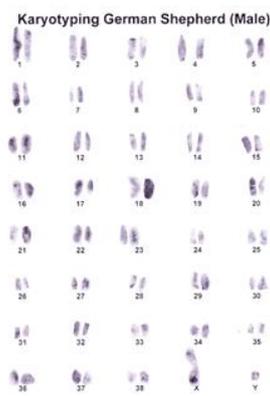
Karyotype (G- Banding) of Rottweiler Female



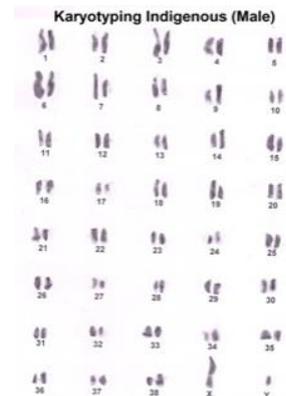
Karyotype (G-Banding) of Pit-Bull male



Karyotype (G-Banding) of Pomeranian male



Karyotype (G-Banding) of Greyhound male

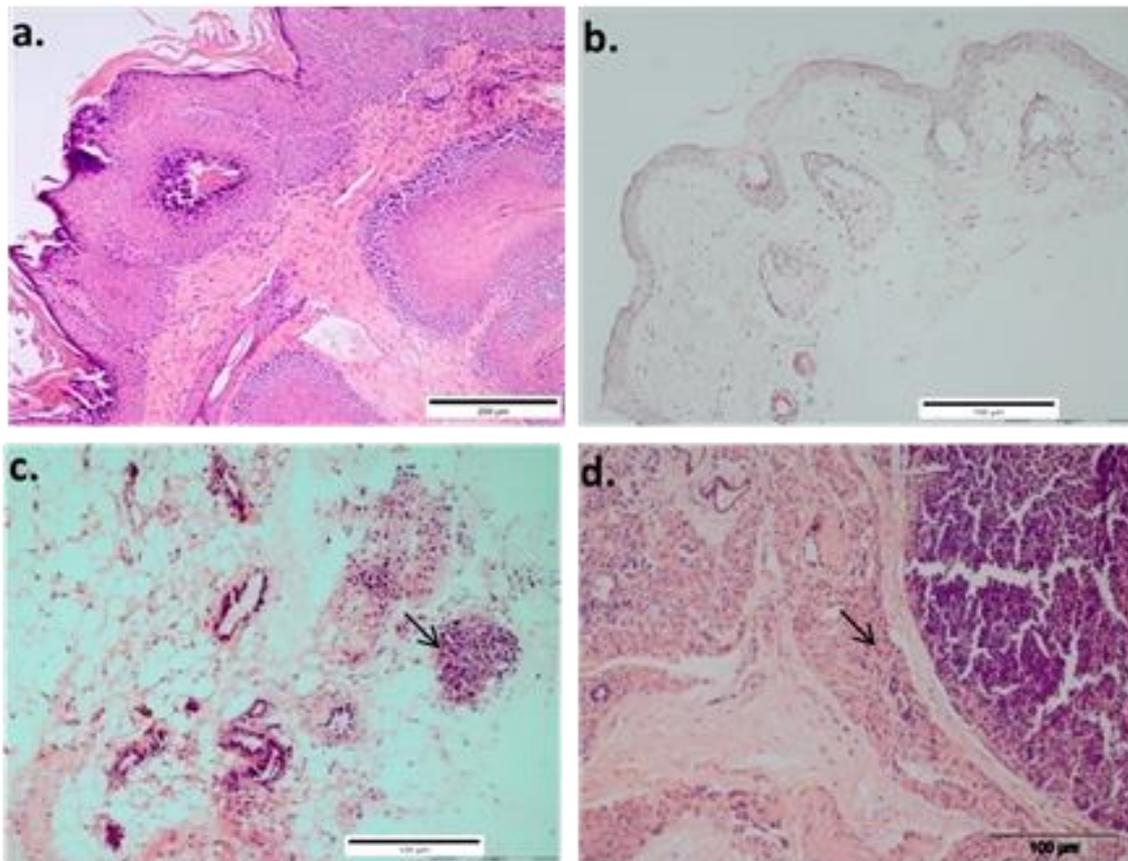


Karyotype (G-Banding) of Pit-Bull male

ii. SNP studies on Beetal goat in Punjab: Single Nucleotide Polymorphisms (SNPs) in exon1 of the GDF9 gene (also called FecG) of Beetal goats at A183C and exon 2 C818T showed a significant association with reproductive traits *viz.* age at sexual maturity, age at kidding and litter size and can be used in marker assisted selection and selection of superior germplasm of Beetal goats.

iii. Diagnosis of leptospirosis: A PCR assay was standardized based on 16s *rrs* gene and lipL32 gene of *Leptospira interrogans*. With modified agglutination test, 10 per cent samples showed anti-leptospiral antibodies while with PCR assay 3 per cent samples came positive. Phase separation technique is being standardized to separate the outer membrane proteins of *Leptospira*.

iv. Development of therapeutic DNA vaccine against mammary tumors: Two xenogenic therapeutic DNA vaccine constructs have been generated, firstly in the bicistronic vector pIRES, expressing canine mammaglobin and Mucin-1 along with mice IL-2, followed by their sub-cloning in pVax-1. The construct with canine mucin-1 and mice IL-2 showed tumor regression with enhanced CMI response.



Photomicrographs of mammary tumors of mice post 15 (a) and 45 (b) days of immunization with Mammaglobin construct. No tumor regression was observed and solid papilloma or hemangiosarcoma were present. Group of mice post 15 (c) and 45 (d) days of immunization with Mucin-1 construct showed tumor regression which is evident from the presence of tumor infiltrated with lymphocytes, H & E staining.

RESEARCH PROJECTS

Submitted Projects			
S.No	Title of Project	budget	PI
Board of Research in Nuclear Sciences (BRNS), Deptt of Atomic Energy (DAE)			
1	Development of phage-based strategies for biocontrol of antibiotic resistant Aeromonas species in fishery products	3438000	Dr. Anuj Tyagi
CCRAS			
2	Strengthening of the Medicinal Plant Garden for Veterinary Ayurveda Research developed at GADVASU, Ludhiana.	3812600	Dr. Santosh Shantilal Mane
3	Strengthening of the Collaborative Research Centre for veterinary Ayurveda, GADVASU	2800600	Dr. Gajarmal Amit Ashok & Dr. VK Dumka
4	Clinical Evaluation of the Efficacy of Ayurveda Formulations in the Management of Mastitis in Bovines	2855600	Dr. Gajarmal Amit Ashok & Dr. Rashmi Sagar Bhullar
DBT			
5	Development of phage receptor binding proteins based assays for rapid detection and quantification of vibrio parahaemolyticus in seafood	3470764	Dr. Anuj Tyagi
6	Achieving efficient reproduction through balanced nutrition by designing need based instructional materials for dairy stakeholders under the "Biotechnology	2000000	Dr. Rajesh Kasrija
7	Promotion of scientific poultry practices for improving productivity of backyard poultry birds in periurban area of the District Mohali, Punjab.	2100000	Dr. Shashi Pal
8	Establishment of a Consortium for One Health to address Zoonotic and Transboundary Diseases in India, including the Northeast Region	14883840	Dr. JS Bedi

9	Modelling of indigenous diagnostics and Immune-potent vaccine candidates to combat African swine fever in India.	37893312	Dr. Yashpal Singh Malik
10	Autochthonous quorum-quenching-probiotics to biocontrol Aeromonas hydrophila infection in Indian major carps	10441096	Dr. Anuj Tyagi
11	Therapeutic Evaluation of Secretome Milk- Derived Stem Cells in Bovine Mastitis	1600000	Dr. Ratan K Choudhary
12	DBT-Builder-Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana Interdisciplinary Life Science Programme for Advance Research and Education	100000000	Dr. Yashpal Singh Malik
13	Investigating the Role of Adipose Tissue-Derived Stromal Vascular Fractions (SVFs) Combined with Xanthosine in Veterinary Regenerative Medicine	5448000	Dr. Ratan K Choudhary
Department of Horticulture, Punjab			
14	Establishment of small scale vegetable processing unit at Krishi Vigyan Kendra, Tarn Taran for farmers of District Tarn Taran, Punjab	1895000	Dr. Nirmal Singh.
15	Establishment and popularization of protected cultivation technology at KVK Farm for the vegetable growers of Tarn Taran through demonstrations	530000	Dr. Nirmal Singh
Deptt of Soil and Water Conservation Tarn Taran			
16	Promotion of water saving technologies in horticultural crops for the farmers of district Tarn Taran, Punjab	76009	Dr. Nirmal Singh.
DST			
17	Fund for Improvement of S& T Infrastructure in Universities and Higher Educational Institutions (FIST) Program-2020	31550000	Dr. Baljinder Bansal

18	Fund for Improvement of S& T Infrastructure in Universities and Higher Educational Institutions (FIST) Program-2020	150 US\$	Dr. Manish Kumar Chatli
19	Mainstreaming one health: Communicating with livestock farmers and secondary school students to reduce zoonotic and pandemic risks and improve food	2801600	Dr Jaswinder Singh
20	Implementation of Learning Management System for Amalgamating of e-Learning of Veterinary Students and Farmers of Punjab	1937800	Dr. Nirmal Singh,
21	Insights into the metabolic dysregulations associated with environmental arsenic exposure in domestic chicken (<i>Galus galus domesticus</i>) for the development	3162100	Dr. Subrat Kumar Dash
22	Mineral status in South western districts of Punjab with respect to seasonal variations and amelioration strategies for Dairy Animals	2489600	Dr. Pallavi Khajuria
23	Digital puppetry: An entertainment-based e-learning tool for dairy farmers of punjab.	2443600	Dr. Arunbeer Singh
24	Promoting Awareness on Livestock through education tools (paltoo) among School students in rural punjab	2751600	Dr. Jaswinder Singh
25	Milk-Based Biomarkers as Tools to Evaluate Production Potential and Gland Health	5674560	Dr. Ratan K Choudhary
ICAR			
26	Experiential Learning in Scientific Intensive Poultry Production	16215220	Dr. Anand Prakash
27	Utilization of agro and livestock waste in subsistence ration for Gaushala, Livestock & Fish Farming	27000000	Dr. Udeybir Singh

ICAR-NASF			
28	Creating an integrated multi-renewable energy technologies model for selected unit operations of a multi-product milk processing unit using artificial intelligence	40000000	Dr. Amandeep Sharma
29	Utilization of fish waste as fish silage in pig ration	21200000	Dr. Udeybir Singh
30	Development of machine learning model based on infrared thermography, a novel diagnostic technique for the automatic early diagnosis of mastitis in cattle	27225000	Dr. D.K. Gupta
31	Development of biochemical and molecular mechanisms-based surveillance and mitigation technologies/tool for the management of acaricides resistant cattle	41200000	Dr. Nirbhay Kumar Singh
32	Development of body weight-cum-condition score estimation tool based on mobile snap/click for precise goat production and marketing	13006400	Dr. Sandeep Kaswan
33	Harnessing Information Technology (IT) for Knowledge Management of Diverse Groups of Stakeholder involved in Livestock Sector in Punjab	45000000	Dr. Y.S. Jadoun
34	Holistic approach to develop disease management strategies to combat the Red sea bream iridovirus (RSIV) and infectious spleen and kidney necrosis virus	25000000	Dr. Naveen Kumar B.T.
Ministry of Rural Development and Panchayats			
35	Establishment of instructional Gaushala at GADVASU, Ludhiana.	10731000	Dr. Sikh Tejinder Singh
NABARD			
36	Promoting organic kitchen gardening for sustainable production, nutritional security and income enhancement during Covid-19 pandemic	1610000	Dr. Yaswant Singh

37	Sustainable vegetable production for nutritional security through organic kitchen gardening in rural household in district Barnala (Punjab)	1770000	Dr. Prahalad Singh Tanwar
38	Improving the Milk Quality and Productivity of Dairy Animals by Adopting Mastitis Management Practices Among Dairy Farmers in S.A.S. Nagar (Mohali) District	1910000	Dr. Yashwant Singh
39	Strengthening of Self-Help Groups of District S.A.S. Nagar for livelihood security	2400000	Dr. Parul Gupta
40	Enhancing of employment opportunities through apiculture among youths in District Barnala (Punjab)	1140000	Dr. Prahalad Singh Tanwar
41	Development of VET MOOCs on Dairy and Poultry Farming vis-a-vis Establishment of e-Learning Centre at GADVASU, Ludhiana	2390000	Dr. Amandeep Singh
42	Deciphering the role of Artificial intelligence in dairy farms at border area of district Tarn Taran, Punjab, India	9862080	Dr. Suresh Kumar
National Fisheries Development Board (NFDB), Hyderabad			
43	Demonstration of monosex Tilapia culture in freshwater ponds of districts S.A.S. Nagar (Mohali) and Roopnagar, Punjab	3600000	Dr. Vikas Phulia
National Horticulture Board (NHB)			
44	Popularization of Terrace gardening through demonstraions and extension approaches in peri-urban areas of district Mohali under Pandemic situation like	1250000	Dr. Munish Sharma
NICRA, ICAR			
45	Omic correlates of hypoxia as surrogates for climate change impacts in farmed freshwater fish under the theme area "Genome guided transcriptome analysis for identifying climate change adaptive genes in aquaculture species	9081100	Dr. Shanthanagouda A.H.

46	Transcriptome-based approach for detection of cold-responsive genes and pathways in Pangasianodon hypophthalmus to develop perennial culture practices in Northern India	3500000	Dr. Anju Tyagi
47	Carbon labeling of milk production under different feeding systems and strategies for its efficient reduction in India	12375000	Dr. RS Grewal
48	Adaptation strategies for inland culture fisheries and fishers for climate resilience and livelihood security in Punjab, India.	8572000	Dr. Surjya Narayan Datta
49	Evaluation of losses in crops and livestock during extreme weather conditions	9541000	Dr. PS Tanwar
50	Dietary manipulations to reduce enteric and manure greenhouse gas emissions in buffalo heifers	7755000	Dr. Jasmine Kaur
51	Climate change and mitigations of anthelmintic resistance in gastrointestinal nematodes (GIN) of ruminants in Punjab	7535440	Dr. Paramjit Kaur
52	Study of grey water footprints in Dairy Sector (from Dairy Farms to milk plants) in Punjab	5940000	Dr. Inderpreet Kaur
53	Genomic evaluation of buffaloes for extreme weather induced production losses and its amelioration through managemental and nutritional interventions	19470000	Dr. Neeraj Kashyap
PMMSY, MFAHD			
54	Establishment of Capacity Building Resource Centre for Intensive Aquaculture Technologies-Re-Circulatory and Biofloc Aquaculture Systems	13905000	Dr. Meera D Ansal
SERB			
55	“Innovative electrospun nanofibers to enhance the nutritive value & storage stability of livestock products”	6734000	Dr. Rajesh Vishwanath Wagh,

56	Accelerated Bioprocessing of Dairy Waste for Value-Added Production of L- Lactic Acid Using Multiphase Co-Cultured Fermentation	2504480	Dr. Namita Rokana
57	Exploration of fish faunal diversity and DNA barcoding of prioritized fishes of river Sutlej	3001480	Dr. Grishma Tewari
58	Exploration of fish faunal diversity and DNA barcoding of prioritized fishes of river Sutlej Exploration of fish faunal diversity and DNA barcoding of prioritized fishes of river Sutlej	3000000	Dr. Anuradha Kumari
59	Effect of various extender compositions and storage temperatures on quality and fertility of Boar semen	2981000	Dr. Gurjot Kaur Mavi
60	Mineral profiling to develop amelioration strategies for dairy animals in South Western district of Punjab	2900000	Dr. Pallavi Khajuria
61	Natural Multivalent Antimicrobial Peptides for combating Antimicrobial Resistance in the Milk Chain	6296620	Dr. Harsh Panwar
62	Sustainable Production of Polyhydroxyalkanoate (PHA) Biopolyesters Using Dairy Industry Waste	2999800	Dr. Namita Rokana
63	Nanoencapsulation of chia seed oil for the development of omega-3 fatty acids enriched dairy products	3152844	Dr. Manvesh Kumar Sihag
64	Novel antibiotic alternatives to Ameliorate antibiotic resistance problems with enhanced production and Immune-modulation in Poultry	1027277	Dr. Anand Prakash
65	To study the correlation of antibiotic-resistant genes in phages and bacteria and their transmission from phages to bacteria	5825240	Dr. Mudit Chandra

66	Metagenomic analysis of bovine rumen under changing climatic scenario	7106000	Dr. Gurpreet Singh
67	Nanotechnological applications for breeding technology development and enhanced growth of high commercial valued striped catfish <i>Pangasianodon hypophthalmus</i>	3411480	Dr. Surjya Narayan Datta
68	Value addition and diversified use of underutilized fruit shrub Karonda (<i>Carissa carandus</i> L.): Development of Functional Foods through Nano-technological Intervention	4200000	Dr. Monika Mahajan, PAU Dr. Sunil Kumar, CODST GADVASU
69	Development and Quality Evaluation- Novel Nanobiocomposite Packaging Material Reinforced with Functional Ingredients –Lab to Commercial Application	4609600	Dr.S. Sivakumar
70	Assessment of airway remodelling associated with endoplasmic reticulum stress and mitochondrial dysfunction in acute and chronic lung injury	4581016	Dr. Nittin Dev Singh
71	Assessment of canine mammary neoplasms as a model for human breast cancer studies	3310120	Dr. Kuldip Gupta
72	Understanding and improving the efficacy of a cryospray process	4325000	Dr. Ajeet Kumar
73	Optimization of Biofloculant Producing Environment for Improving the Productivity of Genetically Improved Farmed Tilapia (GIFT strain; <i>Oreochromis niloticus</i>) in Biofloc System	3675980	Dr. Amit Mandal
74	Process Optimization to Reduce the Anti-nutritional Factors in Duckweed and its Potential Utilization in Food Products as a Non-conventional Protein Source for Feeding Future Generations	3146800	Dr. Vijay Kumar Reddy. S

US Defence Threat Reduction Agency			
75	One Health surveillance approach focusing on high-risk occupations to identify hotspots of zoonoses in India.	\$ 500,000-625,000 US	Dr. B.B Singh
Virbac Animal Health India Private Limited			
76	Effect of supplementing Chelated Agrimin Forte on the performance of dairy animals	1328400	Dr. Parminder Singh

Operational Projects		
Sr. No	Name of the Scheme	Budget
ICAR		
1	Strengthening and Development of Agricultural Education in Agricultural Universities	26050262
2	Network Project on Buffalo Improvement (Main Unit).(C: AGB-1)	8558000
3	Network Project on buffalo Improvement (Field Unit). (C:AGB-2)	4733333
4	Project Directorate on Cattle Field Progeny Testing Project.(C:AGB-3)	8906666
5	All India Coord. Research Project on Poultry Breeding.(C: AGB-4)	9241333
6	AICRP on Cattle New Project Sahiwal (Data Recording Unit). (C:AGB-5)	2746666
7	Project Directorate on Animal Disease Monitoring & Surveillance.	500382
8	AICRP on Nutritional and Physiological Approaches for Enhancing Reproductive Performance in Animals (Enhancing Reproductive Performance)75:25	1273520
9	All india network programme on diagnostic imaging and management of surgical condition in animals75:25	2050000
10	Monitoring of Drug Residues and Environmental Pollutants	698000
11	Integrated approaches for livestock development farmers context for implementation under Farmers First Programme	1550000
12	Network Project on Buffalo improvement center at GADVASU (Nili Ravi)75:25	3432000
13	All India Coordinated Research Project (AICRP) on Pig (75:25)	3169036
14	National Surveillance Programme for Aquatic Animal Diseases"	18751

15	Institutional Development Plan (IDP) for improved Learning Outcome, Skill and Entrepreneurship at GADVASU	64002496
16	ICAR-15: Establishment of a new KVK at village Majra, S.A.S. Nagar (Mohali)	80,63,000/-
17	ICAR-69: Cluster Frontline Demonstration on Oilseed (Rabi) under KVK S.A.S. Nagar (Mohali)	51,635/-
18	ICAR-75: Promotion of Agricultural Mechanization for In-Situ Management of Crop Residue in the state of Punjab under KVK, S.A.S. Nagar (Mohali)	10,46,745/-
19	ICAR-111: Entrepreneurship Skill Development among Scheduled Castes (SC) Communities of Selected Districts of Punjab through Fish Processing and value Addition	5,00,000/-
20	ICAR-16: Establishment of a New Krishi Vigyan Kendra at Village Handiaya, Barnala, District of Punjab.	1,46,36,582
21	ICAR-30: Frontline demonstration of Pulses under KVK-Handiaya, Barnala.	2,50,000
22	ICAR-51: Cluster Frontline Demonstrations of Oilseed (Rabi) 2016-17 under NMOOP for KVK Barnala.	2,08,026
23	ICAR-58: Skill Development Training under KVK Barnala.	3,80,250
24	ICAR-76: Promotion of Agricultural Mechanization for In-Situ Management of Crop Residue in the state of Punjab under KVK, Barnala.	17,06,977
25	ICAR-85: Microbial based agricultural waste management using vermi-composting under Swachhata Action Plan under KVK Barnala.	29,800
26	ICAR-86: Establishment of District Agro-Met Unit (DAMU) at KVK Barnala.	9,22,067
27	ICAR-87: Attracting and retaining youth in agriculture (ARYA).	28,97,693
28	Establishment of a new KVK at Panchayat Booh, Tarn Taran ICAR-14	1.15 cr
29	In-situ crop residue management	13.7000
30	Centrally Sponsored Scheme on Soil Health Card	-
31	Promotion of Agricultural Mechanization for In-situ Management of Crop Residue	8.97144
STATE		
32	Animal Disease Research Centre & Strengthening of diagnostic facilities and experimentation (NPV-26)	1.26135
33	Research Facilities for Dairy Cattle & Buffalo Breeding (NPV 16)	12300000
34	Additional Facilities for the modernization of dairy operations (NPV 19)	1050000

35	Advanced Research Centre for Dairy Animal Reproduction (NPV 18)	11950000
36	NPC-02-Establishment of College of Fisheries at Ludhiana	925000
37	NPV-14-Establishment of Fisheries Unit, GADVASU	680700
38	NPV-03: Strengthening of Emergency Services and Ambulatory Services in Veterinary Clinics	20,15,000/-
39	Genetics improvement in Poultry Stocks (NPV 17)	5000000
40	Establishment of Regional Research Centre for Nili Ravi Buffalo (NPC 3)	1100000
41	NPV-33-Strengthening of Fisheries Research in GADVASU	10000
42	NPV-35-Sustainable Aquaculture Technology for Salt Affected/Water Logged Areas of Punjab	10000
43	NPV-34-Fisheries Research Scheme	855960
DBT		
44	DBT-GADVASU Canine Research Centre and Networks	16637218
45	Multiplex-polymerase chain reaction based detection of tick borne canine haematozoan disease	812200
46	DBT Network Programme on bovine tuberculosis control: Mycobacterial diseases in animals network (My DAN) programme	1599200
47	To evaluate antigenic relationship among the Canine Parovirus types and vaccine strains using in-vitro cross neutralization test	691520
DST		
48	Synergistic effect of Modified Atmosphere Packaging (MAP) and antimicrobial edible packaging on shelf life of composite dairy foods (Doda burfi and Bottle gourd burfi)	82069
49	Solar driven technological interventional in manufacturing of ice bank (IBT) for milk cooling at dairy farms	1043055
50	" Nano-particle based oral bio-film recombinant "	681370
51	Engineering intervention for mechanization of mozzarella cheese manufacture at cottage scale	0
SERB		
52	Immunopathological and molecular studies on bovine cryptosporidial diarrhoea and associated etiologies	994325
53	Fast clotting clinical grade hemostatic agent for emergency care	698778
54	Designing and evaluation of various configurations of threaded intramedullary pins for canine long fractures	1531271
RKVY		
55	Enhancement of Production and Productivity Potential of Livestock, Poultry and Fisheries sector for Socio-economic upliftment of the farmers of Punjab	10266071

RF		
56	Resource Mobilization from Poultry Farm, RF-06	10,000,00
57	LPT / Development and Sale of Value Added Products for Income Generation (RF-8)	700000
58	RF-7: Processing & Distribution of Livestock Farm Produce	2,53,50,000.0
59	Establishment of Veterinary Polytechnic & Regional Research and Training Centre (RF-10)”	7510000
MISC		
60	Misc-100 (Studies on effect of feeding organic traceminerals on production, reproduction, immue- response and metabolic profile in dairy cows)	20,00,000/-
61	Misc-68: Training, Diploma, Short/Certificate Courses in the College of Veterinary Science	51565/-
62	MISC-102(Study on utilization of DDGS as livestock and poultry feed)	10,00,000/-
63	Misc-89: Development of Nursery for cultivation of selected medicinal plants at Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab	5.4
64	MISC-104: Skill Training for Rural Youth (STRY) under KVK Barnala.(PAMETI, PAU Campus, Ludhiana)	37,500
65	MISC-106: Dairy Farming Training under ATMA by KVK Barnala (ATMA, Barnala)	30,000
66	NABARD-06: Promoting Organic Kitchen gardening for sustainable production, nutritional security and income enhancement during COVID-19 pandemic in district S.A.S. Nagar (Mohali)	525000
67	Promotion of water saving technologies in horticulture crops for the farmers of districts Tarn Taran, Punjab	0.76009
68	Development of low cost fruit fly traps for Cucurbit Vegetables and its demonstration at farmer's field in border area of district Tarn Taran	7.75
69	Misc-71(Strengthening of Research, Teaching and Extension Infrastructure and Activities)	160000
70	Situation analysis of use of antibiotics in food animals and food safety implications in WHO South-east Asian region WHO	4.5
71	Addressing Bovine tuberculosis at the Human-Animal interface and Veterinary Antibiotic use in Small Holder Peri-Urban Dairy Farms in India to Ensure Safe and Sustainable Milk Production	92415
72	Molecular Epidemiology of Listeria Spp. in Releation to its Ecology and Trace Back using Genome based typing methods	548665

73	Genome wide association studies for the improvement of productivity in dairy buffalo and cattle in india	2106954
74	Development of Medicinal Plant Garden for Veterinary Ayurveda Research at GADVASU, Ludhiana	1078077
75	Efficacy of long acting Ceftiofur (Wouter-CF) for treatment of respiratory infections in cattle and buffaloes	369400
76	Development of Good Quality and Healthy Ready to Drink Concoction of Milk Tea	962749
77	Clinical evaluation of efficacy of AYUSH V-24 (a coded Ayurvedic formulation) n the management of selected gastro intestinal illness in ruminants	1347744
78	Clinical evaluation of efficacy of Ayurvedic formulation for augmentation of milk production in ruminants	965200
79	Modelling exposure to biological hazards in the dairy chains of Andhra Pradesh to inform food safety policy	1174224
80	Modelling exposure to biological hazards in the dairy chains of Andhra Pradesh to inform food safety policy (SPHZ)	935530
81	Creation of State of Art Institute for Sahiwal Breeding Farm at RRTC, Kaljharani, Bathinda	6892616
82	Implementation of Embryo Transfer and in-Vitro Fertilization Technology for bovine breeding	22098685
83	Establishment of Dedicated River Health Monitoring Cell at GADVASU for Conservation and Restoration of the River Beas	1018747
84	Towards Climate Resilient Livestock Production System in Punjab	7452890
85	Collaborative Research and Training Experience (CREATE) on Genome editing for food security and environment sustainability (GEFSES) NSERC CANADA	\$16,50,000
86	Water Footprint Analysis of Dairy Sector in Punjab	20,000,00
87	Misc-107-Establishment of Capacity Building Resource Centre for intensive Aquaculture Technologies in Punjab Recirculatory and Bio-Flog Aquaculture Systems under the Central Sector Scheme component of the PMMSY	13905000

Projects Allocated				
Sr No	Name of the Scheme	Funding Agency	Budget	PI
1	Studies on effect of feeding organic traceminerals on production, reproduction, immune response and metabolic profile in dairy cows	BASF India Limited	2000000	Dr. JS Hundal
2	To Conduct a situation analysis of antibiotic use in animal production and agriculture sector and its impact on food safety and antimicrobial resistance (AMR) for Member States in South East Asia Region	World Health Organization	458687	Dr. RS Aulakh
3	Study on utilization of DDGS as livestock and poultry feed	BCL Industries	1000000	Dr. Udeybir Singh
4	Establishment of Capacity Building Resource Centre for intensive Aquaculture Technologies in Punjab Recirculatory and Bio-Flog Aquaculture Systems under the Central Sector Scheme component of the PMMSY	PMMSY	13905000	Dr. Meera D Ansal
5	Engineering intervention for mechanization of mozzarella cheese manufacture at cottage scale	DST	1412882	Dr. Gopika Talwar
6	Development of low cost fruit fly traps for Cucurbit vegetables and its demonstration at farmers fields in border area of district Tarn Taran implementation by KVK Tarn Taran	NABARD	329538	Dr. Nirmal Singh.
7	Promoting Organic Kitchen gardening for sustainable production, nutritional security and income enhancement during COVID-19 pandemic in district S.A.S. Nagar (Mohali)		299250	Dr. Yaswant Singh

Projects Completed					
Sr No	Name of the Scheme	Funding Agency	Date of Allocation	Date of Completion	Total Cost of Project
1	Outreach Programme on Zoonotic Disases	ICAR	07-07-15	31-03-21	5205000
2	Niche Area of Excellence (NAE) programme entitled Antibiotic Resistance:Animal Human Interface		March, 2017	31-03-2021	33405000
3	Processing and nutritional evaluation of paddy straw and other feed ingredient pellets as livestock feed	M/s Neway Renewable Energy Bathinda Pvt, Ltd	Jun-18	Jan-21	500000
4	Evaluation of pilled hydrogenated Palm fatty acids in lactating crossbred cows	CIPL	Jan-19	Jul-20	1296000
5	Isolation and molecular characterization of chicken infectious anemia virus	DST	18-04-17	Oct-20	2666000
6	Designer food for management of type 2 diabetes: Targeting the gut hormone molulatory potential of probiotics		12-09-17	29-03-21	2244696
7	Inclusive Growth in Livestock, Dairy and Fishery Farming Through Technological interventions in Punjab	RKVY	2016-17	March, 2021	9666840
8	Understanding in situ dynamics of provincial innate immune response during reproductive Salmonellosis in chicken for considering future practice of anal (cloacal) mucosal vaccination. DBT-16	DBT	2016-2017	March,2021	35,07900
9	Molecular Characterization of Fecundity Genes in Assam Hill Goat		2016-2017	March,2021	2753000

EXTENSION

Extension education and transfer of technologies to end users is one of the mandates of this university. It has adopted a well-designed Extension Model to reach to the livestock, poultry and fish farmers, field functionaries, subject matter specialists, industry people and other related communities. This model includes following activities:

A. Transfer of technologies to the livestock farmers and their feedback for reorienting the ongoing research programmes

The new technologies developed in different areas of Veterinary, Animal Sciences, Poultry and Fisheries are effectively communicated to the livestock farmers who are the ultimate beneficiaries of such technologies. The extension services also help in identifying the researchable problems faced by the livestock farmers and provide new research issues to the scientists. The technologies are effectively transferred through the following activities:

1. Pashu Palan Mela and Regional Kisan Melas:

Pashu Palan Mela is one of the best approach(es) for transferring the technologies generated at the University to the livestock farmers of the State. It is usually a two day affair and it is celebrated twice a year in the months of March and September. Because of covid-19 outbreak, the September Mela was celebrated in virtual mode alongside PAU Kisan Mela on Sept 18-19.2020. More than 60 videos on relevant subjects related to animal husbandry, poultry husbandry, fish farming and fodder cultivation were uploaded on YouTube and links were shared on PAU Kisan Mela Platform.

2. Awareness Week(s):

There is no doubt that livestock sector has potential of doubling farm income, improving human nutrition, and providing employment in the state. The animal productivity could be significantly increased by breed improvement, better nutrition and health management. Keeping in view this set-up, University started organizing *Awareness Weeks*. The first such Week was celebrated as *Livestock Nutrition Awareness Week* from 22 to 26 February, 2021. The Awareness Week started with a one-day workshop on "Recent Trends in Livestock Nutrition to optimize their Productivity" organized at the campus in which more than 120 stakeholders participated. The next event was an exposure visit to Feed Manufacturing Plant of Markfed in Kapurthala district. A hands-on training for manufacturing mineral mixture at village level was imparted to dairy farmers. A refresher training course for about 70 field vets was organized at Shiv Batalvi Auditorium, Batala. The last day of the Week witnessed a Training Program on Balance Nutrition for Dairy Farmers at village Manupur in Ludhiana district.



Workshop on Recent Trends in Livestock Nutrition to optimize their Productivity

Outstations of the university also organized awareness camps and training programmes on the importance of balanced nutrition for the farmers. KVK, Booh organized training camps on all the days of the Week. The stakeholders were also sensitized about issues related to animal nutrition through TV/Radio Talks, newspaper articles etc.



A training camp organized under Livestock Nutrition Awareness Week

3. Animal Health Camps/ Animal Welfare Camps

Animal Welfare/Health Camps were organized by various departments of the University under the aegis of Directorate of Extension Education. These are usually a one day affair. Repeat breeding, anoestrus and mastitis are the major problems encountered in the rural dairy animals. Owing to major chunk of the cases belonging to reproductive disorders, these camps are also known as Infertility Camps. Poor and marginal farmers also get benefitted through participation in these camps.

KVK barnal organized one such camp on 19.01.2021 at village kahneke in which farmers showed keen interest. Animals provided treatment on the site itself.



Animal Health Camps organized by COVS, Rampura Phul on six occasions, the details of which have been tabulated below.

S. No	Particulars of Animal Welfare Camps	Date	Participants
1	Anti-rabies Vaccination and Awareness Camp at VCC, Rampura Phul	28.09.2020	>80
2	Veterinary Awareness-cum-Anti Rabies Camp at Village Dhinger	13.10.2020	>80

3	Veterinary Awareness-cum-Anti Rabies Camp at Village Buggran	20.10.2020	>100
4	Veterinary Awareness-cum-Anti Rabies Camp at Village Burj Manshia	23.10.2020	>100
5	Veterinary Awareness-cum-Anti Rabies Camp at Village Chotian	27.10.2020	>100
6	Veterinary Awareness-cum-Anti Rabies Camp at Village Bhaini	30.10.2020	>100

4. Awareness camps, Training Camps, Field Days

The organization of Awareness Camps and Field Days helped in dissemination of information on a particular subject related to livestock, fishery and agriculture production. Various subject matter specialists deliver their lectures on specific topics in these camps. When the awareness camp is restricted to one theme only, then, it is termed as Field Day. Due to Covid outbreak, fewer camps had been organized during this year listed as below:

S. No	Particulars of Awareness Camps/ Field Days	Date	Participants
College of Fisheries			
1	On-Site Awareness Camps on shrimp health management at Sri Mukatsar Sahib and Fazilka	20.08.2020	Many
2	On-Site Awareness Camps on shrimp health management at Mansa and Bathinda	14.09.2020	Many
KVKs and RRTCs			
3	Promotion of agricultural mechanization for in-situ management of crop residue at village Diwana, District Barnala	21.10.2020	29
4	Block level awareness programme on in-situ crop residue management at KVK, Barnala	10.02. 2021	81



Glimpses of Awareness Camps

B. Capacity Building of Livestock Farmers and other Related Personnel

1. Trainings Organized:

University organized basic as well as specialized training courses for dairy, poultry, piggery & fish farming and on value addition of livestock product(s) for the farmers to transfer new technologies evolved by the university. Because of lockdown situation, a few of the trainings were organized on-line. Following is the comprehensive list of the trainings.

S. No	Name of the Training Programme	Dates	Duration (days)	No. of Trainings held	No. of Trainees	Summary about training*
Department of Animal Nutrition						
1	Role of fodder and improvement of low quality roughages for dairy animals	Nov. 23-25, 2020	03	01	15	Farmers were advised importance of fodder for dairy animals
2	Recent nutritional technologies for dairy animals	21.12.2020	01	01	15	Animal nutritional strategies were advised
3	Enhancing milk production through sustainable animal nutritional technologies	22.12.2020	01	01	15	Training organized in village Boprai Kalan Distt Ludhiana
4	Efficient technologies for pig production	23.12.2020	01	01	20	Animal nutritional strategies were advised
5	Entrepreneurship training on preparation of mineral mixture for dairy animals	25.02.2021	01	01	10	Techniques for preparing MM were imparted
6	Nutritional perspectives to improve production potential of dairy animals.	26.02.2021	01	01	10	Animal nutritional strategies were advised
7	Experimental learning about preparation of fortified bypass fat	04.03.2021	01	01	10	Training organized in village Madarpura District Ludhiana



Department of VAHEE						
8	Online training course on pig farming	Sept, Oct, Dec, Feb, Mar	12	5	80	Basic practices of pig farming
9	Training course on poultry farming	Dec, Jan, Mar	10	3	33	Basic practices of poultry farming
10	Training course on goat farming	Jan, Feb	5	4	37	Basic practices of goat farming
11	Training course on dairy farming	Feb, Mar	10	2	29	Basic practices of dairy farming
12	Specialized trainings for dairy farmers	Nov, Dec, Feb	1	11	242	Specialized practices of dairy farming
Directorate Livestock Farms						
13	Use of minerals in dairy animals	Nov, Mar	01	04	130	Entrepreneurship Development programme for SC beneficiaries
14	Selective breeding and record keeping of dairy animals	Dec, Mar	01	04	143	
15	Economical feeding strategies for dairy animals	Dec	01	2	53	
16	Importance of feed supplements and feed formulations (Dairy)	Mar	01	04	113	
17	Feeding and General Mgt of Layers/Broilers	Mar	01	04	20	
Department of LPM						
18	Scientific goat farming as a source of income for rural farmers	Jan	2	1	25	SC farmers were trained

19	Rural upliftment through scientific poultry farming	Jan	2	1	25	
20	Entrepreneurial skill development in dairy farming/piggery (ICAR)	Mar	1	02	20	
21	Hands on training on backyard poultry farming	Mar	1	1	10	
Department of LPT						
22	Clean Meat Production and By-products utilization	Jan, Feb	05	2	25	RKVY sponsored training programme
23	Hands on training on value addition of meat and meat products for entrepreneurship development	Mar	01	1	11	
24	Entrepreneurship development programme on utilization of slaughter house by-products	Mar	01	1	12	
Teaching Veterinary Clinical Complex						
25	Webinar on <i>Pashuan Vich Lang Maran Di Samasya Ate Roktham</i>	Nov	01	01	21	
26	Scientific approach to dairy farming	Jan	1	2	75	Trainings were organized at villages Kaunke Khosa and Kaunke Kalan for SC farmers

Department of Veterinary Surgery						
27	Webinar on <i>Janvaran Vich Peshab Da Bann: Bachao and Surgery Rahin Ilaz</i>	19.11.2020	1	1	100	



Glimpses of different training programmes organized

College of Veterinary Science, Rampura Phul title						
S. No	Name of the Training Programme	Dates	Durati on (days)	No. of Train ings held	No. of Trai nees	Summary about training*
28	Skill Development Program on Dairy Farmer/Entrepreneur	18.02.2021 to 18.03.2021	30	1	25	Training was organized under PMKVY scheme
29	Dairy farming training for SC farmers	23.03.2021	01	1	80	Training was organized under at Panjkosi, (Fazilka) under RKVY



Glimpses of trainings organized by COVS, Rampura Phul

College of Fisheries

S. No	Name of the Training Programme	Dates	Duration (days)	No. of Trainings held	No. of Trainees	Summary about training*
38	Fish Farming	23.11.2020 to 27.11.2020	05	01	10	On Aquaculture practices
39	Online training on BMPs for Shrimp Farming	15.03.2021 to 19.03.2021	05	01	78	Complete package of practices for shrimp farming



Glimpses of training programmes organized by CoF

KVK, Booh (Tarn Taran) organized 83 trainings of different durations on various aspects of home science, agricultural, horticultural, livestock, and fish farming. A total of 10187 stakeholders participated in these training programmes. Similarly, KVK, Handaya (Barnala) and KVK Majri (SAS Nagar, Mohali) organized 136 and 39 trainings in which 1676 and 654 beneficiaries got benefitted, respectively. The details are as under:

KVK, Booh (Tarn Taran)						
S. No	Name of the Training Programme	Dates	Duration (days)	No. of Trainings held	No. of Trainees	Summary about training*
40	Vegetable processing at small scale	29.05.2020	01	01	23	On-line training
41	Livestock management vis-à-vis Covid 19 pandemic	04.06.2020	01	01	35	Off-line training
42	Importance of fruit fly traps in fruit crops	11.06.2020	01	01	30	Off-line training
43	Integrated pig-cum-fish farming	20.06.2020	01	01	15	Off-line training

44	Nutrient and water management in direct seeded rice	22.06.2020	01	01	18	Off-line training
45	Corn cob mixture silage making for sustainable animal production	July 09-13, 2020	05	01	20	Off-line training
46	Feed management in fish pond	10.07.2020	01	01	15	Off-line training
47	Harvesting, grading and packaging of Pear	28.07.2020	01	01	9	Off-line training
48	Silage making	28.07.2020	01	01	22	Off-line training
49	Online workshop on management of direct seeded rice	30.07.2020	01	01	31	Off-line training
50	Self marketing of pear for higher income	07.08.2020	01	01	9	Off-line training
51	Awareness programme on fruit fly trap	10.08.2020	01	01	30	Off-line training
52	Fodder production to ensure round year fodder availability	25.08.2020	01	01	07	Off-line training
53	Insight different techniques for value addition of dairy produce for self-employment	Aug 31 to Sep 04,2020	01	01	10	Off-line training
54	Fruit Fly traps use in vegetables	03.09.2020	01	01	08	Off-line training
55	Water quality management in IMC culture	09.09.2020	01	01	07	Off-line training
56	Nutritional security through kitchen gardening	11.09.2020	01	01	13	Off-line training
57	Awareness programme on balanced diet in women and children	11.09.2020	01	01	17	Off-line training
58	Awareness programme on crop residue management	11.09.2020	01	03	29	Off-line training
59	Awareness programme on crop residue management	14.09.2020	01	01	30	Off-line training
60	Micronutrient deficiencies among women and children for Extension functionaries	22.09.2020	01	01	27	On-line training
61	Fruit Fly traps use in vegetables	24.09.2020	01	01	25	Off-line training



62	Awareness programme on crop residue management	02.10.2020	01	01	22	Off-line training
63	Formation of Self-Help Group	05.10.2020	01	01	15	Off-line training
64	Embellishing fabrics through diverse apparel designing techniques	Oct. 05-09,2020	05	01	25	Off-line training
65	Nutritional awareness to prevent anemia in women	06.10.2020	01	01	9	Off-line training
66	Awareness programme about Agricultural Ordinance Bills, 2020s	09.10.2020	01	01	25	Off-line training
67	Awareness programme on crop residue management	09.10.2020	01	01	25	Off-line training
68	Nursery production of vegetable crops	14.10.2020	01	01	9	Off-line training
69	Awareness programme on crop residue management	14.10.2020	01	01	215	Off-line training
70	Soil sampling and testing	21.10.2020	01	01	17	Off-line training
71	Water quality management in fish pond	21.10.2020	01	01	10	Off-line training
72	Workshop cum interface of KVK scientist and Veterinary Officers of Department of Animal Husbandry district Tarn Taran	Oct. 21-25,2020	05	01	40	Off-line training
73	Scientific dairy farming and value addition of dairy produce for self-employment	Oct. 26-30,2020	01	01	30	Off-line training
74	Awareness programme on Agriculture Reform Bills at KVK Tarn Taran	28.10.2020	01	01	15	Off-line training
75	Workshop on cucurbit fruit fly traps	03.11.2020	01	01	25	Off-line training
76	Awareness programme on vegetable kitchen gardening	03.11.2020	01	01	17	Off-line training
77	Awareness programme on crop residue management	04.11.2020	01	01	90	Off-line training
78	Awareness programme on crop residue management	06.11.2020	01	01	120	Off-line training



79	Collection of representative soil sample from field for soil testing	Nov.10-14,2020	05	01	21	Off-line training
80	Collection of representative soil sample from field for soil testing	12.11.2020	01	01	19	Off-line training
81	Water quality management in IMC culture	18.11.2020	01	01	8	Off-line training
82	Role of beneficial soil microorganisms in sustaining soil health and crop production for Rural Youth and School Drop-outs	05.12.2020	01	01	54	Off-line training
83	Scientific Goat farming for self-employment	Dec. 10-16,2020	07	01	25	Off-line training
84	Value addition of pulses	11.12.2020	01	01	7	Off-line training
85	Awareness regarding milk adulteration	16.12.2020	01	01	5	Off-line training
86	Integrated fish cum poultry farming	17.12.2020	01	01	6	Off-line training
87	Nutrient and water management under conservation agriculture	22.12.2020	01	01	17	Off-line training
88	Training programme on organic farming	24.12.2020	01	01	11	Off-line training
89	Dietary tips for physical fitness and balanced diet for adolescents	24.12.2020	01	01	6	Off-line training
90	Stitching and fabric painting techniques	28.12.2020	01	01	8	Off-line training
91	Winter management practices in IMC culture	28.12.2020	01	01	7	Off-line training
92	Fertilizer management in pear orchard	12.01.2021	01	01	04	Off-line training
93	Integrated fish cum livestock farming systems	15.01.2021	01	01	28	Off-line training
94	Awareness programme on bio-security measures in poultry birds	15.01.2021	01	01	65	Off-line training
95	Weed management under conservation agricultural system	19.01.2021	01	01	14	Off-line training



96	Scientific fish farming with special reference to winter management	21.01.2021	01	01	32	Off-line training
97	Designing and development for high nutrient efficiency diet	22.01.2021	01	01	50	Off-line training
98	Application of artificial intelligence in dairy farms	22.01.2021	01	01	26	Off-line training
99	Awareness programme on crop residue management	22.01.2021	01	01	85	Off-line training
100	Scientific Pig farming	Jan 25-Feb 01, 2021	05	01	25	Off-line training
101	Importance of soil and water quality parameters in carp culture	02.02.2021	01	01	06	Off-line training
102	Formation of Self-Help Group	03.02.2021	01	01	08	Off-line training
103	Scientific fish farming	Feb 08-12, 2021	05	01	20	Off-line training
104	Scientific dairy farming for self employment	Feb 08-12, 2021	05	01	25	Off-line training
105	Value addition of dairy produce for self employment	Feb 08-12, 2021	05	01	25	Off-line training
106	Infertility in dairy animals	09.02.2021	01	01	25	Off-line training
107	Farmers-Scientist interaction on different techniques in agriculture and livestock farming	15.02.2021	01	01	65	Off-line training
108	Micronutrient management in happy/super seeder sown wheat	18.02.2021	01	01	48	Off-line training
109	Awareness programme on agricultural loan	19.02.2021	01	01	40	Off-line training
110	Scientific Goat farming	Feb 23-Mar 02, 2021	05	01	25	Off-line training
111	Composite carp fish culture	25.02.2021	01	01	07	Off-line training
112	Awareness programme on agricultural loan	25.02.2021	01	01	35	Off-line training
113	Soil and water testing lab analyst	Mar 01-03, 2021	30	01	25	Off-line training

114	Krishi Rinn Samagam	03.03.2021	01	01	250	Off-line training
115	Management of water quality parameters in IMC culture	05.03.2021	02	01	06	Off-line training
116	One day workshop on Nilli Ravi buffaloes	17.03.2021	01	01	202	Off-line training
117	Scientific Bee Keeping	Mar.17-23,2021	05	01	25	Off-line training
118	Organic input production for organic farming	Mar.18-24,2021	07	01	15	Off-line training
119	Integrated fish cum pig farming systems	19.03.2021	01	01	07	Off-line training
120	One day awareness programme on Value addition of meat products	24.03.2021	01	01	25	
121	Value addition of dairy produce for Self employment	24.03.2021	01	01	25	



Glimpses of training programmes organized by KVK, Booh, Tarn Taran

KVK, Barnala						
S. No	Name of the Training Programme	Dates	Durati on (days)	No. of Traini ngs held	No. of Trai nees	Summary about training*
122	Update the knowledge and technologies of mushroom growers in district Barnala	June 04-09, 2020	05	01	17	
123	Stitching, Painting and Embroidery	June 15-July 15, 2020	30	01	14	
124	Scientific pig farming	June 02-06, 2020	05	01	16	
125	Mushroom Production Technologies	Sept.18-24, 2020	05	01	24	
126	Bee keeping	Sept. 28-Oct. 01, 2020	05	01	11	
127	Scientific pig farming	Sept. 30-Oct. 06, 2020	05	01	17	
128	Value addition to fruits and vegetables	Oct. 15- 22, 2020	05	01	14	
129	Scientific goat farming	Oct.20-26, 2020	05	01	21	
130	Fish farming	Oct.28-Nov. 03, 2020	05	01	11	
131	Mushroom production technologies	Nov.10-16, 2020	05	01	17	
132	Value addition to seasonal fruits and vegetables	Nov. 25- Dec. 02, 2020	05	01	14	
133	Bee keeping	Dec. 16-22, 2020	05	01	32	
134	Scientific goat farming vocational training	Jan. 18-25, 2021	05	01	26	
135	Value addition of fruits and vegetables	21.01.2021	01	01	03	
136	Value addition of seasonal fruits and vegetables	Jan. 25- Feb.01, 2021	05	01	05	
137	Bee keeping	Feb. 04-10, 2021	07	01	40	
138	Value addition of dairy produce to Scheduled Caste women group	Feb. 08-09, 2021	02	01	20	
139	Value addition of dairy	Feb. 15-19,	05	01	16	

	produce	2021				
140	Scientific poultry farming	Feb. 25-26, 2021	02	01	20	
141	Mushroom production technologies	Mar. 03-09, 2021	07	01	14	
142	Stitching, Tailoring and Embroidery	Mar. 08-Apr 08, 20 21	30	01	20	
143	Bee keeping	Mar. 18-19, 2021	02	01	09	
144	Scientific dairy farming in association with Department of Agriculture	Mar. 15-20, 2021	06	01	20	
145	Scientific dairy farming in association with PAMETI, Ludhiana	Mar. 15-20, 2021	06	01	15	
146	Organic farming	Mar. 15-19, 2021	05	01	12	
147	Animal health worker	Feb19-Mar.31, 2021	38	01	25	Sponsored by ASCI
148	Integrated farming system at villages Naiwala, Ugoke, Khudi Kalan and Rure Ke Khurd	Oct.2020, Jan.2021	02	04	80	Conducted under RKVY
149	Scientific goat farming	Jan. 14-15, 2021	02	01	20	Conducted under RKVY
150	Nutritional value of egg recipes at household level	Jan. 21-22, 2021	02	01	14	Conducted under RKVY
151	Scientific poultry farming	Feb.15-16, 2021	02	01	20	Conducted under RKVY
152	Cotton crop production technologies	24.03.2021	01	01	12	For Extension Personnel



Glimpses of vocational training programmes organized by KVK, Barnala

Other Trainings organized by KVK, Barnala						
S. No	Name of the Training Programme	Dates	Durati on (days)	No. of Traini ngs held	No. of Trai nees	Summary about training*
153	Management of wax moth in honey bees	28.05.2020	01	01	15	On campus training
154	Management of insect-pest and diseases of fodder maize	09.06.2020	01	01	10	Off campus training
155	DSR cultivation practices (Online)	16.06.2020	01	01	17	On campus training
156	Preparation of immunity booster diet for children	16.06.2020	01	01	08	Off campus training
157	Carp fry and fingerling rearing	18.06.2020	01	01	10	Off campus training
158	Pig farming	25.06.2020	01	01	12	On campus training
159	Nutrient management in DSR	30.06.2020	01	01	20	On campus training

160	Management of insect-pests and diseases of sorghum fodder	03.07.2020	01	01	11	Off campus training
161	Post harvest management of vegetable crops	06.07.2020	01	01	12	Off campus training
162	Foliar nutrient application in DSR for correcting nutrient deficiency	08.07.2020	01	01	21	On campus training
163	Capacity building training for SHG	14.07.2020	01	01	13	Off campus training
164	Training of income generating activity to farm women i.e. surf and soap making	19.07.2020	01	01	13	On campus training
165	New molecules for the management of cotton thrips	23.07.2020	01	01	10	On campus training
166	Management of fruit fly in guava orchard	24.07.2020	01	01	10	On campus training
167	Preparation of soap and detergent at household level	29.07.2020	01	01	13	On campus training
168	Scientific management practices in fish farming	06.08.2020	01	01	10	On campus training
169	Insect-pest of cotton and their management	14.08.2020	01	01	10	On campus training
170	Turmeric production technology	29.08.2020	01	01	12	Off campus training
171	Nutrient management in fodder production	08.09.2020	01	01	22	On campus training
172	Maize fodder production technologies	08.09.2020	01	01	23	On campus training
173	Preventive health management in fish farming	09.09.2020	01	01	10	On campus training

174	Contract farming	19.09.2020	01	01	13	On campus training
175	Fish processing and value addition	19.09.2020	01	01	12	On campus training
176	Insect-pest and disease management in paddy	23.09.2020	01	01	18	On campus training
177	Different ways to stitch home made mask for eliminating viral infection	23.09.2020	01	01	12	Off campus training
178	Protein and energy rich diet for pregnant women	24.09.2020	01	01	14	Off campus training
179	Garlic cultivation and production technology	05.10.2020	01	01	10	On campus training
180	Water quality management for carp fish culture	15.10.2020	01	01	10	On campus training
181	Balance use of fertilizers	22.10.2020	01	01	21	On campus training
182	Cultivation practices of fodder oats	23.10.2020	01	01	22	On campus training
183	Effect of weather variability on goat production and its remedies	23.10.2020	01	01	21	Off campus training
184	Webinar on Integrated fish cum goat farming	23.10.2020	01	01	37	On campus training
185	Gobhi Sarson cultivation practices	26.10.2020	01	01	46	On campus training
186	Chickpea cultivation practices	27.10.2020	01	01	65	On campus training
187	Chickpea cultivation practices	28.10.2020	01	01	31	On campus training

188	Effect of extreme weather on fish culture	02.11.2020	01	01	8	Off campus training
189	Composite Carp Culture	04.11.2020	01	01	12	On campus training
190	Button Mushroom Cultivation technologies	09.11.2020	01	01	8	On campus training
191	Different techniques for tie and dye of fabric	09.11.2020	01	01	9	Off campus training
192	Value addition to seasonal fruits and vegetables	10.11.2020	01	01	10	Off campus training
193	Work simplification for women in household and agricultural activities	13.11.2020	01	01	5	Off campus training
194	Care and management of pigs of different ages	24.11.2020	01	01	17	Off campus training
195	Oyster mushroom cultivation technologies	25.11.2020	01	01	12	On campus training
196	Training on feeding of bypass fat in dairy animals	25.11.2020	01	01	11	On campus training
197	Weed management in rabi crops	27.11.2020	01	01	15	Off campus training
198	Preparation of different types of nutritious pickles	02.12.2020	01	01	12	On campus training
199	Chilli production technologies	23.12.2020	01	01	7	On campus training
200	Management of insect-pest of fodder crops	11.01.2021	01	01	22	Off campus training
201	Awareness regarding role of weather forecasting in agriculture	13.01.2021	01	01	15	Off campus training



203	Onion cultivation and production technologies	15.01.2021	01	01	7	On campus training
204	Post-harvest management of vegetable crops	21.01.2021	01	01	14	Off campus training
205	Value addition of fruits and vegetables	21.01.2021	01	01	03	On campus training
206	Awareness about zoonotic diseases in farm animals	28.01.2021	01	01	23	Off campus training
207	Management of insect-pests through natural enemies	03.02.2021	01	01	23	Off campus training
208	Importance of use of Liquid fertilizers in crops	11.02.2021	01	01	15	Off campus training
209	Feeding of high yielding dairy cattle	11.02.2021	01	01	23	Off campus training
210	Preparation of immunity booster diet for children	11.02.2021	01	01	10	Off campus training
211	Awareness regarding role of weather forecasting in agriculture	24.02.2021	01	01	14	Off campus training
212	Awareness regarding role of weather forecasting in agriculture	05.03.2021	01	01	41	Off campus training
213	Utilization of weather forecasting in agriculture	18.03.2021	01	01	15	Off campus training
214	Care and management of day old chicks	18.03.2021	01	01	15	On campus training
215	Capacity building training for SHG Women	24.03.2021	01	01	08	On campus training
216	Entrepreneurship development through dairy farming among SC families	27.03.2021	01	01	21	Off campus training

217	Summer greengram cultivation practices	28.03.2021	01	01	37	On campus training
218	Awareness on Entrepreneurship development through poultry farming	30.03.2021	01	01	20	Off campus training
219	Value addition in wheat and rice produce	31.03.2021	01	01	11	Off campus training

KVK, Mohali

S. No	Name of the Training Programme	Dates	Durati on (days)	No. of Traini ngs held	No. of Trai nees	Summary about training*
220	Diet during COVID-19 to aaganwadi workers	04.09.2020	01	01	19	
221	Awareness on sanitation and hygiene during menstruation	09.09.2020	01	01	08	
222	Importance of vegetables and fruits in daily diet through kitchen gardening	10.09.2020	01	01	09	
223	Cultivation of Potato and OFT Input Distribution	11.09.2020	01	01	09	
224	Mitigating mal nutrition among children	30.09.2020	01	01	19	
225	In situ crop residue management	Sept. 25- Oct.01, 2020	07	01	25	
226	Scientific pig farming	Sept.04-10, 2020	07	01	07	
227	5 days training on CRM	Sept. 11-17, 2020	07	01	25	
228	Cultivation of rabi season vegetables	14.10.2020	01	01	16	
229	Cultivation of root vegetables	19.10.2020	01	01	12	
230	Crop production and protection practices in gobhisarson	23.10.2020	01	01	20	
231	Production practices of bulb vegetables	28.10.2020	01	01	10	



232	In-situ crop residue management	Oct 13-19, 2020	07	01	25	
233	Fabric embellishment techniques	Oct. 13-19, 2020	07	01	10	
234	Scientific fish farming	Oct 21-27, 2020	07	01	09	
235	Crop production and protection practices in gobhisarson	23.10.2020	01	01	20	
236	Organic kitchen gardening	12.11.2020	01	01	19	
237	Vegetable nutritional gardening	13.11.2020	01	01	16	
238	Vegetable cultivation in homes	16.11.2020	01	01	15	
239	Home gardening	17.11.2020	01	01	14	
240	Vegetable gardening	18.11.2020	01	01	16	
241	Importance of green leafy vegetables in daily diet	20.11.2020	01	01	16	
242	Organic vegetable gardening	24.11.2020	01	01	16	
243	Nutritional deficiency in dairy animal	Nov. 23-24, 2020	02	01	27	
244	Scientific vegetable farming	Oct. 30-Nov. 05, 2020	07	01	10	
245	Beekeeping	Nov. 09-13, 2020	05	01	17	
246	Vegetable kitchen gardening	Dec. 03-09, 2020	07	01	15	
247	Pest management in chickpea and gobhisarson	11.12.2020	01	01	9	
248	Drafting and pattern making for clothing construction	Dec. 22-29, 2020	07	01	10	
249	Nutritional deficiency in dairy animal	29.12.2020	01	01	25	
250	Nutritional deficiency in dairy animals	15.01.2021	01	01	25	
251	Nursery management of summer vegetables	19.01.2021	01	01	20	
252	Nutritional deficiency in dairy animals	22.01.2021	01	01	23	

253	Cultivation of cucurbitaceous vegetables	11.02.2021	01	01	18	
254	Scientific cultivation of summer vegetables	17.02.2021	01	01	18	
255	Training for small dairy farmers and beekeepers	24.02.2021	01	01	36	
256	Kitchen gardening and post harvest management of vegetables	Jan. 27-Feb. 02, 2021	07	01	15	
257	Mushroom cultivation	Feb 04-10, 2021	07	01	13	
258	Development of value added products through baking	Feb 11-17, 2021	07	01	10	
259	Scientific poultry farming	Feb 11-17, 2021	07	01	16	



Glimpses of trainings organized by KVK, Mohali

RRTC, Talwara, an outpost of university organized 12 one-day trainings on 'Calf Management', 'Reproductive Management of Dairy Animals', 'Non-Infectious and Productive Diseases of Dairy Animals' and 'Infectious and Productive Diseases of Dairy Animals' in *Kandi* area of Hoshiarpur district of Punjab. A total of 360 beneficiaries have been trained in these programmes

RRTC, Talwara						
S. No	Name of the Training Programme	Dates	Duration (days)	No. of Trainings held	No. of Trainees	Summary about training*
260	Trainings on Calf Management, Reproductive Mgt of dairy animals, Non infectious and productive diseases of dairy animals and Infectious and productive diseases of dairy animals in Kandi area	Sep, Oct, Nov, Jan, Feb	01	12	360	Farmers were made aware of relevant management aspects.



Glimpses of trainings organized by RRTC, Talwara

2. Lectures delivered at off-campus trainings:

Subject Matter Specialists of the University also delivered expert lectures in trainings organized by outstations of GADVASU or various other agencies.

S No	Date	Topic	Organized by
1	07.04.2020	Direct seeded rice production technologies	Department of Agriculture and Farmers' Welfare, Barnala
2	02.07.2020	Care of milch animals	PAU, Ludhiana
3	19.07.2020	Webinar on Application of IVF Technology in Cows & Buffaloes at the doorsteps of farmers in India	JK Bovagenix, JK Trust, Pune (by Dr. Narinder Singh)
4	21.07.2020	Collection of semen in boar and its processing; Artificial insemination in pig	Government Pig Farm, Nabha
5	26.07.2020	Control of ticks	Department of Animal Husbandry, Punjab
6	05.08.2020	Economics of poultry farming Training	PAMETI, Ludhiana

		course: Poultry rearing and management, PAMETI	
7	06.08.2020	Compounding concentrate ration for dairy animals	PAU, Ludhiana
8	25.08.2020	Feasibility of ZTD in Southern India with the experience of IGP	ICAR-CIAE Regional Centre, Coimbtore, TN
9	27.08.2020	Webinar on Effect of Nutrition on Reproduction in dairy animals	Department of Animal Husbandry, Punjab
10	09.09.2020	Webinar regarding weather linked insurance of cattle	Punjan state council for Science and Technology (By Dr. R S Grewal)
11	11.09.2020	Selection of breeding bulls	Sahiwal Cattle Breeders Society, Punjab
12	17.09.2020	Crop Biofortification: A Sustainable Way to Alleviate Malnutrition	KVK, Barnala
13	18.09.2020	Management and treatment of infertility in dairy animals	PAU, Ludhiana
14	18.09.2020	Breeds of poultry and their importance	KVK, Tarn Tarn
15	18.09.2020	General management practices for poultry farming	
16	21.09.2020	Importance of greens for women & children	
17	19.10.2020	<i>In-situ</i> crop residue management	KVK, Mohali
18	22.10.2020	Women startup: A way forward	GBPUAT, Pantnagar
19	23.10.2020	1. Pashuan vich prajnan parbandh; 2. Heha samkalin	KVK, Tarn Taran
20	30.10.2020	Webinar on Nutrition, a haze for sustainable dairy	Indian Dairy Association, New Delhi (by: R S Grewal,)
21	02.11.2020	Crop residue management practices in Punjab	Amritsar College of Engineering & Technology, Amritsar
22	05.11.2020	Care of milch animals in winters	PAU, Ludhiana
23	21.11.2020	Webinar on 'Value addition in meat products'	Extension Education Institute, Nilokheri
24	22.11.2020	Feeding of pigs	PAMETI, Ludhiana
25	08.12.2020	The modus operandi for doubling farmers' income: Special perspective on Aquaculture	GBPUAT, Pantnagar
26	15.12.2020	Good management practices in carp culture- Part I	GBPUAT, Pantnagar
27	16.12.2020	Webinar on 'Changing role of egg in human nutrition'	NIFTEM, Kundli

28	19.12.2020	Good management practices in carp culture- Part II	GBPUAT, Pantnagar
29	23.12.2020	Sustainable approaches in fish farming to enhance fish farmers' income	Rayat-Bahra University, S.A.S. Nagar
30	29.01.2021	1. Reproduction management of pigs 2. Pig housing	KVK, Booh
31	05.02.2021	Sexed Semen: A tool to combat stray male cattle population	PAMETI, Ludhiana
32	12.02.2021	1. Importance of backyard poultry 2. Shelter management in poultry farming	KVK Mohali
33	17.02.2021	1. Preparation of nutraceutical muffins 2. Preparation of nutraceutical cookies.	KVK, Mohali
34	19.02.2021	Recent Advances in Animal Nutrition for Intensive Livestock Development	ICAR- IGFRI , UAS Raichur
35	23.02.2021	1. Mastitis in dairy animals 2. Insect and disease management in organic farming 3. Pest Management in organic farming	Department of Agriculture and Farmers Welfare, SAS Nagar
36	25.02.2021	Sustainable farming	Y S School, Barnala
37	01.03.2021	1. Important breeds of buffalo and their characteristics 2. Care of lactating animals before and after pregnancy	COVS, Rampura Phul
38	02.03.2021	1. Kharif green fodder crops 2. Rabi green fodder crops	
39	02.03.2021	Turmeric cultivation	Department of Agriculture and Farmers Welfare, SAS Nagar
40	03.03.2021	Treatment of dairy animals through indigenous technologies	Kamdhenu Gaushala, Nurmahal, Jalandhar
41	03.03.2021	Communicating Effectively with the Farmers	PAMETI, Ludhiana
42	06.03.2021	Mastitis in dairy animals	Department of Dairy Development, Punjab
43	13.03.2021	1. Extension strategies adopted by GADVASU 2. Integrated livestock farming: Need of hour	CoVS, Rampura Phul, Bathinda
44	21.03.2021	Post harvest management & processing of Turmeric	ATMA, SAS Nagar
45	26.03.2021	Vermicompost production, processing and application	KVK, Mohali

46	30.03.2021	Pest Management in organic agriculture	Department of Agriculture and Farmers Welfare, SAS Nagar
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C. Meetings of Livestock And Fishery Farmers Associations:

Because of Covid-19 outbreak, the meetings of various Associations were held in on-line mode as webinars. The list of webinars organized by the university is as follows:

Title of Webinar	Date	Speaker	No of Participants
Prime minister Formalization of micro food processing enterprises (PMFME scheme)	12.10.2020	Mr R Tuli and Sanjeev Kumar, NABARD	65
Role of woman in dairy farming	15.10. 2020	Dr Sumenpreet Kaur	35
Silage making for dairy farming	22.10.2020	Dr Jaswinder Singh	22
Pig proliferate prosperity-A promising entrepreneurial venture for youth"	11.11.2020	Sh Sukhwinder Singh, Kotli	91
Judicial use of Antibiotic in animal treatment	24.11.2020	Dr RK Sharma	68
Major internal parasites of dairy animals	17.12.2020	Dr Harkirat Singh	15
Nutritional diseases in Poultry	24.12.2020	Dr N Dev Singh	17
Cow creates career- buffalo build business	12.01.2021	Sh A S Ratol	265

Members of Innovative Fish Farmers Association (IFFA), Punjab met four times in the current assessment period and university scientists delivered eight technical lectures.

C. Extension Publications

1. Books/Booklets published

- i. Ansal, M. D. & Kaur, V. I. (2020). *Biosecurity Guide for Aquaculture*. College of Fisheries, GADVASU, Ludhiana. pp 1-24.
- ii. Gill, M. S., Walia, S. S., Singh, N. & Kaur, K. (2020). *Drumstick (Moringa Oleifera Lam.)-A miracle tree in India*. Lambert Academic Publishing Republic of Moldova, Chisinau-2068.
- iii. Kaur, H., Phulia, V., Sharma, M., Pal, S., Gupta, P. & Singh, Y. (2020). *Jhone Di Parali da Uchit Prabandhan*. (Eds. Phulia V, Kaur V and Singh Y), Krishi Vigyan Kendra, S.A.S. Nagar, Directorate of Extension Education, GADVASU, Ludhiana. pp. 1-25.
- iv. Kumar, B. & Dhillon, P K. (2020). *Success Stories*. Krishi Vigyan Kendra, Tarn Taran, Directorate of Extension Education, GADVASU, Ludhiana.

- v. Pal, S., Singh, Y., Gupta, P., Phulia, V., Sharma, M. & Verma, H. K. (2020). *Broiler Murgi Palan*. KVK, SAS Nagar (Mohali). pp 1-21.
- vi. Phulia, V., Singh, Y., Tanwar, P. S. & Kumar, B. (2020). *Success Stories of Integrated Farming System Units Developed by KVKs of GADVASU*. Directorate of Extension Education, GADVASU, Ludhiana. pp 1-21.
- vii. Roopa, Y., Kasrija, R., Verma, H. K. & Randhawa, C. S. (2020). *Guiding Book for Dog Owners*. GADVASU, Ludhiana. ISBN 978-93-87403-42-0.
- viii. Sharma, A., Singh, A. K., Chahal, U. S., Mahajan, V., Kaur, P., Sodhi, S. S., Bansal, B. K. & Singh, P. (2020). *Economically Viable Model Plans for Different Types of Piggery Units in Punjab*. ISBN No. 9788194343721.
- ix. Tyagi, A. & Ansal, M. D. (2020). *Aquaculture Health Management Guide: Prevention and Treatment of Common Fish Diseases in Fresh Water Fish*. College of Fisheries, GADVASU, Ludhiana. pp 1-24.

2. Pamphlets/Folders/Bulletins published

- i. Lamba, J. S., Grewal, R. S. & Sharma, A. (2020). *Conservation of green forages*. Department of Animal Nutrition, GADVASU, Ludhiana.
- ii. Sharma, A., Hundal, J. S. & Kaur, J. (2020). *Importance of bypass nutrients in dairy animals*. Department of Animal Nutrition, GADVASU, Ludhiana.
- iii. Singh, A. K., Sharma, A., Chahal, U. S., Mahajan, V., Sodhi, S. S., Bansal, B. K. & Singh, P. (2020). *Suriaan vich masnui garabhdaan, nasal sudharan da ik lahaevand vardaana*. Department of Veterinary Gyneacology and Obstetrics.
- iv. Singh, J., Sharma, A., Grewal, R. S. (2020). *Urea treatment of wheat straw*. Department of Animal Nutrition, GADVASU, Ludhiana.
- v. Singh, R. S., Randhawa, S. S. & Singh, K. (2020). *Things to keep in mind related to COVID-19*. Teaching Veterinary Clinical Complex, GADVASU, Ludhiana.
- vi. Singh, R. S., Randhawa, S. S. & Singh, R. (2020). *Covid-19 prati dhian dein jog gallan*. Teaching Veterinary Clinical Complex, GADVASU, Ludhiana.
- vii. Tanwar, P. S., Matharu, K. S. & Singh, S. (2020). *Sarsoan jaati diyan fasalan vich saravpakhi keet pravandhan*. KVK, Barnala.
- viii. Tanwar, P. S. & Singh, J. (2020). *Kisanan lai loo wale dina de doran bachaw lai jaruri nukte*. KVK, Barnala.
- ix. Tanwar, P. S. & Singh, J. (2020). *Loo ton bachaw layi sambhav nukte*. KVK, Barnala.
- x. Tanwar, P. S. & Singh, J. (2020). *Vatavaran Diwas par 'Kujh Paran Kariye'*. KVK Barnala.
- xi. Tanwar, P. S. & Singh, J. (2020). *Loo wale dina doran sur palakan layi dhiyan rakhan yog galan*. KVK, Barnala.
- xii. Tanwar, P. S., Singh, K., Singh, S. & Singh, K. (2020). *Sarson di fassal vich pae jan wale parmukh mittar kide*. KVK, Barnala.
- xiii. Tanwar, P. S., Singh, S., Matharu, K. S., Sohi, H. S., Sharma, A. & Singh, K. (2020). *Parali di saab sambal ate varto lai takneeka*. KVK, Barnala.

3. Leaflets published

- i. Sharma, A. (2020). *Soyabean hai sehat da khazana*. KVK, Barnala.
- ii. Sharma, A. & Tanwar, P. S. (2020). *Sabjiyan di bijayi karan vala auzaar*. KVK, Barnala.
- iii. Sharma, A. & Tanwar, P. S. (2020). *Shaid de fayade ate seht lyi labh*. KVK, Barnala.

- iv. Singh, K. & Tanwar, P. S. (2020). *Advisory for fish farmers during lockdown*. KVK, Barnala
- v. Tanwar, P. S., Matharu, K. S. & Sohi, H. S. (2020). *Phal di makhi de sarvpakhi keet parvand*. KVK, Barnala.
- vi. Tanwar, P. S., Sharma, A. & Singh, S. (2020). *Postik ahaar jisnu roj khana hai jaruri*. KVK, Barnala.
- vii. Tanwar, P. S. & Singh, J. (2020). *Garmi de dina vich pashuan de sar sambhal*. KVK, Barnala.
- viii. Tanwar, P. S. & Singh, J. (2020). *Kisana lai phasal katai sambandhi sujhav*. KVK Barnala.

4. Compendia published

- Kasrija, R., Singh, P., Singh, J., Jadoun, Y., Kansal, S. & Verma, H. K. (2020). Compendium of Skill Development Programme, *Animal Health Worker*. February 12-March 12, 2020. Directorate of Extension Education, GADVASU, Ludhiana. pp: 1-156.
- Sharma, A. & Hundal, J. S. (2020). *Animal Nutrition Technologies for Livestock*. Department of Animal Nutrition, GADVASU, Ludhiana. pp 1-45.
- Singh, J., Singh, P., Jadoun, Y., Kansal, S. K., & Verma, H. K. (2020). Compendium of Skill Development Programme, *Dairy Farmer/Entrepreneur*. February 12-March 12, 2020. Directorate of Extension Education, GADVASU, Ludhiana. pp: 1-178.
- Singh, J., Singh, P., Jadoun, Y., Kansal, S. K., & Verma, H. K. (2020). Compendium of Skill Development Programme, *Small Poultry Farmer*. February 06-March 12, 2020. Directorate of Extension Education, GADVASU, Ludhiana. pp: 1-171.
- Verma, H. K., Singh, J., & Jadoun, Y. S. (2020). Workshop Compendium: *Latest Advances in Livestock, Poultry and Fisheries for Animal and Fisheries Scientists of KVKs (Punjab)*. Directorate of Extension Education, GADVASU, Ludhiana. pp 1-55.

5. Articles published

- Ahuja, A. K. & Honparkhe, M. (2020). You must need to know about horse breeding? *The Marketers (June-July Issue)*, 2.
- Anand, V. M. & Kumar, A. (2020). Emergency treatment and prevention of gastric dilatation and volvulus in dogs. *Punjab Veterinary Journal (Dec 2019-June 2020)*, 10-13.
- Ansal, M. D. (2020). Ajola bagbani sumel da nahi koi mel. *Vigyanak Pashu Palan 13* (11), 30.
- Ansal, M. D. (2020). Corona virus mahamari: ki kre jhinga vapari? *Vigyanak Pashu Palan 13*(8), 27-29.
- Ansal, M. D. (2020). Karp machi brudstak sudhar lyi desi nukte. *Vigyanak Pashu Palan 14*(1), 31.
- Ansal, M. D. (2020). Naksali talab- machi utpadan da kargar upaa. *Vigyanak Pashu Palan 14*(12), 31.

- Ansal, M. D. (2020). Sardia ch machi di suchaji dakhbhal- kisan malamaal. *Vigyanak Pashu Palan* 15(4), 28-30.
- Ansal, M. D. & Singh, P. (2020). Punjab vich jhinga machi sathiti. *Vigyanak Pashu Palan* 13(7), 27.
- Arora, A. K. (2020). Janvra vich chhoot diyan bimariya ton behau lyi tikakaran ate isdi mahatata. *Vigyanak Pashu Palan* 13(9), 17-18.
- Banga, M. & Geeta D. L. (2020). Creating awareness about a dreaded disease “Rabies”. *Punjab Veterinary Journal (June 2019-Dec 2020)*, 19-21.
- Bansal, V. & Chawal, R. (2020). Paneer kharab hon de nkanan ate rokan de tarike. *Vigyanak Pashu Palan* 13(6), 15-16.
- Bashetti, P., Suresh, R. & Geeta, D. L. (2020). Bovine Neosporosis: an update. *Livestock Line* 14(3), 27-29.
- Bhanuprakash, C. & Kumar, B. (2020). Adverse effect of Corona virus (Lockdown) on Fisheries Sector. *Agriculture & Food: e-Newsletter* 02(05), 15-18.
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6. TV/Radio Talks

University has liaison with electronic media for flashing various livestock related interventions and precautions for disease control and seasonal correct management practices. University experts deliver TV talks regularly on Doordarshan/ Cable networks/ private channels on current & seasonal topics related to livestock and fish farming. On an average two to three talks are delivered/broadcasted in a week. The comprehensive list of TV talks has been given below.

S.No.	Name of the Faculty Member	Date of the Talk	Title of the Talk
Department of Animal Breeding and Genetics			
1	S Kaur	24.10.2020	Pashu khariden wele dhiyan yog gallan; AIR Jalandhar
Department of Animal Nutrition			
2	J S Lamba	15.04.2020	Conservation of fodder in relation to Covid 19; AIR Bathinda
Directorate of Livestock Farms			
3	R S Grewal	16.07.2020	Summer feeding; AIR Jalandhar
4		09.10.2020	Feeding of freshly calved animals; DD Jalandhar
5		09.10.2020	Post calving nutrition for animals; DD Jalandhar
6		19.10.2020	Use of paddy straw in animals; DD Jalandhar
7		04.02.2021	Nutrition Awareness Week; DD Jalandhar
8		22.02.2021	Nutrition Awareness Week; DD Jalandhar
9		Navdeep Singh	10.07.2020
10	22.09.2020		Pahuan vich sunh di samasya, karan ate sujhhav; AIR, Patiala
11	P P Dubey	27.02.2020	Murgi paalan; AIR, Jalandhar
Department of Livestock Production Management			
12	Daljeet Kaur	27.10.2020	Murgi palan lahevand dhanda kiven bnee; AIR, Patiala

13		06.01.2021	Ghar de pichware murgi palan ate mahila sashktikaran; AIR, Patiala
Department of Veterinary & Animal Husbandry Extension			
14	R K Sharma	28.04.2020	<i>Pashuan Dian Bimarian Lai Ghareilu Upchar.</i> AIR, Bathinda
15		07.05.2020	<i>Pashuan Lai Ghareilu Totake</i> AIR, Bathinda
Animal Disease Research Centre			
16	V Mahajan	07.05.2020	Pashuan vich tikakaran; phone-in programme at AIR Jalandhar
17	M S Bal	11.02.2021	Dhudharu pashuan vich garmian de mausam vich hon vale parjivi rogan dian bimarian ate bachao, AIR, Jalandhar
18	G Filia	23.02.2021	Vaccination in animals; AIR, Patiala
Department of Veterinary Microbiology			
19	Gurpreet Kaur	19.06.2020	Pashuan diyaan lag walian beemarian te bachao; AIR, Jalandhar.
20	Paviter Kaur	09.07.2020	Pashuan vich laag ton hon waalian prajnan samasyaavan; AIR, Jalandhar.
21	T S Rai	05.03.2021	Pashuaan vich gall-ghotu di bimaari; AIR, Jalandhar.
22		06.02.2021	Biosecurity; AIR, Jalandhar.
Department of Veterinary Parasitology			
23	Paramjit Kaur	20.11.2020	Prajivi samsia ate pashua di sambhal; AIR, Patiala
24		16.3.2021	Garmi di rut vich pashuan de prajivi rog ate ohna di sambhal; Doordarshan Jalandhar
25	Harkirat Singh	28.12.2020	Pashuan vich parjivi samasia; AIR, Jalandhar
Department of Veterinary Pharmacology and Toxicology			
26	V K Dumka	08.10, 2020	Kudrati jaddi butian ranhi pashuan di bimarian di roktham ate Ilaaj; AIR, Jalandhar.
27	S P S Saini	29.07.2020	Pashuan vich dwayian de durupyog ton bachaa; AIR, Jalandhar
Department of Veterinary Gynaecology			
28.	S S Dhindsa	16.02.2020	Pashuan ch hehe di sahi pehchan; AIR, Jalandhar.

29		09.11.2020	Pashuan de hehe di sahi pehchaan ate garabh dharan; Doordarshan, Jalandhar
30	A K Singh	06.11.2020	Nasal sudhar layee nar pahu di chon ate mahatta; AIR, Jalandhar.
31	Bilawal Singh	17.12. 2020	Pashuan wich heha samkalin vidhi; DD, Jalandhar
Department of Veterinary Surgery and Radiology			
32	Ashwani Kumar	26.02.2021	First Aid in Animals; Doordarshan, Jalandhar
33	S K Mahajan	18.06. 2020	Jaanwaraan vich akhaan diyaan bimaarian ate ilaaj; AIR Bhatinda
Department of Veterinary Medicine			
34	Sushma Chhabra	30.09.2020	Hyperthermia in dairy animals; AIR, Jalandhar
Teaching Veterinary Clinical Complex			
35	Raj Sukhbir	06.07.2020	Hospital facilities for dairy farmers during COVID-19; AIR, Bathinda
36	Randhir Singh	14.07.2020	Dudharu pashuan vich leve di soj; AIR, Patiala
37	Khushpreet Singh	13.01.2021	Reproductive problems in dairy animals; AIR, Jalandhar
38	S S Randhawa	07.01.2021	Veterinary university de pashu hasptaal dian sewawan; Doordarshan, Jalandhar
Department of Livestock Products Technology			
39	M K Chatli	05.04.2020	Corona virus and poultry products; AIR, Patiala
40		30.04.2020	Corona virus and poultry products; AIR, Ludhiana
41	Nitin Mehta	14.08.2020	Pashu utpad rahi aatam nirbhar Bharat; AIR, Jalandhar
42		15.01.2021	Vadhare munafe layi pashu palak udami banan; DD Jalandhar.
Centre For One Health			
43	Simranpreet Kaur	17.02.2020	Saaf ate Sehatmand Dudh da Uttpadan; AIR, Jalandhar
44	Simranpreet Kaur	13.09.2020	Saaf suthra Dudh da Uttpadan; AIR, Jalandhar
45	J S Bedi	23.03.2020	COVID-19 pandemic; DD, Jalandhar

46	B B Singh	19.10.2020	Brucellosis: Preventions and precautions for human beings and animals; AIR, Jalandhar
47	Rajnish Sharma	18.12.2020	Swine flu and Swine Fever; Akashwani, Patiala
48		06.01.2021	Bird flu; YouTube Channel <i>Dainik Sawera</i> https://youtu.be/7Ek9leycF E
49		11.01.2021	Bird flu bare jankari; AIR, Jalandhar
50		21.01.2021	Bird Flu and prevention; Akashwani, Patiala
51		28.01.2021	Bird Flu-Savdhania and behao; DD, Jalandhar
52		03.02.2021	Bird flu bare jankari; Akashwani, Patiala
College of Dairy Science and Technology			
53	Venus Bansal	25.04.2020	Extending the shelf life of milk and milk products during COVID-19 pandemic; AIR, Ludhiana
54		06.08.2020	Handling of milk and milk products during raining season; AIR, Jalandhar
55		27.02.2021	Prolonging the shelf life of milk and milk products; AIR, Jalandhar
56	Rekha Chawla	13.04.2020	Extending the shelf life of milk and milk products during COVID-19 pandemic; AIR, Jalandhar
57	Gursharn Singh	05.11.2020	Dudh processing lai machinikaran; AIR, Jalandhar
58	Amandeep Sharma	19.02.2021	Chhote padhar te milk plant laun bare; DD Jalandhar
59	Amandeep Sharma	20.06.2020	Garmia vich dudh di sambhal; Doordarshan, Jalandhar
60	Varinder Pal Singh	24.11.2019	Majhan pallana munafa wala kitta; AIR, Jalandhar
61		29.10.2020	Majhan paalan de kitta taun munafa kiwen wadhayie; AIR, Jalandhar
62		26.02.2021	Dairy farming vich majhan taun munafa kiwen wadhayie; AIR, Jalandhar
63	Nitika Goel	15.12.2020	Dudh uttpadan di gunvatta vadha ke munafa lena; AIR Bathinda

KVK and RRTCs			
64	B Kumar	16.04.2020	Fodder management for livestock during Covid-19 pandemic
65	H S Sohi	27.09.2020	Turmeric cultivation and its processing technologies; BBC Punjabi Channel
66	P Gupta	17.10.2020	Anaj, phal atte sabjiyan di saambh sambhal Akashwani, Patiala
67	S Singh	29.01.2021	Integrated Farming Systems; AIR, Patiala
68	V Phulia	25.01.2021	Sardiyan de mausam vich machhiyan si saambh sambhaal Akashwani, Patiala
69	V Phulia	22.02.2021	Sardi rute machhiyan si saambh sambhaal Akashwani, Patiala
70	B Kumar	03.03.2021	Krishi Rinn Smagam; DD Jalandhar
71	P K Dhillon	03.03.2021	Home Science extension activities at KVK during Krishi Rinn Samagam; DD Jalandhar
College of Fisheries			
72	Meera D. Ansal	16.04.2020	Recommendations for fish farming during lockdown; AIR Ludhiana
73		23.04.2020	Recommendations for shrimp farming during lockdown; AIR Bathinda
74		14.05.2020	Care of fishes during summer season; AIR Jalandhar
75		13.07.2020	Care of fishes during rainy season; DD, Jalandhar
76		28.07.2020	Fish farming options in Punjab; DD, Jalandhar
77		09.06.2020	Management of fish ponds during summer season; DD, Jalandhar
78		09.07.2020	Summer care in fish farming; DD, Jalandhar
79		28.07.2020	Fish farming options in Punjab; DD, Jalandhar
80		21.08.2020	Fish farming management during rainy season; AIR Patiala
81		27.11.2020	Aquaponics-Integration of horticulture and fish culture; AIR Jalandhar
82		04.12.2020	Care of Fish during Winters; AIR Jalandhar

83		07.01.2021	Automated Aquaponics System; DD, Jalandhar
84	Vaneet Inder Kaur	02.11.2020	Fish farming management during winters; DD Jalandhar
85		24.06.2020	Summer care in fish farming; AIR Jalandhar
86	Ajeet Singh	13.01.2021	Fish Processing and value addition for more profitability; AIR Jalandhar
87	Grishma Tewari	11.12.2020	Best management practices in fish culture; AIR Patiala
88	Prabjeet Singh	19.06.2020	Effect of temperature on fish growth; AIR Jalandhar
89		29.07.2020	Shrimp Farming; AIR Jalandhar
90		17.12.2020	Shrimp Farming in Punjab; AIR Jalandhar
91		12.03.2021	Shrimp farming in Punjab; DD, Jalandhar
College of Animal Biotechnology			
92	S S Sodhi	11.08.2020	Nasal Sudhar Naal Suran Ton Vadere Utpadan; DD, Jalandhar.
93		05.03.2021	College of Animal Biotechnology in Service of Farmers; DD, Jalandhar
College of Veterinary Science, Rampura Phul			
94	Sandeep Kaswan	20.08.2020	Scope of goat farming in Punjab; AIR, Jalandhar
95	M K Chatli	30.04.2020	Safety of poultry egg and meat during COVID; AIR Ludhiana

7. Expert visits

University scientists have undertaken expert visits to various parts of the state on different occasions. These visits have been enumerated below:

- i. To MC Zoological Park, Chhat Bir, Mohali to examine/ treat sick wild animals in the months of February and March, 2021.

E. Utility Services provided by university

Various departments and outstations of GADVASU provide following utility services to different categories of livestock, poultry and fish farmers and other stakeholders.

- i. Specialized diagnosis of diseased conditions of various livestock, pet, wild animals and birds.
- ii. Specialized treatment for various livestock, pet, wild animals and birds.

- iii. Provision of veterinary health services in the surrounding villages through ambulatory van.
- iv. Running “Animal Birth Control (ABC) programme’ for the control of stray dog population.
- v. Sale of area specific mineral mixture, urea molasses multi-nutrient blocks (UMMB), Bypass Fat, eggs, semen straws live germ plasm
- vi. Sale of germ plasm of Sahiwal and Crossbred Cattle; Murrah and Nili Ravi buffalo; Layer and Broiler birds; Beetal goat, Pig, Rabbit etc.
- vii. Supply of male cow and buffalo calves for breeding purposes
- viii. Service of Sahiwal cattle embryo transfers at farmers’ door step
- ix. Sale of university literature
- x. Sale of herbal plants
- xi. Sale of Azolla inoculums
- xii. Sale of mastitis detection kits, rumenal magnets, milk adulteration testing kits
- xiii. Sale of vegetable kits, vermicompost, mushroom, vegetables, fruits, seed of different crops, honey, fruit fly traps
- xiv. Testing of faecal, blood, semen samples etc.
- xv. Soil and water testing
- xvi. Service of of Sahiwal cattle embryo transfers at farmers’ door step.
- xvii. Nutritional evaluation of meat and egg products.
- xviii. Quality evaluation of packing materials

Animal Disease Research Centre

i. Disease outbreaks investigated

Thirteen outbreaks were investigated during 2020-2021 viz., Haemorrhagic Septicemia (1), Septicemia (1), Classical Swine Fever (1), Aflatoxicosis (1), Mixed infection of Monieziosis and cholangiohepatitis (1), Anaplasmosis (1), Mixed infection of theleriosis and anaplasmosis (1), Mixed infection of strongylosis and coccidiosis (1), Mixed infection of strongylosis and balantidiasis (1), Mixed infection of aflatoxicosis and balantidiasis (1) and Nitrate toxicity (3).

ii. Testing of Diseases

- **Brucellosis:** During the period under report 648 animals were tested for brucellosis and 46 animals were found positive on the basis of RBPT. Overall prevalence came out to be 7.09%.
- **Tuberculosis:** A total of 246 cattle and buffaloes (114 cattle & 132 buffaloes) were screened for tuberculosis by CID (Comparative intradermal test) and 10 (2 cattle & 8 buffaloes) were found to be positive by CID.
- **Johne’s disease:** A total of 246 faecal samples of cattle and buffaloes were collected and screened for JD. Of these 15 samples were AFB positive on fecal staining and microscopic examination. Three animals were found to be positive for JD by PCR.

iii. Disease diagnostic test services

Laboratory is well equipped with automated state of art equipments and various tests *viz.* Complete blood count, Biochemical analysis, Urine analysis, Cytological examination, Parasitological examination for ectoparasite and endoparasite, Microbial culture and Culture sensitivity test are routinely performed. The collective professional expertise of the clinical diagnostic laboratory supports the veterinary hospital of the university as well as veterinary practitioners /researchers working in the different departments.

In the clinical diagnostic lab, 10098 samples were processed for hematological, 1399 samples for cytological, 920 samples for urine analysis, 6133 for biochemical analysis and 2736 samples for parasitological examination. In the clinical microbiology lab of the department, 674 samples were tested for brucellosis by RBPT, 77 faecal samples for JD by acid fast staining, 102 samples for culture sensitivity testing and 108 samples for dermatophytes/ fungal examination during last year.

University Library and Networking

The University Library is having a rich collection of information resources and is well equipped with *state-of-the-art* facilities providing a congenial learning environment to the University fraternity. The various operations and services of Library are fully automated using Koha (Open Source Library Management Software).

The library provides the single window access to its e-resources, services and other important information through its website i.e. Cyberary. In addition, the website provides access to various forms/ proformas relevant to the fraternity of the University. Web-links have been given to various open access electronic information resources to provide access to enhanced scientific literature. The website of library is continuously updated to facilitate current information to users. The library is member of Consortium for e-Resources in Agriculture providing access 2633 journals in the broad spectrum of Agricultural Sciences encompassing Veterinary Sciences; Animal Husbandry, Livestock Management & Poultry Sciences; Fisheries and Aquaculture; Dairy Technology; Biotechnology; Food Science and Technology; Animal Nutrition and allied subjects. The access to e-resources, the University Library has also been extended to the fraternity of one of the off-campus constituent college of the University viz. College of Veterinary Science, Rampura Phul through Virtual Private Network.

The Online Public Access Catalogue (OPAC), providing information about the resources of the library and their current status is accessible from diverse devices connected to the Internet. The other Information Technology based services of library include automated Circulation, Creation of ID Cards, Database management for the books, Journals, Thesis etc. Library is member of Krishikosh: An Institutional Repository of NARES. The library also publishes e-Newsletter of the University (on behalf of the worthy Vice-Chancellor) on quarterly basis, reflecting the trinity of teaching, research and extension activities of the University, disseminating these to the end users.

During the year 2020-21, the University Library strengthened its e-book collection with addition of 40 titles (not available under CeRA) worth Rs. 5,00,000/-. The online books were purchased on perpetual access basis; therefore the access to these books will always remain accessible from the university. The books are accessible on IP range of the university i.e. the e-books can be accessed from any computer connected to the campus wide area network. These books are being used by library members to meet their academic needs and are helping students for better performance in academic programmes and to compete at international level. The e-books are being accessed by students, researchers and faculty at their own convenience.

The University Library also strengthened its print book collection on veterinary science, dairy science and technology, fisheries and animal biotechnology with addition of 250 books worth

Rs. 5,00,000/- along with 40 online books. These are being used by students and researchers to meet their academic and research information needs.

The University Library is continuously making efforts for educating its users about strategies for accessing online information. In continuation of this, the library developed videos for making viewers aware about effective usage of information resources which have been uploaded and are accessible from the YouTube Channel of GADVASU.

Networking:

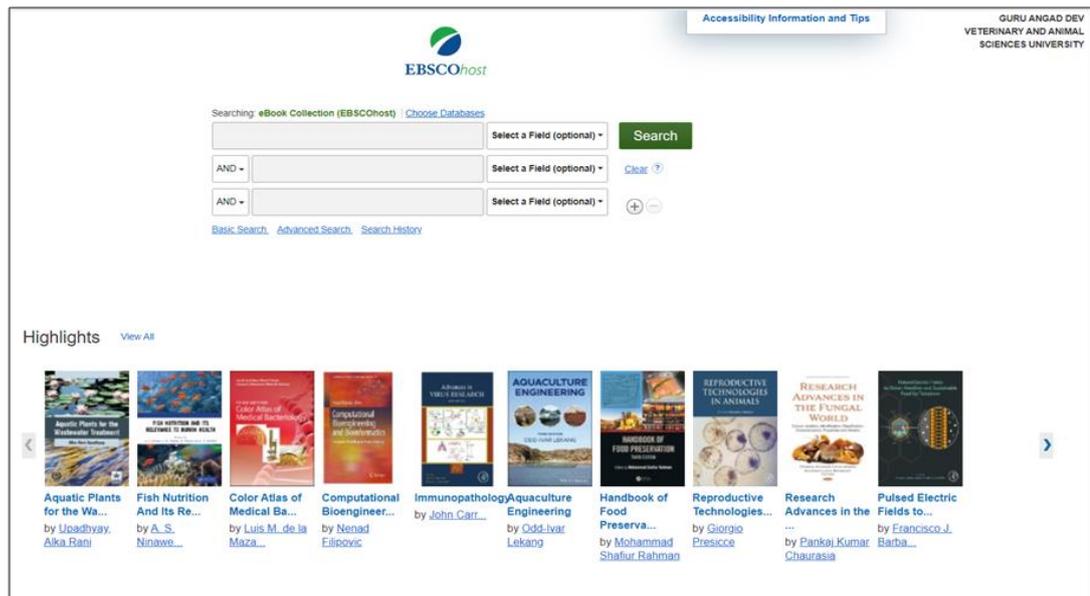
The University Library has established campus wide network in the University connecting more than 800 nodes throughout the campus. The Library provides various services like Internet, E-mail and access of Library through intranet through Campus Wide Area Network. The Library provides Network Server Management under which the internet services are provided throughout the University *via* Campus Wide Area Network on Fiber Optic Cable. The internet services are provided through User base authentication. The Library hosts Intranet Web Server to provide Library Services throughout the Campus from its website i.e. Cyberary. The networking facility of GADVASU has also been extended to cover hostels and Library premises and surroundings using Wi-Fi Technology. The Wi-Fi network is centrally controlled by using the control based technology from centralized location. The controller equipment's are placed in the Library server room. The network facility has been extended to College of Dairy Science & Technology, College of Animal Biotechnology and Centre for One Health. The Library has provided backup internet link of 40Mbps for un-interrupted and smooth functioning of online activities of the University. The Central Virtual Classroom facility has been established in the College of Dairy Science & Technology under NAHEP-Component 2 project of ICAR-IASRI.

The Library provides Email Services to the staff on domain @gadvasu.in. This Email service can be accessed worldwide. The Information Technology personnel of library manage and control the server for Apache Web-server, Mail Services, Network Management System and Server for Antivirus Software. The Library monitors the traffic and security of Local Area Network through the monitoring software. In addition, library maintains, troubleshoots and administers the use of Local Area Network (LANs) which has more than 800 nodes to access the services of Intranet and Internet. The facility for managing network switches for continuous smooth functioning of internet services is also rendered by library.

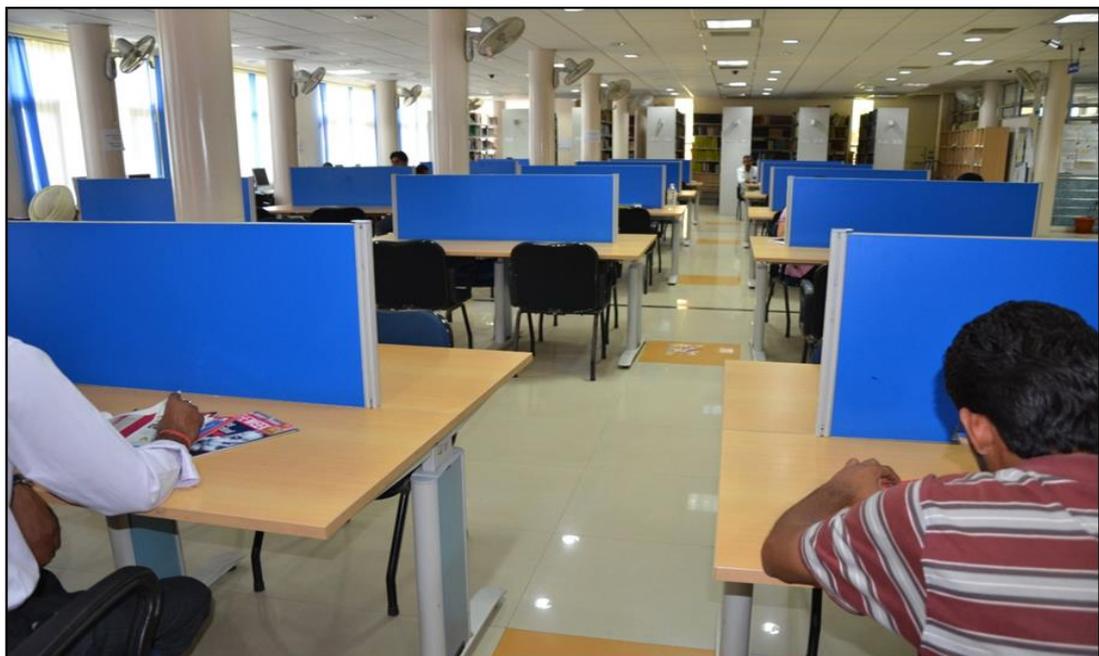
The University Library is hosting and managing the Digital Repository of articles published by the faculty. The repository has been customized to retrieve articles by NAAS Rating and Impact Factor i.e. matrix required for compilation of reports of the University involving data about university publications. The digital contents available on the repository are accessible to fraternity of the University including faculty, students and researchers for better

comprehension of the teaching and research activities. The repository has following features:

1. Every faculty member has his/her own user account for uploading respective publications.
2. The data can be accessed at university level, college level, department level vis-à-vis at an individual level
3. The Discover feature and browse option have been customized to retrieve articles based on NAAS Rating and Impact Factor



Gateway to Access E-Books



State of the Art Reading Hall at GADVASU Library

DIRECTORATE OF STUDENTS WELFARE AND ESTATE OFFICE

Sports Wing

University has created facilities to promote the sports activities among the students. Large number of students (both boys and girls) from constituent colleges have shown keen interest in sports activities. Due to prevailing COVID crisis the University could not organize Annual Athletic meet. In addition, the students could not participate in any of the inter university tournaments.

Cultural Activities Wing

Cultural Activities Wing of the Directorate has been entrusted with the responsibility to promote the cultural and co-curricular activities amongst the students, sharpening their skills in the fields of fine arts, theatre, drama etc. and to provide them a platform to articulate their creativity. To achieve this objective, the wing organized regular camps, seminars, meetings and interactions with eminent artists/personalities from the field of art and culture and facilitated the student participation in cultural programmes in and out of the University. During the period under report the students actively participated in cultural activities and won various prizes. The Cultural Activities Wing of the University also organized functions to celebrate Independence Day and Republic Day. Students showed their talents by presenting patriotic songs and skits during the said celebrations.

NSS Unit

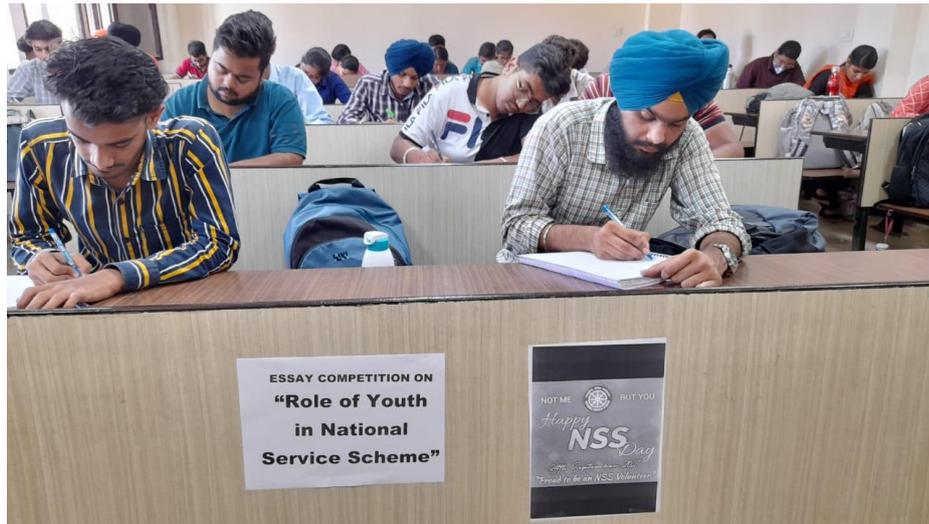
Campaign of “Fit India Run”: The campaign was organized with the NSS volunteers by the Department of Youth Services, Kapurthala and Hoshiarpur on 2nd September, 2020 with an aim to promote health and fitness among the youth. A total of 36 volunteers from COABT and COVS participated in this event.

Plog Run: More than 250 NSS Volunteers of all Colleges participated in a Plog Run (2 km distance from near their homes and took photographs of the same to commemorate and celebrate Gandhi Jayanti (2nd October, 2020).

Vigilance Awareness Week: NSS volunteers participated in Vigilance Awareness Week (27th October, 2020 to 2nd November, 2020) with the theme ‘Satark Bharat, Samridhh Bharat’. The aim was to create awareness and a pledge for the same was taken online on 27th October. Volunteers also made posters.

Ek Bharat Shrestha Bharat: NSS volunteers participated in a webinar on the topic of Language Learning under the Program ‘Ek Bharat Shrestha Bharat’ on 20th November, 2020 through the online meeting platform Cisco Webex.

Essay Writing Competition: An essay writing competition was organized by NSS wing on 3rd December, 2020 on the topic ‘Agriprenurship to Ensure Doubling Farmer’s Income’.



Program on Gita Shlok: A program was conducted for NSS volunteers on the occasion of 'International Gita Mohatsav' from 21st – 25th December 2020 in Kurukshetra.

Celebrating Indian Youth: The Department of Youth Affairs and sports organized an online ceremony to celebrate Indian Youth on 8th January, 2021 through live on facebook on their page.

National Youth Parliament Festival 2021: The Department of Youth Affairs organized a 'National Youth Parliament Festival' on 11th January, 2021 where in more than 100 NSS volunteers from various college of GADVASU participated virtually.

National Voters Day Celebration: The NSS wing of the College of Animal Biotechnology took a pledge on the occasion of National Voters Day that falls on 25th January, 2021.

Webinar on Women in Leadership: A webinar for NSS volunteers was on 8th March, 2021 on the topic 'Women in Leadership-Athletics' in order to commemorate International Women Day, 2021.

Yoga for Unity (31st March,2021- 21st June, 2021): A program for NSS volunteers totalling 100 days of yoga was organized by Yoga for Unity & Well being to celebrate the International Yoga Day.

NSS Volunteers of COABT put up posters in the College Canteen to promote cleanliness and also donated a disposal bin at the canteen.

Assistance during Covid-19: As the Nation continue to fight with the Covid-19 in its own ways, the NSS volunteers of Guru Angad Dev Veterinary and Animal Sciences University and its affiliated colleges pooled in for social cause at their respective places. During Covid-19 pandemic, NSS Volunteers took part in various activities of social welfare and got associated in distribution of masks, langars for the welfare of the society.

Rohan Sharma, who enrolled as NSS volunteer at University affiliated College of Veterinary Science at Rampura Phul in Bathinda performed langar sewa at Jammu Pathankot border areas. A regular at Sewa, Rohan has been engaged in distributing food to the migrant laborers

stuck at the Lakhanpur border near Shahpur Kandi in Pathankot. Another student, Pawandeep Singh, an NSS volunteer at Amritsar located University's constituent college Khalsa College of Veterinary and Animal Sciences has joined hands with Udham NGO at Abohar for door-to-door distribution of ration and essential grocery items to the needy.

Activities of R&V Sqn NCC Unit /NCC/NSS

NCC Training Activities

Various NCC training activities performed by the NCC cadets of 1 Punjab R&V Sqn NCC, GADVASU- Ludhiana between 01/04/2020 to 31/03/2021

- i. One hundred fourteen cadets of this unit attended Annual Training Camp w.e.f. 19/02/21 to 24/02/21 at 1 PB R&V SQN NCC, Ludhiana. During the camp the cadets were imparted rigorous training in Drill, Physical training, lectures on basic army training, equitation, sports activities and firing etc.
- ii. Ten cadets were promoted for senior ranks during the camp
- iii. NCC cadets took part in various activities like swachhta abhiyaan, Water Conservation, Run for fun etc in which various activities like awareness rallies pertaining to the social causes were done.
- iv. Weapon training and firing practices were conducted for all the cadets.
- v. Twenty seven cadets appeared for NCC "C" certificate exam held on 07/03/2021 at SCD Govt. College, Ludhiana.
- vi. Cadets were imparted rigorous training in Horse man ship.



Cadet promoted by Commanding officer



Cadets with CO and office staff



Group commander visited firing practices site



Firing practice by the cadets



Cadets involved in Swachh Bharat Abhiyaan

Infrastructure Developed / & Renovated and Strengthening of Labs:
During the period University has strengthening different labs and farm facilities. A glimpse of the same is provided below:



Video conferencing facility at TVCC



Motorized Tooth Rasp at Department of Surgery



Veterinary Patient Monitor with EtCO₂ at Department of Surgery



Renovated Obstetrics Unit at Department of Gynecology



Uterine Detorsion Area Constructed Department of Gynecology



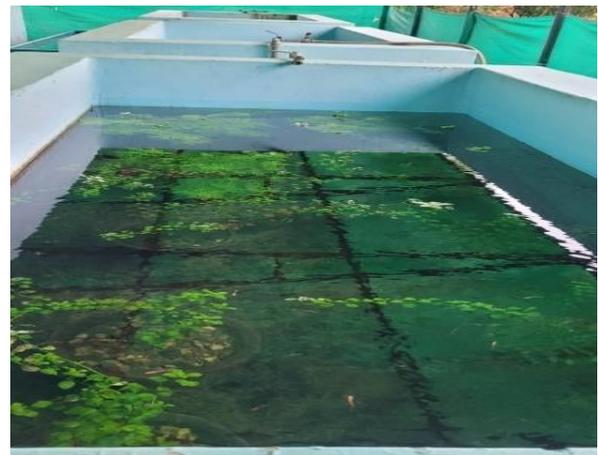
Pig Shed College of Fisheries



Swine Reproduction Lab



Ornamental Fish Culture & Breeding Unit at College of Fisheries



Ornamental Aquatic Plant Culture Unit at College of Fisheries



Technology Information Room



Farmer Extension Library



Fisheries Museum at College of Fisheries



Fisheries Museum at College of Fisheries



Microscopy Lab at College of Fisheries



Smart class rooms (03) - Upgraded with IDP Funding



**Seminar room with seating capacity of 100 participants at College of Fisheries -
Upgraded with IDP Funding**



Laminar Air Flow at KVK Barnala



BOD Incubator KVK Barnala



**Poultry Eggs Hatching Unit at KVK
Barnala**



Honey Processing Unit at KVK Barnala

AWARDS/HONORS/FELLOWSHIPS BY FACULTY

a. Awards/Honors/Recognitions

S. No.	Name of the Faculty	Detail of the Award/Honour/ other Recognitions	Date of the Award
College of Veterinary Science, Ludhiana			
1.	Dr. Jasmine Kaur	<i>Best Presentation Award</i> in the International webinar on Climate smart livestock and poultry production through nutritional interventions” organized by Institute of Animal Nutrition, Kattupakkam, Tamil Nadu Veterinary & Animal Sciences University.	23-24. 11.2020.
2.	Dr. Amit Sharma	<i>Certificate of Appreciation</i> for organizing a webinar (as Organizing Secretary) on ‘Silage- A hidden treasure for agribusiness’ awarded by PI-IDP & Dean GADVASU, Ludhiana.	03.11.2020
3.	Dr. Simarjeet Kaur	<i>Bestowed with Inspiring Lady Veterinarian award 2021</i> on the occasion of International Women’s Day 2021 by Pashudhan Praharee	08.03.2021
		<i>Best Oral Presentation Award</i> for Sire evaluation considering first lactation and Milk Constituent traits authored by Singh A, Dubey P P, Kaur S and Malhotra P, during International web conference (GRISAAS-2020)	28-30.12. 2020
		Editorial Board Member of the Indian Journal of Livestock, Veterinary and Animal Sciences.	2020-21
		Editorial Board Member of the VigiyanakPashuPalan Magazine	2020-21
4.	Dr. Raman Narang	<i>Oral Presentation Award</i> during International E-Conference on Agriculture & Biological Science 2020.	18-19.12.2020
5.	Dr. Yashpal Singh	<i>Certificate of Appreciation</i> for acting as judge for e-Canvas Spills (poster sessions) during the e-conference on Igniting youth minds for sustainable growth through entrepreneurship and skill development: A Vets Vision, organized by IDP, GADVASU, Ludhiana.	05.03.2021

6.	Dr. Subhash Chandra	<i>Certificate of Appreciation</i> during National e-conference on Igniting youth minds for sustainable growth through entrepreneurship and skill development: A Vets Vision, organized by IDP Cell, GADVASU, Ludhiana.	05.03. 2021
7.	Drs. Rajesh V Wagh and O. P. Malav	<i>Second Best Poster Award</i> for Interconnectivity of Echo-health and Zoonoses: Global Challenges at World Zoonoses Day -2020- International Webinar on ‘Human- Animal- Environment Interface: Recent Approaches for Containing the Global Zoonotic Burden’ organized by Indian Veterinary Association, CVAS Mannuthy Unit and KVASU.	06- 08.07.2020
8.	Drs. Rajesh V. Wagh, O.P. Malav, M. K. Chatli, Nitin Mehta and Pavan Kumar	<i>Third Best Article Award</i> for Recent Advances in Rapid Detection of Meat borne Pathogens of Zoonotic Importance during International Webinar on ‘Human-Animal-Environment Interface: Recent Approaches for Containing the Global Zoonotic Burden’- organized organized by Indian Veterinary Association, CVAS Mannuthy Unit and KVASU.	06-08.07.2020
9.	Drs. Rajesh V Wagh, O.P. Malav, Pavan Kumar and S. Kaur	<i>Third Best Poster Award</i> for Doubling the Farmers Income through Integrated Livestock-Agricultural Boost Up at IDP-NAHEP sponsored National e-Conference on “Igniting Younge Minds for Sustainable Growht Through Entrepreneurship and Skill Development: A Vets’ Vision, organized by IDP cell, GADVASU, Ludhiana.	05.03.2021
10.	Drs. Pavan Kumar, S. Kaur, O.P. Malav, Rajesh V. Wagh and R. Kantale.	<i>First Best Poster Award</i> for Entrepreneurship Development Through Meat and Egg Processing at IDP-NAHEP sponsored National e-Conference on “Igniting Younge Minds for Sustainable Growth Through Entrepreneurship and Skill Development: A Vets’ Vision, organized by IDP cell, GADVASU, Ludhiana.	05.03.2021
11.	Drs. O.P. Malav, Rajesh V. Wagh, Pavan Kumar and	<i>Second Best Poster Award</i> for Goat Processing and Value addition for Profitable Entrepreneurship: Proof of concept at IDP-	05.03.2021

	S. Kaur	NAHEP sponsored National e-Conference on Igniting Young Minds for Sustainable Growth Through Entrepreneurship and Skill Development: A Vets' Vision, organized by IDP cell, GADVASU, Ludhiana.	
12.	Dr. Y S Jadoun	<i>Best Oral Presentation Award</i> for Analysis of Knowledge Level of Dairy Farmers about Good Dairy Farming Practices during online International Conference on “Global Research Initiatives for Sustainable Agriculture & Allied Sciences (GRISAAS-2020).	30.12. 2020
13.	Dr. Y S Jadoun	<i>Excellence in Extension Award-2020</i> from Society for Scientific Development in Agriculture and Technology, Meerut (U.P) during International Conference on “Global Research Initiatives for Sustainable Agriculture & Allied Sciences (GRISAAS-2020)”.	30.12 2020
14.	Dr Paviter Kaur	<i>Second Best Poster Presentation Award</i> for Integrated Farming: The key to Atamnirbhar Bharat by Kaur P, Satpathy M and Sharma N S during IDP-NAHEP sponsored National e-Conference on Igniting Young Minds for Sustainable Growth Through Entrepreneurship and Skill Development: A Vets' Vision, organized by IDP cell, GADVASU, Ludhiana.	05.03.2021
15	Dr. L.D. Singla	Appointed as Zonal Coordinator for North Zone in meeting of NAVS held on 03.12.2020 to promote and popularize NAVS (I) in Veterinary fraternity working in Colleges, Universities, State Departments and Industry	03.12.2020
16.	Dr. L.D. Singla	<i>Editorial Excellence Award</i> as Associate Chief Editor of Indian Journal of Animal Research	01.01.2021
17.	Dr. L.D. Singla	<i>Certificate of Appreciation</i> for outstanding contribution as Member Scientific Advisory Board to International Journal of Livestock Research in the year 2020-21	31.03.2021
18.	Dr Jyoti	<i>First Best Poster Presentation Award</i> during IDP-NAHEP sponsored National e-Conference on Igniting Young Minds for Sustainable Growth Through	05.03.2021

		Entrepreneurship and Skill Development: A Vets' Vision, organized by IDP cell, GADVASU, Ludhiana.	
19.	Dr. L. Geeta Devi	<i>First Best Poster Presentation Award</i> during during IDP-NAHEP sponsored National e-Conference on Igniting Young Minds for Sustainable Growth Through Entrepreneurship and Skill Development: A Vets' Vision, organized by IDP cell, GADVASU, Ludhiana.	05.03. 2021
		<i>Third Best Prize for Poster Presentation</i> during XVIth National Online Conference of IAWV-2020 on Sustainable contribution of Atmanirbhar Women Veterinarians in Enrichment of Production Potential in Livestock through Applications of Modern Technologies by College of Veterinary and Animal Sciences, Parbhani (co-authors Singh N D, Mahajan V and Brar A P S)	09-10.12. 2020
20.	Dr. Kuldip Gupta	<i>ICVP Certificate of Appreciation</i> for the invited lead lecture on Cytopathology in diagnosis of commonly occurring neoplasms, during the Online International Veterinary Pathology Congress-2020 organized by Nagpur Veterinary College, MAFSU, Maharashtra.	29.12.2020
21.	Dr. Omer Khalil Baba	<i>Appreciation Letter</i> for serving as Research Scientist during the national emergency caused by COVID-19 pandemic for the period from 19-04-2020 to 03-07-2020 at Viral research and Diagnostic Laboratory (VRDL), Government Medical College Patiala, Punjab.	03.07 2020
		<i>Appreciation Award</i> for outstanding and dedicated service to the nation in the diagnosis and fight against novel Corona virus COVID-19 by Guru Angad Dev Veterinary And Animal Sciences University.	10.07. 2020
22.	Dr. Vijay Singh Malik	<i>Reviewer Excellence Award</i> by the Editors of ARCC Journals for reviewing article for Indian Journal of Animal Research for outstanding contributions as reviewer.	04.12.2020

23.	Dr. Pallavi Verma	<i>Certificate of Excellence</i> for reviewing Current Journal of Applied Science and Technology.	2020
		<i>Certificate of Excellence</i> for reviewing International Journal of Life Sciences and Applied Sciences.	2021
24.	Dr Ashwani Kumar	<i>Appreciation Certificate</i> for acting as ‘Incharge’ of the committee for MCQ Repository (Vet-o-Holics Quiz event), organized by IDP Cell, GADVASU, Ludhiana.	05.03.2021
		<i>Certificate of Recognition</i> for Prognostic assessment of tumors in pets during DBT-CRCN project sponsored training course on “Advances in mammary tumor diagnosis and treatment” organized by College of Animal Biotechnology, GADVASU, Ludhiana.	17.12.2020
		<i>Reviewer Excellence Award</i> by the Managing Editor, Indian Journal of Animal Research for outstanding contributions as reviewer.	2020-2021
		<i>Certificate of Appreciation</i> by Executive Editor, International Journal of Livestock Research as Member of Scientific Advisory Board	2020-21
25.	Dr Arun Anand	<i>Letter of Appreciation</i> from NITTTR, Chandigarh	9.10.2020
26.	Dr. D K Gupta	<i>Third Best Poster Presentation Award</i> in IDP-NAHEP sponsored National e-conference organized by GADVASU	05.03.2021
27	Dr. Jasbir Singh Bedi	<i>Academic Editor</i> of Plos One peer review international journal.	2020
28.	Dr. Rajnish Sharma	<i>Certificate of Appreciation</i> for invited lecture on Molecular characterization of zoonotic parasites, during a training on Biotechnological Approaches in Animal Research and Disease Diagnosis, organized by the College of Animal Biotechnology, GADVASU, Ludhiana.	01-12.02. 2021

29.	Dr. Pankaj Dhaka	<i>Certificate of appreciation by International Journal of Livestock Research</i> as a member of scientific advisory board.	2020-21
		<i>Awarded grant</i> to attend the virtual edition of <i>6th World One health Congress</i> in <i>Edinburgh, Scotland, UK</i> w.e.f. 30.10.202-03.11.2020.	30.10.202-03.11.2020
30.	M Honparkhe	<i>Certificate of Appreciation</i> by ISSAR (Maharashtra chapter) and INTAS Animal Health for being a resource person in e-reprosound workshop. held from	08-10.08. 2020
		<i>Reviewer Excellence Award-2020</i> by Indian Journal of Animal Research In recognition of significant and outstanding contribution to the Journal and reviewing the article.	27.08.2020
		<i>Certificate of Recognition 2021</i> for being a resource person in international on-line training programme conducted by PGIVAS, Akola, M.S.	02-06.02. 2021
31.	A K Singh	<i>Award of Honour</i> for judging Cattle breeds (HF and Jersey cross in milk) and Swine breeds (Large White Yorkshire male and female) in XI National Livestock Championship and Agri Expo-2020, organized by Animal Husbandry Department, Punjab and Punjab Livestock Development Board (PLDB) at Batala, Gurdaspur, Punjab scheduled from February 27 – March 02, 2020.	01.03.2020
		<i>Appreciation from the Editorial Office</i> of <i>Reproduction in Domestic Animals (Journal)</i> for publicly acknowledging as reviewer for the journal during 2020.	07.01.2021
32.	Dr. Amarjeet Bisla	<i>Certificate of Recognition</i> by Pashudhan Praharee	February, 2021
33.		<i>Certificate of Appreciation</i> as Member, Scientific Advisory Board from the Editorial Office of <i>International Journal of Livestock Research</i> In recognition of an outstanding contribution to quality of the journal in year 2020 - 21	March 31, 2021



College of Dairy Science and Technology			
		NIL	
College of Fisheries			
34.	Dr. Abhishek Srivastava	<i>Excellence in Teaching Award</i> by Dr. Ram Avatar Shiksha Samiti (DRASS), Uttar Pradesh during virtually organized International Webinar on Urban and Peri-Urban Agriculture for Livelihood.	30.07.2020
35.	Dr. Prabjeet Singh	<i>Young Scientist Award</i> conferred by Society of Krishi Vigyan during virtually organized Second National Conference on Advances in Sustainable Agriculture.	28.09.2020
36.	Dr. Abhishek Srivastava	<i>Shiksha Gaurav Puraskar-2020</i> by Centre for Education Growth and Research (CEGR), New Delhi, for outstanding contribution towards Education, Skill Development and Research.	22.10.2020
37.	Dr. Amit Mandal	<i>Young Scientist Award in Fisheries Science</i> for Comparative dosage evaluation of castor bean (<i>Ricinus communis</i>) seed as fish toxicants for tilapia (<i>Oreochromis mossambicus</i>) and its residual toxicity effect on Amur carp (<i>Cyprinus carpio haematopterus</i>) during 4 th International Conference on “Current Approaches in Agricultural, Animal Husbandry and Allied Sciences for Successful Entrepreneurship 2021 (virtual) organized by Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior (Madhya Pradesh) India.	13-15.03.21
38.	Dr. Sachin Onkar Khairnar	<i>Best Fisheries Scientist Award-2021</i> for Ornamental Fisheries: An approach towards livelihood generation at 4 th International Conference on Current Approaches in Agricultural, Animal Husbandry and Allied Sciences for Successful Entrepreneurship 2021 (virtual) organized by Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior (Madhya Pradesh) India.	13-15.03.21
College of Animal Biotechnology			
39.	Dr. S S Sodhi	<i>Best Article Award</i> for Common Routes of Pesticides exposure and its Protective	24.01.2021

		Measures By Agriculture & Food: e-Newsletter.	
		<i>Certificate of Appreciation</i> by IDP-Cell, GADVASU, Ludhiana for the contribution during an International Webinar on Turkey Reovirus: A Neglected Problem for Poultry Industry.	02.02.2021
		<i>Innovative Article Award</i> for Pesticide Residues in Food By Agriculture & Food: e-Newsletter.	13.03.2021
College of Veterinary Science, Rampura Phul			
40.	Dr.Yashwant Singh	<i>Outstanding Achievement Award</i> for contributions in the field of Livestock Production and management during International Web Conference on Global Research Initiatives for Sustainable Agriculture & Allied Sciences.	30.12.2020
		<i>Third Best Paper presentation Award</i> for Prevalence of mastitis in dairy animals in Mohali District of Punjab during the Second National virtual conference of KVKs on Advances in Sustainable Agriculture.	28.09. 2020
41.	Dr Kritima Kapoor	<i>First Best Poster Award</i> for Strategies for doubling farmer's Income in National e-conference on Igniting young minds for sustainable growth through entrepreneurship and skill development: A Vet's Vision" organized by IDP-NAHEP cell, GADVASU, Ludhiana.	05.03. 2021

b. Fellowship by the Faculty

S. No.	Name of the Faculty	Detail of Fellowship	Date of the Award
College of Veterinary Science, Ludhiana			
1.	Dr S P S Ghuman	Fellowship of National Fellow of Dairy Science 2020	07.04.2021
2.	Dr S P S Ghuman	Fellowship of National Academy of Veterinary Sciences2020	07.04.2021
3.	Dr N S Sharma	Fellowship of National Academy of Veterinary Sciences2020	07.04.2021
4.	Dr Harkirat Singh	Associate Fellow, National Academy of Dairy Sciences for the Year 2020	07.04.2021

5.	Dr J S Hundal	Membership, National Academy of Veterinary Sciences for 2020	25.09.21
6.	Dr N D Singh	Membership, National Academy of Veterinary Sciences for 2020	25.09.21
7.	Dr. Udeybir Singh	Fellow, Animal Nutrition Association during Centennial Symposium	12.03.21
8.	Dr. Devendra Pathak	Associate Fellow of Indian Academy of Dairy Sciences	01.01.2021
9.	Dr. B B Singh	Adjunct Professor, University of Saskatchewan, Canada.	2014-till date
		Honorary Lecturer, The University of Sydney, Australia.	2019-till date
10.	Dr Rajnish Sharma	One Health Fellowship Foundation Grant-2020 to attend and present research work in the 6th World One Health Congress, virtual edition, Edinburgh, Scotland, UK	30.10.2020-03.11.2020

b) Students

College of Veterinary Science, Ludhiana			
Name of Student	Department	Detail of the Award/Honour	Date of the Award
Gurpreet Kour Tulla	Animal Genetics and Breeding	<i>Oral Presentation Award</i> , International E-Conference on "Agriculture & Biological Science 2020"	18-19.12. 2020
Sarishti Katwal	Livestock Production Management	<i>Second Best E-Poster Award</i> made on Water foot print for sustainability of water in Dairy farm at competition on the theme Valuing Water: Judicious & Efficient Use organized by IDP-Cell, GADVASU, Ludhiana on the occasion of World Water Day	22.03.2021
Shilviya Bhat, Rajesh V Wagh, O.P. Malav, D. Jamadar and I. Parmar	Livestock Product Technology	<i>Second Best Poster Award</i> for Value Added Meat Processing for Profitable Entrepreneurship at IDP-NAHEP sponsored National e-Conference on Igniting Young Minds for Sustainable Growth Through Entrepreneurship and Skill Development: A Vets' Vision on 1-5 March, 2021 by Institutional Development Plan (IDP) cell, GADVASU, Ludhiana	01-05.03.2021

Deepika Jamadar, Rajesh V Wagh, O.P. Malav, Shilviya Bhat, J Jwala and R Sharma		<i>Second Best Poster Award</i> for Confronting Bird Flu: Promising One Health Strategies at IDP-NAHEP sponsored National e-Conference on Igniting Young Minds for Sustainable Growth Through Entrepreneurship and Skill Development: A Vets' Vision on 1-5 March, 2021 organized by Institutional Development Plan (IDP) cell, GADVASU, Ludhiana-04, Punjab, India	01-05.03.2021
Deepika J., Rajesh V. Wagh, J. Jawla, O. P. Malav, R. Sharma and I. Parmar		<i>Second Best Poster Award</i> at XVI National online conference on Sustainable contribution of ATMNIRBHAR women veterinarians organized by Indian Association of Women Veterinarian.	9-10.12.2020
Apeksha Jangir, O.P. Malav, MK Chatli, Nitin Mehta and Rajesh V. Wagh		<i>First Best Poster Award</i> for Development of low fat functional pork nuggets with incorporation of milk precipitate at XVI National online conference on Sustainable contribution of ATMNIRBHAR women veterinarians organized by Indian Association of Women Veterinarian	9-10.12.2020
Deepika Jamadar	Livestock Product Technology	<i>Second Prize</i> for Egg based products demonstration contest organized by association of food scientist and technologist, Thrissur and Indian Veterinary Association, CVAS Mannuthy Unit and KVASU.	09.10.2020
Jyoti		<i>Young Scientist Award</i> during National online conference on Sustainable contribution of ATMNIRBHAR women veterinarians organized by Indian Association of Women Veterinarian	9-10.12.2020

Ishani Parmar and Dr R.V. Wagh		<i>Best E-poster Award</i> on theme Relation of Ecohealth and Zoonoses in webinar organised by COVAS, Parbhani, MAFSU, Nagpur	13.07.2020
Samikshya Sarangi	Veterinary Anatomy	<i>Third prize in poster presentation</i> at National e- Conference on Clinical Anatomy of Bovines and Canines for Effective Veterinary Practice, organized by Veterinary College and Research Institute, Orathanadu, Tamilnadu.	3-4.11.2020.
Niharika Thakur	Veterinary and Animal Husbandry Extension Education	<i>Certificate of Excellence</i> for quiz on 'Importance of Nutrition in the scenario of Covid-19 Pandemic' online National e-Quiz organized by Krishi Vigyan Kendra-II, Sitapur	16.09. 2020.
Niharika Thakur		<i>First Prize for the e-Poster Presentation</i> in the Theme –V of the IDP-NAHEP Conference on Igniting Young Minds For Sustainable Growth Through Entrepreneurship and Skill Development : A Vets Vision, Organized by IDP Cell, GADVASU	01-05.03.2021
Moon Moon Satpathy	Veterinary Microbiology	<i>First presentation Award</i> for e-poster entitled "Animalcules- From Laboratory to farm" by "Satpathy M, Paviter Kaur and Sharma N S" under "Theme 1" in IDP-NAHEP Sponsored National e-conference on "Igniting young minds for sustainable growth through Entrepreneurship and Skill development: A vets vision"	01-05.03.2021
Moon Moon Satpathy	Veterinary Microbiology	<i>Young Scientist Award and Professional Excellence Award</i> for Antimicrobial Resistance Pattern of <i>K. pneumoniae</i> & <i>E. coli</i> in India – A Predictive analysis by Satpathy M, Sharma N S, Paviter Kaur and Arora A K in India-vet Expo conference by PLRC.	20-21.03. 2021



Karman Kour		<i>First Prize Award</i> for oral presentation on Raising of hyperimmune sera for CPV 2a and CPV 2b in rabbits for diagnostic purposes by Karman Kour, Gurpreet Kaur, Mudit Chandra, and PN Dwivedi in National level online Research paper presentation competition organized by Lakhimpur College of Veterinary Science, in collaboration with College of Veterinary Science, Guwahati.	19-24.08.2020.
Karman Kour		<i>First Best Paper Award</i> for oral presentation on Realtime PCR typing of Canine Parvovirus type/s in various regions of northern India by Karman Kour, Gurpreet Kaur, Mudit Chandra, and PN Dwivedi in National seminar on Environmental protection for improving animal and human health by IVA at Kerala and KVASU.	08-10.05.2020
Shikha Chaudhary		<i>Best Oral Paper Presentation Award (First)</i> in the International e-Symposium on Emerging Focus on Immunology in Augmenting Animal and Human Health, conducted Society of Immunology and Immunopathology by CoABT, GADVASU, Ludhiana.	19-20.02. 2021
Andrabi S A	Veterinary Pathology	<i>IAVP-Dr Balwant Singh Memorial Young Scientist Best Oral Presentation Award-2020</i> for Molecular detection and characterization of field isolates chicken anaemia virus and its effects on immune cells by Andrabi S A, Lalankimi, Deka D, Gupta K and Singh A. during the Online International Veterinary Pathology Congress-2020 by Nagpur Veterinary College, Nagpur.	26-29.12. 2020.

Monika Thakur	Veterinary Pathology	<i>IAVP-Organizing Secretary Second Best Poster Award-2020</i> for Immunohistochemical localization of inducible nitric oxide synthase (iNOS) within neurons of cattle infected with rabies by Thakur M, Sandhu B S, Singh C K, Gupta K and Sood N K, during the Online International Veterinary Pathology Congress-2020 by Nagpur Veterinary College, Nagpur.	26-29.12. 2020.
Anamika Gupta		<i>ICVP Appreciation Certificate-2020</i> for Immunohistochemical and molecular diagnosis of bovine tuberculosis and Johne's disease from natural cases of bovine lymphadenopathies by Gupta A, Bansal M, Leishangthem G D, Narang D, Gupta K and Singh A, presented in the Open Award Session for Young Pathologists, Organized by Indian College of Veterinary Pathologists, during the Online International Veterinary Pathology Congress-2020 by Nagpur Veterinary College, Nagpur.	26-29.12. 2020.
Pallavi Bhardawaj	Pharmacology and Toxicology	<i>Best Ph.D Thesis Award</i> in XX Annual e- Conference of Indian Society of Veterinary Pharmacology & Toxicology	04-05.10. 2020
Harpreet Singh		<i>First Best Research Poster Award</i> in XX Annual e- Conference of Indian Society of Veterinary Pharmacology & Toxicology	
K. Kasturi Devi		<i>Second Best Research Poster Award</i> in XX Annual e- Conference of Indian Society of Veterinary Pharmacology & Toxicology	
Amanjot Singh		<i>Third Best Research Poster Award</i> in XX Annual e- Conference of Indian Society of Veterinary Pharmacology & Toxicology	

<p>Beenish Quereshi,</p>	<p>Veterinary Surgery and Radiology</p>	<p><i>National Level Online Research Paper Presentation Competition</i> organized at Lakhimpur College of Veterinary Science, Assam Agricultural University, North Lakhimpur, Assam from</p>	<p>19-21.08.2020</p>
<p>T M Rajasekeharan</p>		<p><i>Young scientist Award</i> at Indian VETexpo-2021, Organized by Paws Learning and Research Council (PLRC) India Authors: T M Rajasekaran, S K Mahajan, and N Umeshwori Devi</p>	<p>19.3.2021</p>
<p>Prem Sairam,</p>	<p>Veterinary Surgery and Radiology</p>	<p><i>Young Scientist Award at Indian VETopia - 2021</i> National Veterinary Foundation, India Authors: Prem Sairam, C., Tarunbir Singh and S K Mahajan</p>	<p>26-28.03.2021</p>
<p>Ravneet Kaur,</p>		<p><i>First Poster Prize</i> for Endoscopic resection of a tracheal tumor in a dog at e-Canvas spills IDP-NAHEP</p>	<p>05.03.2021</p>

		sponsored National e-Conference on 'Igniting Young Minds for sustainable growth through entrepreneurship and skill development: A vets vision' organized by IDP cell GADVASU, Ludhiana from 1-5 March, 2021, by Ravneet Kaur, J. Mohindroo, T. Singh and K. Gupta	
Asima Zehra	Veterinary Public Health and Epidemiology	<i>First Best Poster Presentation Award</i> for Detection and molecular identification of adenoviruses in surface water and wastewater samples from Ludhiana (Punjab), India" in International Webinar on One-Health Perspectives of Antimicrobial Resistance organized jointly by Karnataka Veterinary, Animal & Fisheries Sciences University, Bidar and IAVPHS	04-09.2020.
Kriti Singh		<i>First Best Poster Presentation Award</i> in Session: Emerging and Zoonotic Infections for the paper entitled Isolation and Characterization of <i>Listeria</i> spp from poultry meat of Punjab" in International e-Symposium on Emerging Focus on Immunology in Augmenting Animal and Human Health held at College of Animal Biotechnology, GADVASU, Ludhiana.	19-20.02.2021
Deepthi Vijay	Veterinary Public Health and Epidemiology	<i>First Position for the Oral Presentation</i> for Assessment of factors for antibiotic usage and resistance among veterinarians in India: Present status and way forward', under One Health and VPH stewardship stream, during International Webinar on One-Health Perspectives of Antimicrobial Resistance & E-Poster competition organized jointly by KVASU, Bidar and IAVPHS.	04.09.2020

Deepthi Vijay		<i>Third E-Poster Presentation Award</i> under the theme III on One during national e-conference on Igniting Young Minds for Sustainable Growth Through Entrepreneurship and Skill Development: A Vet's Vision by Institutional Development Plan Cell, GADVASU.	01-05.03.2021
Natasha Sambyal		<i>Selection for GEFSES-CREATE training</i> program at McGill University, Canada.	01.09. 2020 to 31.08.2021
College of Dairy Science Technology			
Radhika Sharma	Livestock Products Technology (Collaborative work)	<i>Third best e-poster prize</i>	01-05.03.2021
Ankit Kumar Deshmukh	Dairy Engineering	<i>National Talent Fellowship</i>	2020
Anamika Singh	Dairy Microbiology	<i>DST INSPIRE Fellowship IF-190446</i> effective from 25.08.2020	03.04.2021
College of Fisheries			
Niharika Maurya	B.F.Sc. IV th year	Online competition for e-poster making on the theme of Impacts of Covid-19 on Nature.	05.06.2020
Abdullah A Hasbullah	B.F.Sc. II nd year	<i>Second Prize</i> in a National level Online Essay Writing Competition-2020', organized by All India Agriculture Student Association (AIASA) – Fisheries Chapter	07.11.2020.
College of Animal Biotechnology			
Nasrul I. Shaikh	College of Animal Biotechnology	<i>Best Article Award</i> for Pesticide usage and its impact on biodiversity. Agriculture and Food e-Newsletter.	23.01.2021
Srishti Prashar	College of Animal Biotechnology	<i>Best Article Award</i> for the article Common routes of pesticides exposure and its protective measures Agriculture and Food e-Newsletter.	24.01.2021

Afnan Saleem		<i>Young Scientist Award</i> for the paper entitled Lysyl oxidase as a marker for diagnosis of canine mammary tumors by Afnan Saleem, Satparkash Singh, B.V. Sunil Kumar, R.K. Choudhary and R.S. Sethi in the International e-Symposium on Emerging Focus on Immunology in Augmenting Animal and Human Health held at College of Animal Biotechnology, GADVASU, Ludhiana.	20.02.2021
Gurvinder Kaur		<i>Best Oral Presentation Award</i> for Exposure to 2,4-D downregulates the pulmonary expression of Gsk3 β in a mouse model by Gurvinder Kaur, Saloni Singla, Ramneek and R S Sethi. International e-Symposium on Emerging Focus on Immunology in Augmenting Animal and Human Health held at College of Animal Biotechnology, GADVASU, Ludhiana.	
Gurvinder Kaur		<i>Best Poster Presentation Award</i> for Exposure to 2,4-D induces oxidative stress and upregulation in Wnt signaling pathway in mouse lung". Gurvinder Kaur, Saloni Singla, Ramneek and R S Sethi. International e-Symposium on Emerging Focus on Immunology in Augmenting Animal and Human Health held at College of Animal Biotechnology, GADVASU, Ludhiana.	
Prakriti Sharma		<i>Innovative Article Award</i> for Pesticide residues in food. Agriculture and Food e-Newsletter.	13.03.2021
College of Veterinary Science, Rampura Phul			
Harphool Singh	B.VSc & A.H, Second Year	<i>First prize in E-canvas</i> for Inclusive entrepreneurial innovations in livestock sector during National e-conference on	01-05.03.2021

		“Igniting young minds for sustainable growth through entrepreneurship and skill development: A Vet’s Vision” organized by IDP-NAHEP cell, GADVASU, Ludhiana.
Ayush Garg	B.VSc & A.H, Second Year	<i>First prize in E-canvas</i> for Integrated strategies in livestock sector for environmental protection and sustainability during National e-conference on “Igniting young minds for sustainable growth through entrepreneurship and skill development: A Vet’s Vision” organized by IDP-NAHEP cell, GADVASU, Ludhiana.
Dhairya Choudhary	B.VSc & A.H, Second Year	<i>Second Prize in E-Canvas</i> for Role of women in livestock sector: A vibrant Change during National e-conference on Igniting young minds for sustainable growth through entrepreneurship and skill development: A Vet’s Vision” organized by IDP-NAHEP cell, GADVASU, Ludhiana.
Tanya Munjal	B.VSc & A.H, Second Year	<i>Second Prize, in E-Canvas</i> on theme Integrated strategies in livestock sector for environmental protection and sustainability during National e-conference on “Igniting young minds for sustainable growth through entrepreneurship and skill development: A Vet’s Vision” organized by IDP-NAHEP cell, GADVASU, Ludhiana.

Participation in Conferences/ Symposia/ Workshop/ Trainings etc.

S. No.	Name of the Conferences/ Symposia/ Workshop/ Trainings	Organizing agency, place and date	Name of the Faculty Member who attended the meeting
INTERNATIONAL			
College of Veterinary Science			
Overseas			
1.	Online International Teaching Workshop	College of Veterinary Science in collaboration with University of Calgary, Canada from 26-27.08. 2020	Dr. Jasmine Kaur Drs Gurpreet Kaur, and Paviter Kaur Dr. Sujata Turkar
2.	International Online Teaching Workshop Teaching Days 2020	Taylor Institute for Teaching and Learning, University of Calgary, Canada from 26-27.08. 2020.	Dr Rajesh Kasrija Dr. Chanchal Singh Dr Simranpreet Kaur
3.	Teaching workshop	College of Veterinary Science in collaboration with University of Calgary, Canada from 19-21.02.2020.	Dr Rajdeep Kaur
4.	Sci Comm-2020	University of Nebraska-Lincoln, USA from 14-16.08. 2020)	Dr. Pankaj Dhaka
5.	Sixth World One Health Congress in Edinburgh, Scotland, UK	Edinburgh, Scotland, UK from 30.10.2020 – 03.11. 2020.	
College of Fisheries			
6.	Online Training Program on Development of Sustainable Aquaculture Industry	Galilee International Management Institute, Israel From 07.10.2020 – 25.11.2020	Dr. Vaneet Inder Kaur,
College of Animal Biotechnology			
7.	International Teaching Workshop	University of Calgary Canada, 13-14.08. 2020.	Dr. R.S. Sethi
8.	International Virtual Summer School Workshop	University of McGill, Canada from 26-27.08.2020.	Dr. R.S. Sethi

College of Veterinary Science, RampuraPhul			
9.	A Session on Accessing Taylor and Francis Journals	Taylor and Francis group on 16.09.2020.	Dr. Raushan Kumar Singh
10.	The Article Publishing Process: An Elsevier Author Workshop	Researcher Academy Online mode 1st June, 2020	Dr. Ramandeep Kaur Dhaliwal
11.	The Book Publishing Process: An Elsevier Author Workshop	Researcher Academy Online mode 3rd June, 2020	
International Conferences/Workshop held in India			
College of Veterinary Science			
1.	International webinar on Climate smart livestock and poultry production through nutritional interventions	Institute of Animal Nutrition, Kattupakkam, Directorate of Centre for Animal Production Studies, Tamil Nadu Veterinary & Animal Sciences University on 23-24.11. 2020	Dr. Jasmine Kaur
2.	Participated in online Conference on Water and Waste Management.	International conference and Expo 24-26.02.2021.	Dr. Simarjeet Kaur
3.	International Webinar on Antibiotic Resistance: A Menace of Mastitis.	Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu in Collaboration with Association of Mastitis on 10.09.2020,	Dr. Ravi Kant Gupta
4.	International Webinar on Climate Smart Livestock and Poultry Production Through Nutritional Interventions	Institute of Animal Nutrition, Directorate of centre for Animal Production Studies, Tamil Nadu Veterinary and Animal Sciences University on 23-24. 11.2020.	
5.	Online International Conference on Livestock Products and Food Safety: Realities and Imperatives for Global health	Jointly organized by TANVASU and KVAFSU from 24-25.11.2020 and 30.11.2020.	Dr Pawan Kumar
6.	International Webinar on Recent Challenges and Opportunities in Swine Production	Post Graduate Research Institute in Animal Sciences. Kattupakkam, Tamil Nadu on 03.12.2020.	



7.	International webinar on Antibiotic Resistance: A menace in management of mastitis.	SKUAST-Jammu in collaboration with Association of mastitis on 10.09.2020	Drs. Pavan Kumar, Nitin Mehta, O P Malav, Rajesh V Wagh and Simranjeet Kaur
8.	International webinar on Food Safety Policies and Regulations	Department of Food Science and Nutrition, College of Community Science in collaboration with National Agriculture Education Project (NAHEP) AAU, Jorhat on 27-28.07. 2020	Dr. Simranjeet Kaur
9.	International Webinar on Conceptual Framework Entwining Translational Anatomy with Veterinary Clinical Sciences	Department of Veterinary Anatomy, KVASU, Mannuthy, Kerala from 19-20.08.2020.	Drs. Varinder Uppal, Neelam Bansal and Anuradha Gupta
10.	International webinar on Electron microscopy and ultrastructure of cells.	Department of Veterinary Anatomy and Histology, KVASU, Kerala & Directorate of Entrepreneurship and Academic Staff College on 01.01.2021	Dr. Varinder Uppal
11.	International Virtual Training on Advanced Microscopic Techniques in Biomedical Research	NTR College of Veterinary Science, Gannavaram from 28-30.01. 2021	Dr. Neelam Bansal
12.	The International Education and Skill Summit – TIESS Virtual 2021	India Didactics Association from 27-30.01.2021.	Dr. Opinder Singh
13.	1 st Virtual International Conference on Challenges and Strategies in Reproductive and Environmental Health during and after Covid-19 Pandemic.	31 st Annual Meeting of the Indian Society for the Study of Reproduction and Fertility (ISSRF) 19-21.02.2021.	Dr. Devendera Pathak
14.	Virtual International conference on New Generation vaccines and animal disease control strategies; roadmap for enhancement of animal and human health”	Veterinary College and Research Institute, Orthanadu, Thanjavur, Kerala from 02-04.12.2020.	Dr Paviter Kaur



15.	XXXVII Annual Conference of Indian Association of Veterinary Pathologists and International Symposium on Role on Veterinary Pathology in Controlling Emerging & re-emerging Diseases of Livestock & Poultry: One Health Approach.	Indian Association of Veterinary Pathologists, at Department of Pathology, Nagpur Veterinary College, Nagpur 26-29.12. 2020	Drs. B.S. Sandhu Amarjit Singh Kuldip Gupta, A P S Brar N D Singh L Geeta Devi and O K Baba
16.	International e-Training cum Orientation Programme on Physio-biochemical and Biotechnological Approaches for Optimization of Health and Reproduction in Animals	Department of Veterinary Physiology and Biochemistry, College of Veterinary Science & A.H. Mhow, NDVSU, Jabalpur from 01-21.12. 2021	Dr. Omer Khalil Baba
17.	20 th Annual e-conference of ISVPT and International Webinar on Receptor Dynamics in Cell Signalling.	Department of Pharmacology and Toxicology, College of Veterinary Science and Animal Husbandry, DUVASU, Mathura from 4-5.10. 2020	Drs. SK Sharma VK Dumka SPS Saini MK Lonare and Saloni Singla
18.	Physio- Biochemical & biotechnological approaches for optimization of health and reproduction in animals	21 days international online training organized by College of Veterinary Science and A H, NDVSU, Mhow, from 01-21.12. 2020	Dr N Umeshwori Devi
19.	One Health and VPH stewardship stream, during International Webinar on One-Health Perspectives of Antimicrobial Resistance	Assessment of Air Quality Changes in the Four KVASU, Bidar, and IAVPHS on 4.09.2020.	Dr. Jasbir Singh Bedi
20.	International Webinar on One-Health Perspectives of Antimicrobial Resistance & e-Poster competition	Organized jointly by KVASU, Bidar and IAVPHS on 04.09.2020.	Dr. Pankaj Dhaka
21.	International Webinar on Human-Animal-Environment Interface: Recent Approaches for Containing the Global Zoonotic Burden	Organized by Indian Veterinary Association, College of Veterinary and Animal Sciences, Thrissur on 06-08.07. 2020)	



College of Dairy Science Technology			
22.	4 th AMIFOST 2020 International virtual conference on Future food for sustainability and nutritional security	Amity Institute of Food Technology (UP), 21.12. 2020	Dr. Anuradha Kumari
23.	International e-symposium on Emerging focus on immunology in augmenting animal and human health	College of Animal Biotechnology	Dr. Harsh Panwar
College of Fisheries			
24.	Online Workshop on Application of Remote Sensing and GIS for Water, Environment, Land and Society.	Organized jointly by International Association for Water, Environment, Energy and Society (IAWEES) and IHE Delft Institute for Water Education from 01-03.12.2020	Dr. Prabjeet Singh
College of Animal Biotechnology			
25.	International Webinar on Alternative Therapies to Mitigate Microbial Resistance	Indian Veterinary Research Institute, Izatnagar from 23-24.02. 2021	Dr J S Arora and Dr Satparkash Singh
College of Veterinary Science, Rampura Phul			
26.	International training programme on “Automation and robotics in Agriculture” organized by School of Natural Resource Management for sustainable Agriculture.	PAU, Ludhiana from 22-31.07.2020.	Dr.Yashwant Singh
27.	XXXVII Annual Conference of Indian Association of Veterinary Pathologists and International Symposium on Role on Veterinary Pathology in Controlling Emerging & re-emerging Diseases of Livestock & Poultry: One Health Approach.	Indian Association of Veterinary Pathologists, at Department of Pathology, Nagpur Veterinary College, Nagpur 26-29.12. 2020	Dr. Jagmeet Kaur

NATIONAL			
College of Veterinary Science			
1.	Participated in National Webinar on Modern Genetic approaches for improvement of Indigenous Cattle.	Department of Animal Genetics & Breeding, COVS &AH, DUVASU, Mathura (UP).	Dr. Simarjeet Kaur
2.	Twenty one days online refresher course on Reorienting Extension Education and Advisory Services for Sustainable Development of Farming Community.	Online training jointly organized by Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar and National Agriculture Development Cooperative Ltd. (NADCL), Baramulla. 08.07.2021 - 28.07.2021.	Dr. Bharti Deshmukh
3.	Enhancing Teaching and Managerial Skills among the faculty of SAUs and SVU	Online training program organized by MANAGE, Hyderabad 28- 30.06.2021.	Dr. Bharti Deshmukh
4.	Winter School on ICT and Social media use in Agricultural Extension.	Directorate of Extension Education, PAU, Ludhiana from 30.01.2020-19.02. 2020.	Dr Navdeep Singh
5.	Webinar on Equine Reproduction	ISSAR, Rajasthan chapter, 19.07.2020.	
6.	Basic techniques in laboratory animal care and management	College of Parbhani, MAFSU, Nagpur. from 02- 08. 09.2020	Dr. Gurjot Kaur Mavi
7.	Participated in 21 days DBT-funded e-training course on 'Skill Development on Advanced Bioinformatics in Genome Analysis of Livestock and Pets'	Organized at the College of Animal Biotechnology, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana from 05- 25.03.2021.	Dr.Shakti Kant Dash
8.	Regional workshop on motivating and attracting youth in Agriculture (MAYA)	PAU, Ludhiana on 29.02.2020	Dr. Daljeet Kaur
9.	01-day webinar on, Prospectus and Challenges in Poultry Sector: Small Scale Farming to Large Scale Commercial Enterprise	College of Veterinary Science and Animal Husbandry, Rewa, (MP) on 31.07.2020	Dr. Daljeet Kaur
10.	Webinar on Stray Cattle - Strategies and Challenges	National Academy of Dairy Sciences (India) and SRS of ICAR-NDRI, Bengaluru	Dr. Ravi Kant Gupta

11.	National Webinar on Packaging of meat and poultry products.	Department of LPT, College of Veterinary Science, DUVASU, Mathura on 12-02-2021	Drs. Pavan Kumar and Rajesh V. Wagh
12.	National webinar on "Functional foods of animal origin: Role in health promotion and disease prevention"	Department of Livestock Products Technology College of Veterinary Science & Animal Husbandry DUVASU, Mathura (UP) on 06-07.08.2020	Drs. Pavan Kumar, Nitin Mehta and O. P. Malav
13.	Collaborative online training programme on Climate Smart Technologies for Food Animal Production and Products.	ICAR-NRC on meat and MANAGE, Hyderabad from 19-23.04.2021.	Dr Nitin Mehta
14.	National Women Food Science and Technology Conference.	Indian Institute of Food Processing Industry, at Thanjavur, Tamil Nadu. 08.03. 2021	Dr. Simranjeet Kaur
15.	Online workshop on Current trends and Ethical aspects in scientific writing' at Parbhani Veterinary College, MAFSU, Nagpur (MH).	Parbhani Veterinary College, MAFSU, Nagpur (MH) on 27-31.05.2020	Dr. Rajesh V. Wagh
16.	National Webinar on 'Eggcellent' Health Benefits: Immunity Booster	Department of Poultry Science, College of Veterinary and Animal Sciences, Parbhani (MH) on 09-10-2020.	Dr. Rajesh V. Wagh
17.	Web Conference on Advances in Teaching and Research in Veterinary Anatomy in India	Department of Veterinary Anatomy, Gannavaram, Andhra Pradesh on 27-29.10. 2020	Drs. Varinder Uppal, Neelam Bansal, Anuradha Gupta
18.	Nutritional Appraisal of commercial feed verses home kitchen feed of dogs.	ISACPCON-2020 held at Jabalpur, MP from 21-23.01. 2020	Dr Jaswinder Singh
19.	Online training program on Transforming Agribusiness with Artificial Intelligence Machine Learning and Block Chain Technologies.	MANAGE, Hyderabad from 15-16.02. 2021.	Dr. Y S Jadoun
20.	Online training program on Intellectual Property Rights for Agri Start-ups.	MANAGE, Hyderabad from 8-12.02.2021	

21.	Online training on Promoting Startups in livestock and Fisheries sector	National Institute of Agricultural extension management (MANAGE), Hyderabad from 17- 19.02.2021	Dr Rajesh Kasrija
22.	Refresher course on Reorienting Extension Education and Advisory Services for Sustainable Development of Farming Community.	Karnataka Veterinary Animal and Fisheries Sciences University, Bidar and NADCL, Baramulla on 08-28.07.2021.	Dr. Bharti Deshmukh
23.	Basic techniques in laboratory animal care and management	College of Parbhani, MAFSU, Nagpur. from 02-08.09.2020.	Dr.Gurjot Kaur Mavi
24.	Basic Techniques in Laboratory Animal Care and Management (MS).	Organized by College of Veterinary & Animal Sciences, Parbhani from 02- 08.09.2020.	Dr. Kulvinder Singh Sandhu
25.	21 Days Winter School on Modern Practices of Plant and Animal Nutrition for Sustainable Agriculture Production and intensive Livestock Development.	ICAR-IGFRI, Southern Regional Research Station, Dharwad (Karnataka), University of Agricultural Sciences Raichur (Karnataka) and NADCL. Baramulla, 02- 22. 02. 2021	Dr. Kulvinder Singh Sandhu
26.	Participated in online training program on “Next generation sequence data analysis”	IASRI, New Delhi from 22-27.03.2021.	Drs Gurpreet Kaur, Mudit Chandra
27.	National e-Workshop cum Webinar on Current Perspectives of swine disease in India and its management practices.	ICAR National research centre on pig, Guwahati Assam and IAAVR during 11-12.01.2021	Dr Paviter Kaur
28.	National webinar on Veterinary Medicine and Artificial Intelligence.	Indian Society for Veterinary Medicine on 18.07.2020	Dr. L.D. Singla
29.	Strategies for sustainable control of parasites of livestock, poultry and wild life and their public health significance: national webinar series	LUVAS, Hisar from 21-23.08.2020	Dr Paramjit Kaur
30.	An update on canine vector borne parasitic diseases: webinar	TANUVAS, Chennai on 24.09.2020	Dr Paramjit Kaur

31.	Workshop on Intellectual Property right	MOE-Institution Innovation Council (IIC) and University of Delhi. 09-13.02.2021	Dr. L.D. Singla
32.	21 days online training-cum-orientation programme on Advances in Clinico-pathological Diagnosis of Farm Animals Diseases: A Radical Approach in Doubling Farmers' Income.	Department of Veterinary Pathology, College of Veterinary Science & A.H., Rewa (M.P.), India from 05-25.02.2021.	Drs. L. Geeta Devi and Omer Khalil Baba
33.	Seven days online training programme on Basic techniques on laboratory animal care and management.	College of Veterinary and Animal Sciences, Prabhani from 02-08.09.2020	Dr. L. Geeta Devi
34.	XVI National Online Conference of IAWV-2020 on Sustainable contribution of ATMANIRBHAR Women Veterinarians in Enrichment of Production Potential in Livestock through Applications of Modern Technologies.	Indian Association of Women Veterinarians at College of Veterinary and Animal Sciences, Parbhani (MS) India 09-10.12.2020	Dr. L. Geeta Devi
35.	Online International Training cum Orientation Programme on Advances in Pharmacology: Addressing the Paradigm Shift in Clinical and Paraclinical Sciences	Department of Veterinary Pharmacology and Toxicology, College of Veterinary Science & A.H., REWA, NDVSU, Jabalpur (M.P), India from 28.12.2020 to 21.01.2021	Dr. Omer Khalil Baba
36.	Five-day Training Programme on Management Development Program for Women Officers in Development Sectors.	National Institute of Agricultural Extension management (MANAGE), Hyderabad from 14-18.12.2020.	Dr Rajdeep Kaur
37.	XXIX Annual e-conference of Society of Animal Physiologists of India on Recent approach to escalate livestock productivity under current socio-economic scenario.	Bihar veterinary College, Bihar Animal Sciences University, Patna w.e.f. 25-26.02.2021	Dr. Digvijay Singh

38.	XXIX Annual e-conference of Society of Animal Physiologists of India on Recent approach to escalate livestock productivity under current socio-economic scenario.	Bihar veterinary College, Bihar Animal Sciences University, Patna from 25-26.02.2021	Dr. Manjinder Sharma
39.	Abdominal Ultrasonography in Cattle	TANUVAS on 27.11. 2020 (online)	Dr Bilawal Singh
40.	Zoonotic diseases and novel approaches in Worm Control	SKUAST-Jammu on 24.09.2020 (online)	
41.	Advances on equine health management	Seven days online training organized by college of veterinary and animal sciences, (MAFSU), Parbhani, from 25-31.10.2020	Dr N Umeshwori Devi
42.	Equine Reproduction	Webinar organized by ISSAR Rajasthan Chapter on 19.07.2020	Dr Jasmeet S Khosa Dr Jasmeet S Khosa
43.	Physical Rehabilitation: Therapeutic and surgical management.	Webinar organized by KNP college MAFSU Maharashtra on 23-07-2020.	
44.	Canine sports medicine-common injuries and treatment: Therapeutic and surgical management	Webinar organized by KNP college MAFSU, Maharashtra on 24-07-2020.	
45.	Electrocardiography in Companion Animals- Basics to Practice.	NDVASU Jabalpur on 04.07.2020	Dr. Sujata Turkar
46.	Echocardiography- A Practical Approach.	NDVASU Jabalpur on 14.07. 2020	
47.	An Update on canine cardiomyopathies.	NDVASU Jabalpur on 16.07. 2020	
48.	Homeopathy in Veterinary Medicine.	NDVASU Jabalpur on 29.07. 2020	
49.	Sustainable contribution of Atmanirbhar Women Veterinarians in enrichment of production potential in livestock through application of modern techniques.	COVAS, MAFSU, Prabhani on 09-10.12. 2020.	Dr. Sushma Chhabra
50.	Brainstorming Session on Antimicrobial Resistance	National Academy of Agricultural Sciences, India on 29.08.2020.	Dr. Jasbir Singh Bedi

51.	Zoonoses and One Health	National Institute of Animal Biotechnology (NIAB), Hyderabad on 22.10.2020	Dr. Jasbir Singh Bedi
52.	Brainstorming Session on One World One Health.	National Academy of Agricultural Sciences, India on 19.09.2020	Drs. Jasbir Singh Bedi, Simranpreet Kaur, R.S. Alukah and Pankaj Dhaka
53.	Tenth National Workshop on One Health Approach to prevent Vector-borne Diseases of Public Health Importance.	Organized by Millennium India Education Foundation, Heart Care Foundation of India, Vardhman Mahavir Medical college and Safdarjung Hospital New Delhi. on 06.07.2020	Drs. R.S. Aulakh, Randhir Singh, J.S. Bedi, Simranpreet Kaur, Rajnish Sharam and Pankaj Dhaka
54.	Webinar on Novel Approaches and Emerging issues in Parasitic Diseases of Veterinary and Medical Importance	Veterinary College, Hebbal, Bangalore, 16-18.09. 2020	Drs. Paramjit Kaur and Jyoti
55.	Webinar on Zoonotic Diseases and Novel Approaches in Worm control organized by Division of Veterinary Parasitology, Faculty of Veterinary Sciences & Animal Husbandry	SKUAST-Jammu on 24.09.2020	
56.	On line training programme on Advanced Reproductive technologies for augmentation of fertility in dairy animals	PGIVAS, Akola from 02-06.02.2021.	Dr. M Honparkhe
57.	Holistic approach towards diagnosis and management of canine cardiac disorders.	NDVASU Jabalpur 20.07.2020	Dr. Sujata Turkar
58	Therapeutic management of Tigers and Lions.	Maharashtra Animal and Fisheries Sciences University and ISVM on 19.07.2020	

59	Technological Advances To Revolutionize Cancer Diagnosis	Organized by COVSc Anjora, Chhattisgarh Kamdhenu Vishwavidyalaya Durg on 07.08.2020	
60	Causes of Elephant calf mortality.	Wildlife Research And Training Centre, Department Of Veterinary Clinical Medicine, Ethics & Jurisprudence, Nagpur Veterinary College, MAFSU 12.08.2020.	
61	Review of abdominal radiography in dogs and cats.	TANUVAS along with Knowledge Partner Intas Alembic on 16.09.2020	
62	How to get the most out of hematological diagnosis in companion animals.	TANUVAS along with Knowledge Partner Intas Animal Health on 16.12.2020.	
63	Scaling up the strategic relationship in Agriculture, Dairy & Animal Husbandry Sectors	CII, India on 19.01.2021.	Dr. Jasbir Singh Bedi
64	Alternatives therapies to mitigate antimicrobial resistance	ICAR-IVRI, Izatnagar from 23-24.02. 2021.	
65	Veterinary Webinar on Preventing the next pandemic: Training animal disease detectives' to combat emerging infectious diseases.	Organized by Indian Veterinary Association under Continuing Professional Development on 30.04. 2020.	Dr Simranpreet Kaur
66	Webinar on One-Health Perspectives of Antimicrobial Resistance	Organized jointly by Karnataka Veterinary, Animal & Fisheries Sciences University, Bidar and Indian Association of Veterinary Public Health Specialists on 04.09.2020	
67.	Training Program on Enhancing Teaching and Managerial Skills among the Faculty of SAU and SVU.	Organized by National Institute of Agricultural Extension Management (MANAGE), Hyderabad from 28-30.06. 2021.	
68	21 days orientation program entitled New Vistas for Disaster Resilient Academic Ecosystem Management.	Kerala Veterinary and Animal Sciences University (KVASU), Directorate of Entrepreneurship, Academic Staff College, from 25.11.2020 to 15.12.2020	Dr. Pankaj Dhaka

69	21 days training on "Integrating molecular biology and bioinformatics for clinical diagnosis"	Organized by Department of Animal Biotechnology, College of Veterinary Sciences, Lala Lajpat Rai University of Veterinary and Animal Sciences (LUVAS) from 10-30.03.2021	
College of Dairy Science and Technology			
70	Online Training on "Teaching from Home with IT tools"	Sardarkrushinagar Dantiwada Agricultural University from 23.04.2020 to 01.05.2020	Dr. Venus Bansal
71	Online training on "Emotional Intelligence at Workplace for Scientists /Technologists	Centre for Organization Development, Hyderabad on 20-24.09.2021	Dr. Rekha Chawla
72	Training -PM Formalization of Micro Food Processing Enterprises Scheme for Master Trainer	NIFTEM, IIFPT	Drs. Amandeep Sharma and Gopika Talwar
73	Theoretical Foundations of Educational Technology	ICAR-NAARM	Er. Gursharn Singh
College of Fisheries			
74	Online training programme on Recent innovations in Educational Technology	ICAR- NAARM, Hyderabad From 05-10.11.2020	Drs. Grishma Tewari and Prabjeet Singh
75.	Online workshop on Gender Sensitization & Prevention of Sexual Harassment	Systematic Institute of Economic Research and Development (SIERD), New Delhi (Online) on 19.11.2020.	Dr. Meera D. Ansal
76	Online training program on Communication Skills and Technical Writing.	Academy of Agricultural Research and Education Management, Directorate of Human Resource Management, CCS HAU, Hisar from 03-23.02.2021.	Drs. Grishma Tewari and Rajinder Kaur
77	Online training on Promoting Startups in Livestock and Fisheries Sector.	ICAR-NAARM, Hyderabad from 17-19.02.2021	Drs. Ajeet Singh and Prabjeet Singh

College of Animal Biotechnology			
78	Online Training on Communication Skills and Technical Writing	Academy of Agricultural Research and Education Management, Directorate of Human Resource Management, CCS HAU, Hisar from 03-23.02.2021	Dr CS Mukhopadhyay
College of Veterinary Science, Rampura Phul			
79	National web conference on Advances in teaching and research in Veterinary Anatomy in India	organized by department of Veterinary Anatomy, NTR College of Veterinary Science, Gannavaram, Anadhra Pradesh from 27-29.10.2020.	Dr.Amit Chalana
80	Three-day National Web Conference on Advances in Teaching and Research in Veterinary Anatomy in India.	organized by Department of Veterinary Anatomy, NTR College of Veterinary Science, Sri Venkateshwara University, Gannavaram	Dr. Kritima Kapoor
81	Webinar on Scope of New Age Technologies in Indian Dairy Farming.	ICAR-National Agricultural Higher Education Project (NAHEP) Centre of Advanced Agricultural Science & Technology (CAAST) on Secondary Agriculture Navsari Agricultural University (NAU), Navsari (Gujarat) 20-03. 2021 (Online).	Dr Chaudhari Mahesh Vishwas
82	XXIX Annual conference on Recent approach to escalate livestock productivity under current socio-economic scenario.	Society of Animal Physiologists of India from 25-26.02.2021	Dr. Gurpreet Singh
83	Mighty regulation of a tiny regulator: the miRNA movement.	Molecular Genetics Division, CSIR-Indian Institute of Chemical Biology, Kolkata, India on 16 .08. 2020.	Dr. Subrat Kumar Dash
84	My journey from the 93D puff to hsr-omega lncRNAs.	Banarus Hindu University, Varanasi, India on 23.08.2020	
85	A century old vaccine against CoVID: Science and Sense	Centre for Molecular Medicine, Jawaharlal Nehru University, New Delhi, India on 30.08.2020	

86	21-days training on Modern practices on plant and animal nutrition for sustainable agriculture production and intensive livestock development.	Jointly organized by ICAR-Indian grassland and fodder research institute, Southern regional station, Dharwad, Karnataka and National Agricultural Development Cooperative Ltd., Baramulla, J and K. from 02-22.02.2021.	
87	Virtual Colloquium on covid 19 pandemic and animal agriculture; interaction threats and economic impacts	Veterinary Science and Animal husbandry at SKUAST, Jammu From 25-26.06.2020	Dr Chetna Mahajan
88	21 days National Training Programme (NTP-2020) on Advances in fodder production, Utilization and conservation for Improving Livestock Health, Productivity and Environmental Sustainability.	ICAR-IGFRI, RRS Srinagar and NADCL Baramulla	Dr. Yashwan t Singh
89	21 days online winter school Modern practices of plant & animal nutrition for sustainable agriculture production and intensive livestock production.	ICAR-IGFRI, SRSR, Dharwad , Karnatak , UAS, Raichur, Karnatak & NADCL (J&K) 02-22.02.21	Dr Parag Acharya
90	Recent approaches in Forensic Pathology	Department of Veterinary Pathology, College of Veterinary Science & A.H., NDVSU, Jabalpur (M.P.) from 1st to 14th September, 2021.	Dr. Varun Bassessar
91	Basic techniques in laboratory animal care and management	College of Veterinary and Animal Sciences, Parbhani (MAFSU, Nagpur) from 02-08.09.2020.	Dr. Jagmeet Kaur
92	Advances in Pharmacology: Addressing the Paradigm Shift in Clinical and Paraclinical Sciences.	College of Veterinary Science and Animal Husbandry, Rewa (M.P), India from 28.12.2020 to 21.01 2021.	Dr. Raushan Kumar Singh
93	Poultry Entrepreneurship and Skill Development	Central Poultry Development Organisation (N.R.) Industrial Area, Phase-I, Chandigarh from 07- 09.12. 2020.	

94	Regional Workshop on Motivating and Attracting Youth in Agriculture (MAYA) in North India.	Jointly by Punjab Agricultural University Ludhiana, the Trust for Advancement of Agricultural Sciences (TAAS), New Delhi and the ICAR-Agricultural Technology Application Research Institute, Ludhiana, held at PAU, Ludhiana from 28-29.02.2020	Dr.Ramandeep Kaur Dhaliwal
95	National webinar on Modern Genetic approaches for improvement of Indigenous Cattle.	Department of AGB, College of Veterinary Science and Animal Husbandry, Mathura Online mode 29.07.2020.	

14. **Conferences/symposia/workshops/trainings (other than extension trainings) Organized**

S.No	Name of Conferences/Symposia /Workshops/Trainings	Organizing Agency	Date
College of Veterinary Science			
1.	Lectures by Eminent Experts for preparing students for national / international competitions”	ICAR-1 Strengthening and Development of Higher Agricultural Education in India under subcomponent- Scheduled Caste Sub Plan at GADVASU, Ludhiana.	28.03.2021
2.	Silage- A hidden treasure for agribusiness	IDP-NAHEP project	03.11.2020
3.	Herbal remedies: A New Era of Entrepreneurship in Veterinary Medicine’		17.11.2020
4.	Online Webinar on Status and Conservation of Cattle and Buffalo Genetic Resources.	ICAR Scheme: " Strengthening and Development of Higher Agricultural Education in India "Under Sub-Component" Scheduled Caste-Sub Plan"	24.03.2021
5.	Online Webinar on Progeny Testing Program for Genetic Evaluation of Cattle and Buffaloes		25.03.2021

6.	Online Webinar on Poultry Farming: An Evergreen Enterprise.		26.03.2021
7.	Online Webinar on Chromosomal and DNA Based Genetic Diseases & Screening in Dairy Animals.		27.03.2021
8.	Online Webinar on Indigenous Canine Genetic Resources of India: Growing Importance and Future Prospects.		27.03.2021
9.	Scientific goat farming as a source of income for rural farmers. (25 SC farmers)	Department of Livestock Production Management 	27-28.01. 2021
10.	Rural upliftment through scientific poultry farming. (25 SC farmers)	Department of Livestock Production Management 	29-30.01. 2021
11.	National Webinar and Industry Academia Students interface on Technological Innovations and Entrepreneurship in Animal Byproducts.	Department of Livestock Product Technology under IDP Cell	27.06 .2020

12.	National Webinar- Industry Academia Students interface on the topic Global Corona Crisis: Impact and strategic measures to uplift Poultry Industry.	IDP Cell	18.07.2020
13.	National Webinar- Industry Academia Students interface on the topic Entrepreneurship in Goat Farming for Young Graduates.	IDP Cell	01.08. 2020
14.	National Webinar on Eggcellent ways to promote health on World Egg Day	Department of Livestock Product Technology under IDP Cell	9.10. 2020
15.	Webinar on Entrepreneurship opportunities in egg processing for young veterinarians	Department of Livestock Product Technology under IDP Cell	01.12.2020
16.	National Webinar on Topographic Anatomy of abdomen of bovines in relation to clinical interventions.	Department of Veterinary Anatomy under IDP Cell	26.11.2020
17.	Personality development through life skill training”	Department of Veterinary Anatomy under ICAR 1- Strengthening and development of	18.01.2021
18.	Social inclusions of SCs through Government sponsored welfare Program	higher agricultural education in India under sub-component- Scheduled Caste Sub Plan	21.01.2021
19.	Road safety and traffic Rules		21.01.2021
20.	Hands on training on Advances in Histochemistry: Aggrandizing the research calibre of students.	ICAR-1, Strengthening & development of higher education in India under sub component "Scheduled Caste Sub Plan.	19.02.2021
21.	Status of schedule castes in Punjab	Department of Veterinary Anatomy under ICAR 1-	23.03.2021

22.	Covid-19 control strategies: where we stand and challenges ahead	Strengthening and development of higher agricultural education in India under sub-component-Scheduled Caste Sub Plan	24.03.2021
23.	Processing & value addition of meat & milk for entrepreneurial development		25.03.2021
24.	Comprehending the English grammatical structure : A brief overview	Department of Veterinary Anatomy under ICAR 1-Strengthening and development of higher agricultural education in India under sub-component-Scheduled Caste Sub Plan	
25.	Personality development of students	Department of Veterinary Anatomy under ICAR 1-Strengthening and development of higher agricultural education in India	25.03.2021
26.	Hands on Training for postgraduate students on Histomorphological techniques: A tool to study morphology of cell		28.03.2021
27.	Awareness training for Internship Students of B.V.Sc. & A.H. (2016 batch) regarding Biomedical waste management		01.03.2021
28.	Clinical practice and hospital management	<p>ICAR 01 (SC-SP)</p>  	15.03.2021

29.	Webinar series viz. Grooming and hygiene in dogs, Practical aspects of ECG in animals, hemoprotozoan diseases in dairy animals, Per rectal examination in bovines and Hernia repair in animals	ICAR-1 Strengthening & Development of Higher Agricultural Education in India sub component “Scheduled Caste-Sub Plan	24.03.2021 to 26.03.2021
30.	Intradermal Rabies vaccination with local wound infiltration of rabies immunoglobulins : A life saving protocol in domestic bovine.	Department of Veterinary Microbiology under NAHEP: IDP Cell	16.02. 2021
31.	Campylobacter infections: an emerging animal and human concern.		16.03.2021
32.	Vaccine platforms		19.03. 2021
33.	ELISA for detection, sero-monitoring and sero-surveillance of different diseases with special reference to FMD		19.03. 2021
34.	One Health Approach to tackle Non-Tuberculous Mycobacterium species -it's feasibility in Indian Scenario.		22.03. 2021
35.	Conventional and Modern approaches for detection of microbial pathogens		23.03.2021
36.	Advances in nucleic acid amplification techniques for food borne pathogen detection		23.03.2021

36.	Marvelous microbes: The beneficial side		24.03. 2021	
37.	Good food: Great vibes		24.03. 2021	
38.	Healthy eating tips for children during pandemic		25.03. 2021	
39.	Reading Food labels for healthy food choices		25.03. 2021	
40.	Online Training on Diagnostic Cytology	Department of Veterinary Pathology	19-23.10. 2020	
41.	Online Training on Biopsy Interpretation		26-30.10.2020	
42.	Online Training on Post Mortem Examination of Animals		02-06.11. 2020.	
42.	Online Training on Rabies Diagnosis		09-13.11. 2020.	
43.	Online Training on Poultry Diseases.		16-20.11. 2020	
44.	Online Training on Molecular Techniques in Pathology		30.11.2020 - 04.12. 2020	
45.	Webinar on Career Opportunities for Veterinary Graduates in Armed and Paramilitary Forces		GADVASU, Ludhiana	07.12. 2020.
46.	National webinar on Traditional Systems of medicines (Ethnoveterinary & Veterinary Ayurveda) for UG students		IDP, Cell	05.01.2021
47.	National webinar on Redefining Self to attain Prosperity and Happiness for UG students.	11.01. 2021		
48.	Webinar on Remote Sensing and GIS in Human Resource Development for UG students.	ICAR	14.01.2021	

49.	Webinar on Folk remedies conservation: A promising intervention for livelihood upliftment of livestock farmers for UG students.		21.01.2021
50.	Webinar on Awareness Programme on Quality Control: A Road to Food Safety for UG students	ICAR	28.01.2021
51.	Hands on Training on Alternate Toxicological protocols to reduce use of animals in research for SC beneficiary students		15.02.2021
52.	Hands on Training on Maintenance of Safe and Healthy Working Environment for SC beneficiary employees of GADVASU		23.03.2021
53.	Relevance of Biochemistry in Veterinary Education and Research- A Perception and Application	IDP Cell	10.11.2020
54.	How to be successful in Academics?	Dept. Veterinary Physiology & Biochemistry under ICAR-1, Strengthening & development of higher education in India” subcomponent “Scheduled Caste Sub Plan	23.03. 2021
55.	Motivational Talk on How to face the student life Pressures?		24.03. 2021
56.	Advancement in Physiological Function Tests in Domestic Animals and Pets		26.03. 2021
57.	Online Tutorial Classes for SC students by inviting eminent experts for preparing students	Department of Veterinary Gynaecology and Obstetrics under ICAR-1 Strengthening and Development to Higher	24.03.2021
			25.03.2021
			26.03.2021
			27.03.2021

	for national/international competition"	Agricultural Education in India" under sub-component "Scheduled Cast-Sub Plan" sub head	28.03.2021
58.	Systemic approach to reading radiographs in small animal patients	Department of Veterinary Surgery and Radiology under All India Network program on Diagnostic Imaging and Management of Surgical Conditions in Animals	24-28.03.2021,
59.	Certificate course in Veterinary Diagnostic Imaging	Department of Veterinary Surgery and Radiology	Nov, 2020 to April 2021
60.	Certificate course in Small Animal Anesthesia	Department of Veterinary Surgery and Radiology	Dec. 2020 to June 2021
61.	Short Course in Veterinary Diagnostic Imaging		Jan - Feb, 2021
62.	International Web-Symposium on Rabies and One Health	School of Public Health and Zoonoses,	28.09. 2020
63.	One day workshop on Hands on training on Lab safety guidelines.	Centre for One Health,	17.02.2021.
64.	National webinar on Avian Influenza in Poultry: An Indian Perspective and Zoonotic Potential of Avian Influenza	Center for One Health under ICAR-1 Strengthening and Development of Higher Agricultural Education in India under sub component-students and Faculty amenities	22.03 2021
65.	National webinar on Addressing antimicrobial resistance at animal-human interface in North India and Interactive session on Antimicrobial resistance		22.03 2021
66.	Virtual Expert Lectures on An overview of Emerging Parasitic zoonotic diseases and Recent Techniques for diagnostic of parasitic	Centre for One Health under ICAR-1 Strengthening and development of higher agricultural education in India under sub component "Students and Faculty amenities: Tutorials for SC/St	22.03 2021

	zoonotic diseases	students: students counselling, placement cell, health facilities:, personality development Recreation Facilities including Agri-unifest and Agri-sports”	
67.	National Webinar on New Dimensions in Food Safety and Public Health: Role of National and International Organizations.	Centre for One Health under IDP-Cell	13.01.2021.
College of Dairy Science Technology			
68.	One Day International Webinar on Advanced Characterization of Dairy-based Products through Rheology and Tribology	In collaboration with Anton Paar GmbH, Anton-Paar-Str. 20, A-8054 Graz, Austria.	15.07. 2021
69.	Online Training of District Level Trainers (DLT) Milk and Milk Products on PM Formalization of Micro Food Processing Enterprises Scheme	Punjab Agro	08-09.03. 2021
70.	National webinar on Lactic acid bacteria from starter cultures to cell factories for probiotics	Dairy Microbiology under IDP, Cell	14.10.2020
71.	National webinar on Sustainability of Dairy Business and research innovation through development of techniques and their transfer to entrepreneurs	Under IDP, Cell	05.12.2020
72.	National webinar on Latest tools and technologies for driving leadership as a dairy entrepreneur		29.12.2020

73.	National webinar on Skills for development and marketing of novel foods in dairy sector		19.01.2021
College of Fisheries			
74.	Industry- Farmer-Academia interaction (online) on Covid-19 Crisis: Mitigation Strategies for Shrimp Farmers of Punjab	Under IDP Cell	11.05.2020
75.	International webinar on Current Advances in Epigenetics and Vaccine Development in Aquaculture	In collaboration with Department of Biotechnology (DoBT) & College of Animal Biotechnology (CoABT)	10.08.2020
76.	Online Career Counseling Session for Fisheries students	In collaboration with Faculty of University of Tasmania, Australia (UTAS) and International Overseas Education Consultants in India, AECC Global India.	14.10.2020
77.	Academia-Industry Interface (online) on Status of Aqua Feed Sector in India and Employment Opportunities	Under IDP Cell	22.10.2020
78.	Webinar on Agri Business Incubation in Fisheries		26.10.2020
79.	National Webinar on Ornamental Fisheries-Opportunities Unlimited		26.11.2020
80.	Academia-Industry		04.11.2020

	Interface (online) on Innovations in Aquaculture Feeding Technologies		
81.	Academia-Industry Interface (online) on Shrimp Farming: Opportunity Unlimited		10.11.2020
82.	Academia-Industry Interface (online) on 'Recent Technological Interventions in Shrimp Farming and Hatchery Management'		17.11.2020
83.	Webinar on Career Opportunities for Fisheries Graduates		17.12.2020
84.	Webinar on Entrepreneurship Opportunities in Fish Processing Sector		02.12.2020
85.	Webinar on Fish Protein Based Functional Foods – Recent Advances		09.12.2020
86.	Webinar on Advances in Fish Health Management		14.12.2020
87.	Webinar on Clinical Practices in Aquaculture		15.12.2020
88.	Webinar on		16.12.2020

	Entrepreneurship Opportunities in Aquacultures		
89.	Webinar on Career Opportunities for Fisheries Graduates		17.12.2020
90.	Webinar on Advances in Oceanography and Marine Biology		24.12.2020
91.	Webinar on Impact of Climate Change on Aquatic Ecosystem		28.12.2020
92.	Webinar on Scope of Entrepreneurship Development in Aquaculture and Fisheries		29.12.2020
93.	Webinar on Environmental DNA (e-DNA) –A Molecular Tool for Assessment of Fisheries Resources		31.12.2020
94.	Academia-Industry Interface (online) on Farm to Fork Approach and Quality and Food Safety Management System		03.12.2020
95.	Academia-Industry Interface (online) on Management in Fisheries – Production to Marketing / Export		08.12.2020
96.	Academia-Industry Interface (online) on Strategies for International Business in Fish Processing Sector		10.12.2020
97.	Training on Communication Skills	In collaboration with Punjab Agricultural Management and Extension Training Institute (PAMETI), under ICAR Development Grant Scheduled Caste - Sub Plan (SC-SP) Component - Strengthening and Development of Higher Agricultural Education in India	01-02.2021
98.	Training on Breeding and	Under under ICAR Development	08-09.03.

	Seed Production of Livebearer Ornamental Fish for developing entrepreneurial skills among graduating students	Grant Scheduled Caste - Sub Plan (SC-SP) Component	2021
99.	Five days Entrepreneurial training programs entitled Hands on experience in Aqua-clinic techniques: An entrepreneurship program' for postgraduate students		04-10.03. 2021
100.	Skill development in aqua-clinics for undergraduate students		15-19.03. 2021
101.	Training programme on Stress Management	PAMETI	03.03. 2021
102.	Training programme on "Skills for Successful Career"	In collaboration with PAMETI, under ICAR Development Grant Scheduled Caste - Sub Plan (SC-SP) Component	05.03. 2021
			
	Hand on Training on "Breeding and Seed Production of Livebearer Ornamental Fish"		

			
	Training programme on “Stress Management”	Training programme on “Skills for Successful Career”	
College of Animal Biotechnology			
103.	Four-days e-training program on Bio-computational interventions to analyze canine & livestock genomes	Under Project Monitoring Unit of the DBT-Canine Research Center for Networking	06-09.10.2020
104.	Skill development in viral disease diagnosis and prophylaxis		05-11.12.2020
105.	Two days training on Emerging Bacterial Infections of Canine with Special Reference to Leptospirosis		14-15.12.2020
106.	Three days training on Advances in Mammary tumor diagnosis and treatment		15-17.12.2020
107	International virtual webinar on COVID-19 Pandemic: Concerns and Perspectives		23.01.2021
108.	12-days International training course on Biotechnological Approaches in Animal Research and Disease Diagnosis		01-12.02.2021
109.	International e-Symposium on Emerging Focus on Immunology in		19-20.02.2021

	Augmenting Animal and Human Health		
110.	Entrepreneurship Development programme for SC Beneficiaries(Online)	ICAR at PAMETI, PAU	05-07.03. 2021
111.	21days e-training program on Skill Development on Advanced Bioinformatics in Genome Analysis of Livestock and Pets	Under Project Monitoring Unit of the DBT-Canine Research Center for Networking	05-25.03. 2021
College of Veterinary Science, Rampura Phul			
112.	Webinar on Wildlife and Forensic Science		11.11. 2020
113.	Health talk series Exploring and Understanding: The COVID -19 Pandemic.		18.06. 2021
114.	Webinar on Pig farming: an emerging opportunity for livestock diversification and income augmentation		11.11. 2020
115.	National Webinar on World Egg Day		09.10.2020
116.	National webinar on Awareness on avian influenza in perspective of poultry and human health.		18.01.2021
117.	Skill Development Programme on Dairy Farmer/Entrepreneur	PMKVY, MoA& FW and ASCI	18.02.21 to 18.03.21

Invited lectures delivered by the faculty

S. No	Details of the Lecture
1.	Dr S. Kaur. Next Generation sequencing: A revolutionary tool in animal Sciences. In XVI National e-Conference of Indian Association of Women on sustainable contribution of ATMANIRBHAR women veterinarians in enrichment of production potential in livestock through applications of modern technologie at COVAS, Parbhani, Maharashtra from December 09-10, 2020.
2.	Dr. S. Kaur. Kharid samey dudh wale pashu di chaun karni. In Dairy farming course by DEE, GADVASU from March 15-26, 2021.
3.	Dr. B. Deshmukh 1. Judging of cattle/buffalo and pig at the time of purchase at GADVASU, Ludhiana on August 18, 2020 and September 24, 2020. 2. Important exotic Pig Breeds, Breed Improvement and Marketing at GADVASU, Ludhiana on September 21, 2020.
4.	Dr. R.S. Grewal 1. Effect of Nutrition on Reproduction in dairy animals and stray cattle management in webinars at Dept. of Animal Husbandry, Punjab on August 27, 2020 and September 21, 2020. 2. Towards Climate resilient livestock production system in Punjab on world veterinary day 3. Weather linked insurance of cattle at PSCST on September 9, 2020. 4. Nutrition, a haze for sustainable dairy in webinar of IDA on October 10, 2020. 5. Feeding transition of animals at DEE, GADVASU on February 04, 2020. 6. TMR and fodder quality in training for SC farmers on November 24, 2020.
5.	Dr. S.T. Singh 1. Care of calves, disinfection of naval cord, colostrum feeding, disbudding, identification and deworming training by DEE from February 12 to March 12, 2020. 2. Common prevention and protection strategies related to human animal conflict training by DEE, GADVASU from February 10 to March 24, 2020. 3. Haemodialysis in dogs in advanced training programme on diagnosis and management of chronic gastro-enteropathies and renal diseases in dogs by Veterinary Medicine on March 2-3, 2020.
6.	Dr. N. Singh. Common gynaecological conditions in dairy animals. In Farmer training programme on “Scientific approach to Dairy farming” at GADVASU, Ludhiana on March 03, 2020.
7.	Dr. G. K. Mavi 1. Importance of backyard poultry at KVK, Mohali on February 12, 2021. 2. Rural upliftment through scientific poultry farming at GADVASU on January 29-30, 2021.
8.	Dr. N. Singh. Application of IVF technology in cows & buffaloes at the doorsteps of farmers in India. In webinar in collaboration with JK Bovagenix,

	JK Trust on July 19, 2020.
9.	Dr. S.K Dash. University da hatchary dura prabandh kha gya on March 10, 2021 and Indian D incubation on December 07, 2020 in Poultry training course by VAHEE, GADVASU, Ludhiana.
10.	Dr. R. Singh. Antimicrobial resistance: present status and way forward at KVFASU, Bidar and IVAH on September 04, 2020.
11.	Dr. R. Sharma. Molecular characterization of zoonotic parasites. In training course on biotechnological approaches in animal research and disease diagnosis on February 8, 2021 by COABT, GADVASU from February 01-12, 2021.
12.	Dr. S. Kaur. Emerging and re-emerging bacterial zoonotic infections: factors and surveillance mechanisms. In emerging bacterial infections of canine with special reference to leptospirosis by COABT, GADVASU from December 14-15, 2020.
13.	Dr. S. Kaur. Zoonotic diseases in canines. In skill development in viral disease diagnosis and prophylaxis by COABT, GADVASU from January, 5-11, 2021.
14.	Dr. S. Kaur. Personal protective equipment and emergencies. Hands on training on laboratory safety guidelines by Centre for One Health on February 17, 2021.
15.	Dr. P. Dhaka. Understanding emerging zoonoses in one health perspective. In online DST sponsored National Colloquium on emerging zoonoses and one health approach: perspectives and challenges by Department of Zoology, Mata Gujri College, Fatehgarh Sahib on March 26, 2021.
16.	Dr. P. Dhaka. An overview on practical application of molecular tools for antimicrobial resistance testing. In online national workshop on capacity building on antibiotic susceptibility testing by Centre for One Health, GADVASU on March 25, 2021.
17.	Dr. P. Dhaka. Emerging zoonoses and one-Health approaches. In national webinar organized by Society for Veterinary and Animal Husbandry Extension and Centre For One Health, GADVASU on June 06, 2020.
18.	Dr M. Honparkhe. Understanding the basics of reproductive ultrasonography. In e-workshop on Veterinary reproductive ultrasonography, e-Reprosound at ISSAR, Maharashtra from August 8-10, 2020.
19.	Dr M. Honparkhe. Applications of ultrasonography for reproductive management. in International on-line training programme on advanced reproductive technologies for augmentation of fertility in dairy animals at PGIVAS, Akola, Maharashtra from February 2-6, 2021.
20.	<p>Dr A.K. Singh</p> <ol style="list-style-type: none"> 1. Surian vich masnui garabhdaan di vidhi da pardarshan training organized by DEE, VAHEE, Ludhiana July 16, October 07 and December 10, 2020. 2. Collection of semen in boar and its processing and Artificial insemination in pig at Government Pig farm, Nabha on July 21, 2020. 3. Reproduction management at pig farm: A key to success training by Department of Animal Nutrition, GADVASU on December 23, 2020 and at

	KVK, Tarn Taran on January 29, 2021.
21.	<p>Dr. B. Singh</p> <ol style="list-style-type: none"> 1. Management and treatment of infertility in dairy animals to the livestock farmers at PAU Virtual Kisan mela on September, 2020. 2. Reproductive problems of sows in E-seminar for Piggery farmers of Punjab August 04, 2020. 3. Pashuan vich prajnan parbandh; heha samkalin at KVK, Tarn Taran on October 23, 2020. 4. Management of infertility in dairy animals. In Exposure visit of farmers of Hoshiarpur district to GADVASU on January 28, 2021. 5. Sexed Semen: A tool to combat stray male cattle population. In skill training programme on rearing of improved breed and rearing of cattle and their management by PAMETI sponsored by Skill Training of Rural Youth (STRY) and MANAGE, Hyderabad from February 10-15, 2020. 6. Problem faced in relation to Covid-19 and future strategies. In Interactive webinar with Pig farmers on July, 30, 2020.
22.	<p>Dr. D. Kaur</p> <ol style="list-style-type: none"> 1. Strategies to minimize neonatal kid mortality in training on “Rural upliftment through scientific goat farming” at Bhundri organized by LPM, GADVASU on February 13, 2020. 2. Preparation Procedure for brooding of day -old chicks; General Management practices and tips to enhance the overall profit in Poultry Farming; Hands - on training for general prophylactic measures to be adopted at Poultry Farm. In inculcation of Entrepreneurship skills in poultry farming among SC farmers organized by LPM, GADVASU on March 15, 2020. 3. Managerial problems in poultry expert lecture organized at Deptt. of Veterinary Pathology on November 16, 2020. 4. Selection and grading of live meat animals (Goat/Sheep/pigs) with visit to different farms of GADVASU in training of farmers on clean milk production and by products utilization organized by Deptt. of LPT, GADVASU, Ludhiana on February 02, 2021. 5. Garmi/sardi da pashu te prabhav ate usnu bachaun de tarikae. In Dairy da muharat sikheya course at GADVASU, Ludhiana on March 16, 2021.
23.	<p>Dr. Y.P. Singh</p> <ol style="list-style-type: none"> 1. Housing management for small, medium and large goat farms Brooding management of day old chicks. In training of beneficiary Farmers of SC Category on Scientific goat farming as a source of income for rural farmer (RKVY) by Deptt. of LPM from January 27-28, 2021. 2. Brooding management of day old chicks. In Rural upliftment through scientific poultry farming by Deptt. of LPM from January 29-30, 2021. 3. Management of heifers. Care and management of piglets; Breeds and stains of layers and broilers chicks suitable for backyard farming in Punjab. In training programme for the young farmers for entrepreneurial skill

	<p>development in dairy farming, piggery and poultry (ICAR-1) by Deptt. of LPM on March 14 and March 19, 2021.</p> <p>4. Importance of poultry farming. In Murgiyaan da Muharat Sikheya course by VAHEE, GADVASU, Ludhiana from December 14-24, 2020 and March 01-15, 2021.</p>
24.	<p>Dr S. Chander.</p> <ol style="list-style-type: none"> 1. Pig housing. Farmers training organized at KVK Booh, Tarn Taran on January 29, 2021. 2. Goat breeds, selection and breeding management of Goat at a commercial stall fed Goat farm. In training of beneficiary Farmers of SC Category on Scientific goat farming as a source of income for rural farmers (RKVY) Organized by Deptt. of LPM from January, 27-28, 2021. 3. Common diseases and preventive measures recommended in poultry farm. In Rural upliftment through scientific poultry farming by Deptt. of LPM from January 29-30, 2021. 4. Housing of pigs. In training for Pig farmers by VAHEE, GADVASU on February 09, 2021. 5. Litter management of poultry farm. In training for Poultry farmers by VAHEE, GADVASU on January 13, 2021. 6. Breeding Management of Dairy Animals in Training for the young farmers for entrepreneurial skill development in dairy farming. In training programme for the young farmers for entrepreneurial skill development in dairy farming by VAHEE March 01-15, 2021.
25.	<p>Dr. D.S. Malik.</p> <ol style="list-style-type: none"> 1. Selection and grading of live meat animals” by Deptt of LPM on January 12, 2021 12.01.2021 2. Important breeds of buffalo and their characteristics; Care of lactating animals before and after pregnancy; Kharif green fodder crop; Rabi green fodder crops. In 3. In Skill Development programme on Dairy farmer Entrepreneur under Pradhan Mantri Kausal Vikas Yojna (PMKVY) sponsored by Ministry of Agriculture and Farmer Welfare organized at CoVS Rampura Phull on March, 2021
26.	<p>Dr M.K. Chatli. Hygienic meat production. In National webinar on hygienic meat production and processing at ICAR-CAAST, Bombay Veterinary College, Mumbai on July 17, 2020.</p>
27.	<p>Dr. N. Mehta. Changing role of egg in human nutrition. In Online Induction Programme organized by Village Adoption (VAP) Cell NIFTEM, Kundli on December 16, 2020.</p>
28.	<p>Dr. N. Mehta. Value addition in meat products. In online training programme on Entrepreneurship Development in Forestry, Fisheries and Dairy at Nilokheri (Karnal), Haryana on November 21, 2020.</p>
29.	<p>Dr. S. Kaur. One health approach to zoonoses: emerging think spot. In XVI</p>

	National online conference on Sustainable contribution of ATMNIRBHAR women veterinarians at IAWVPV, Prabhani on December 10-12, 2020.
30.	Dr B.K. Bansal. Bovinem and its management. In training programme for dairy farmers by DEE, GADVASU on February 04, 2021.
31.	Dr. B.K. Bansal. Practical aspects of management of mastitis in dairy animals. In National Virtual Conference at PV Narsimha Rao Telangana Veterinary University, Rajendranagar, Hyderabad from December 10-11, 2020.
32.	Dr. B.K. Bansal. Advances in diagnosis and management of mastitis in dairy animals. In International Workshop on recent rdvances in management of animal health at MAFSU, Parbhani from November 03-09, 2020.
33.	Dr. D.K. Gupta. Advances in diagnosis and medical management of farm animal diseases by Deptt. Veterinary Clinical Medicine, PGIVAS, Akola (MS) from November 25 to December 01, 2020.
34.	Dr. D. K. Gupta. Diagnosis of canine liver diseases. In training by Deptt. of Veterinary Clinical Medicine, COVS, Parbhani (MS) from December 14-19, 2020
35.	Drs. S. Sharma, A.K. Sharma and C.S. Randhawa. Role of classical and recombinant vaccines in animal disease prevention and control programs. In ICAR sponsored short course on advances in molecular epidemiology in veterinary research school of public Health and Zoonoses, GADVASU, from December 10-19, 2020.
36.	Dr. A. K. Arora. Antimicrobial resistance in livestock: where to focus?. In Brain Storming Session on “Antimicrobial Resistance at National Academy of Agricultural Sciences, New Delhi on August 29, 2020
37.	Dr. M. Chandra. Realtime-qPCR gene expression analysis. In international training “Biotechnological approaches in animal research and disease diagnosis by COABT, GADVASU, Ludhiana from February 1-12, 2021 on 03.02.2021.
38.	Dr. M. Chandra. Real Time PCR, it’s various chemistries and its role in disease diagnosis. In National seminar on Current trends in diagnostic approaches for diagnosis of important livestock diseases by society for bioinformatics and biological sciences), Prayagraj in collaboration with Applied Research and Development Organization (ARDO), Jammu on March 07, 2021.
39.	Dr. J.S. Hundal. Silage making and checking its quality. Online webinar of Animal Husbandry Department, Punjab on October 20, 2020.
40.	Dr. J.S. Hundal. Importance of balanced nutrition in animal reproduction. RRTC, Talwara on January 18, 2021.
41.	Dr. L.D. Singla. Intellectual property rights w.r.t. Animal and Veterinary Science. In Webinar series on “New frontiers in Veterinary science (20-28 July, 2020) organized by KNP COVS, Shirwal, Maharashtra on July 27, 2020.

42.	Dr. L.D. Singla. Importance of intellectual property rights in veterinary and animal sciences. In National workshop “An insight to research proposals, statistical Techniques and intellectual property rights” organized by Nanaji Deshmukh Veterinary Science University, Jabalpur from June 26-28, 2020.
43.	Dr. L.D. Singla. Integrated parasite control as means to boost animal health and productivity: An Indian perspective. In national webinar series on ‘Strategies for sustainable control of parasites of livestock, poultry and wild life and their public health significance by LUVAS, Hisar on August 21, 2020.
44.	Dr. L.D. Singla. Progression of technologies for improved diagnosis of haemoparasites. In online training on advances in Veterinary Parasitology: a paradigm Shift by NDVSU, Jabalpur from February 01-15, 2021 on February 06, 2021.
45.	Dr. L.D. Singla. Emerging challenges in diagnosis and management of haemoparasitic infections in livestock. In Newer strategies to mitigate parasitic and bacterial diseases in livestock and poultry for better production and trade at TANUVAS, Chennai on November 11, 2020.
46.	Dr. N.K. Singh. Control of ticks. Extension Wing, Animal Husbandry Department, Punjab on July 26, 2020.
47.	Dr N.K. Singh. Combating acaricide resistance: current status and future directions from Indian perspectives at F.V.Sc. & A.H, SKUAST-Kashmir on August 28, 2020.
48.	Dr. N.K. Singh. Biological control of ticks in dairy animal. DEE, GADVASU, Ludhiana on February 04, 2021.
49.	Dr. K. Gupta and Dr. A. Singh. Cytopathology in diagnosis of commonly occurring neoplasms. In International Veterinary Pathology Congress-2020 and 37 th annual conference of IAVP on role of Veterinary Pathology in controlling emerging and re-emerging diseases of livestock and poultry: An one health approach at MAFASU, Nagpur, Maharashtra from December 26-29, 2020.
50.	Dr. K. Gupta. Cytopathology in diagnosis of diseases in animals. In online training-cum- orientation programme on advances in clinico-pathological diagnosis of farm animal diseases: A radical approach in doubling farmers' income organized at NDVSU, Jabalpur on February, 2021.
51.	Dr. C. Singh. Primer design for CRISPER in webinar at MAFSU, Prabhani on November 09, 2020.
52.	Dr. C. Singh. Mineral deficiency diseases in animals. In online webinar for dairy farmers by DEE, GADVASU on November 12, 2020.
53.	Dr. M. Sharma. Application of cell culture in animal sciences. In training programme on strengthening & development of higher education in India on February 15, 2021.
54.	Dr A. Anand. Etiology, anatomical consideration and diagnosis of equine colic and therapeutic and surgical management of equine colic. In In webinar by Indian society of Veterinary Surgery and INTAS on June 19-20, 2020.

55.	Dr. A. Anand. 3D printed assisted surgery for veterinary patients. In training on additive manufacturing for biomedical applications at National Institute of Technical Teachers Training and Research Chandigarh from October 05-09, 2020 on October 08, 2020.
56.	Dr A. Anand. Practical approach to diagnosis of equine colic. In international online training on advances in equine health management at MAFSU Nagpur on October 29, 2020.
57.	Dr. A. Anand. Systematic approach to reading thoracic radiograph: heart and its large blood vessels. In training on systematic approach to reading radiographs in small animal patient by Deptt. Vety. Surgery & Radiology, GADVASU from March 24-28, 2021 on March 26, 2021.
58.	Dr. V. Sangwan. Radiographic positioning. In systematic reading of radiographs in small animal practice. In training on systematic approach to reading radiographs in small animal patient by Deptt. Vety. Surgery & Radiology, GADVASU from March 24-28, 2021 on March 24, 2021.
59.	Dr. P. Verma. Application of doppler ultrasound in veterinary practice. In webinar by Indian Society of Veterinary Surgery, INTAS on January 09, 2021.
60.	Dr. P. Verma. Systematic approach to reading abdominal radiographs-liver, spleen, urogenital system. In training on systematic approach to reading radiographs in small animal patient by Deptt. Vety. Surgery & Radiology, GADVASU from March 24-28, 2021 on March 25, 2020.
61.	Dr. N. Singh. Basics of canine echocardiography. In webinar by Indian Society for Veterinary Surgery and INTAS pharmaceuticals on December 26, 2020.
62.	Dr J. Mohindroo. Practical demonstration of ultrasonography in diagnosis of gastrointestinal tract and renal diseases. In advanced training Programme on diagnosis and management of chronic gastroenteropathies and renal diseases in dogs on March 03, 2020.
63.	Dr. J. Mohindroo. Advances in ultrasonography and its application in livestock and pets. In five days training on advance diagnostic techniques in livestock and pets. COVS and Animal Husbandry, Junagadh Agricultural University, Junagadh, Gujarat on January 07, 2021.
64.	Dr. J. Mohindroo. Systematic approach to small animal abdominal ultrasound. Indian Society for Veterinary Surgery on June 05, 2020.
65.	Dr. J. Mohindroo. Systematic approach to reading a radiograph - basics of interpretation by united small animal practitioners association MP-CG and Hatvet Pharma on June 07, 21 and 27, 2020.
66.	Dr. J. Mohindroo. Interpretation of abdominal radiographs. In training course on advances in diagnosis and management of ailments in pet animals by COVS, Mhow, MP on January 25, 2021.
67.	Dr. J. Mohindroo. Radiographic interpretation of vertebral column, bone and joint of forelimb and hindlimb. In Indian VETexpo-2021 by Paws Learning and Research Council (PLRC) India on March 20-21, 2021.

68.	Dr. J. Mohindroo. Systematic approach to reading radiographs of fore limbs in small animal patients. In training course on systematic reading of radiographs in small animal patients by Deptt. Veterinary Surgery & Radiology, GADVASU from March 24-26, 2021 on March 25, 2021.
69.	Dr. S.K. Mahajan. Basics of diagnostic ophthalmology in dogs; surgico-therapeutic management of common ophthalmic disorders in dogs. In e-certificate course on fundamentals on veterinary ophthalmology by Deptt. of Veterinary Surgery & Radiology, RAJUVAS, Bikaner from March 15-19, 2021.
70.	Dr. S.K. Mahajan. Systematic ophthalmological examination in small animal practice. In online expedition in veterinary ophthalmology and its pathway to clinical application at Rewa, NDVSU (MP) from February 23-24, 2020.
71.	Dr. S.K. Mahajan. Radiography of lungs, pleura and mediastinum. In training course on systematic reading of radiographs in small animal patients by Deptt. Veterinary Surgery & Radiology, GADVASU from March 24-26, 2021.
72.	Dr. A. Kumar. Prognostic assessment of tumors in pets: current clinical perspectives. In training Course on advances in mammary tumor diagnosis and treatment by CoABT, GADVASU from December 15-17, 2020.
73.	Dr. A. Kumar. Systematic interpretation of gastrointestinal radiographs In training course on systematic reading of radiographs in small animal patients by Deptt. Veterinary Surgery & Radiology, GADVASU from March 24-26, 2021.
74.	Dr. J.S. Khosa. Radiography of vertebral coloumn. In training course on systematic reading of radiographs in small animal patients by Deptt. Veterinary Surgery & Radiology, GADVASU from March 24-26, 2021.
75.	Dr. S.P.S Ghuman. Improving fertility in dairy cattle and buffalo. In online vocational training on immunological advancements in male and female fertility organized by Deptt. Vety. Gynecology & Obstetrics and Deptt. Vety. Physiology & Biochemistry, Junagadh Agricultural University, Junagadh, Gujarat from September 1-5, 2020
76.	Dr. S.S. Randhawa. Hoof management. Punjab Animal Husbandry Department (Extension wing) and GADVASU, Ludhiana on August 12, 2020.
77.	Dr. S.S. Randhawa. Bovine ultrasonography- an advanced technique in disease diagnosis. In international online training on advances in diagnosis and medical management of farm animal diseases at PGIVAS, Akola, MAFSU, Nagpur on November 28, 2020.
78.	Dr. R.K. Sharama. <ol style="list-style-type: none"> 1. Care of milch animals. In webinars organized by PAU, Ludhiana on July 02, 2020. 2. Compounding concentrate ration for dairy animals. In webinars organized by PAU, Ludhiana on August 06, 2020. 3. Care of milch animals in winters. In webinars organized by PAU, Ludhiana November 05, 2020. 4. Selection of breeding bulls by Sahiwal Cattle Breeders Society, Punjab on

	<p>September 11, 2020.</p> <p>5. Treatment of dairy animals through indigenous technologies. Kamdhenu Gaushala, Nurmahal, Jalandhar on March 03,2021</p>
79.	Dr. J. Singh. Making silage for round the fodder availability on February 11, 2020 and Feeding of pigs November 22, 2020 at PAMETI, PAU, Ludhiana.
80.	Dr. Y.S. Jadoun. Communicating Effectively with the Farmers. In Agriculture Extension Service Provider skill development training Program by PAMETI, PAU Ludhiana from February-March 03, 2021.
81.	Dr. Y.S. Jadoun. Extension Strategies Adopted by GADVASU; Integrated livestock farming: Need of hour. In skill development training program on dairy Farmer/Entrepreneur at Rampura Phul, Bathinda, from February –March 18, 2021
82.	Dr. Ravdeep Singh. Economics of poultry farming. In training course: Poultry rearing and management, PAMETI, Ludhiana , August 05-10, 2020
83.	Dr. K. S. Sandhu. Hands on training on poultry diseases and farming. In Strengthening and Development of Higher Education on Layout of Poultry Sheds (ICAR) by Department of Pathology on March 18, 2021.
84.	Dr V. K. Dumka. Combating antimicrobial resistance through rational use of antibacterials. In International webinar on Pharmacology and Toxicology & 40 th Annual Conference of STOX, PGI Chandigarh from January 29-30, 2021.
85.	<p>Dr. V. Uppal.</p> <p>1. Relevance of histochemistry in research. In hands on training on advances in histochemistry: aggrandizing the caliber of students by GADVASU Ludhiana, February19, 2021.</p> <p>2. An introduction to histomorphological techniques to interpret morphology of cell. In hands on training on histomorphological techniques: a tool to study morphology of cell by Deptt. Veterinary Anatomy, GADVASU on March 28, 2021.</p>
86.	<p>Dr. O. Singh.</p> <p>1. Principles and Applications of Enzyme Histochemistry. In hands on training on advances in histochemistry: aggrandizing the caliber of students by GADVASU Ludhiana, February19, 2021.</p> <p>2. Interpretation of Electron Micrographs. In hands on training on histomorphological techniques: a tool to study morphology of cell by Deptt. Veterinary Anatomy, GADVASU on March 28, 2021.</p>
87.	<p>Dr. N. Bansal.</p> <p>1. Histomorphological stains and interpretation of results. In hands on training on histomorphological techniques: a tool to study morphology of cell by Deptt. Veterinary Anatomy, GADVASU on March 28, 2021.</p> <p>2. Recent Advances in Enzyme Histochemistry. In National Web Conference on Advances in Teaching and Research in Veterinary Anatomy in India at NTR College of Veterinary Science, Gannavaram, October 27-29, 2020.</p>

88.	Dr. A. Gupta Tissue processing for light microscopy. In hands on training on histomorphological techniques: a tool to study morphology of cell by Deptt. Veterinary Anatomy, GADVASU on March 28, 2020.
89.	Dr. D. Pathak 1. Immunohistochemistry: A powerful tool for researchers. In Hands on training on Advances in Histochemistry: Aggrandizing the caliber of students by GADVASU Ludhiana, 19.02.2021. 2. Tissue processing for electron microscopy. In hands on training on histomorphological techniques: a tool to study morphology of cell by Deptt. Veterinary Anatomy, GADVASU on March 28, 2021. 3. Immunohistochemistry, Step by Step: principle and protocol. International Virtual Training on Advanced Microscopic Techniques in Biomedical Research at NTR College of Veterinary Science, Gannavaram on January 28, 2021.
90.	Dr. A. Sharma. Role of pig farming to address the agrarian and environmental crises in transgangetic plains in India. National conference and 27th annual convention of Indian Society of Animal Production Management (ISAPM) at PGIVER, Jaipur from February 04-06, 2020.
91.	Dr. M. K. Chatli. Current Status, Future Prospects and Challenges of Meat Industry in India. National program on recent advances in quality assurance of meat and meat products under the World Bank Funded NAHEP-CAAST project "Centre of excellence for advanced research on animal food safety from February 1-5, 2021.
92.	Dr. M. K. Chatli. Poultry Products Processing & Marketing. In national webinar on marketing dynamics in poultry sector: perspective and challenges by ICAR-NAHEP; CAAST International Agribusiness management Institute, AAU, Anand from September 17-18, 2020.
93.	Dr. M. K. Chatli. Quality and processing of eggs. In national webinar on eggs: nutrition and human health on World Egg Day-2020 by ICAR-CARI, Izatnagar on October 09, 2020.
94.	Dr. M. K. Chatli. Hygienic and safety requirements of animal origin foods. In national webinar on Hygienic Meat Production and Processing by ICAR-NAHEP-CAAST, MAFSU, Nagpur on July 17, 2020.
95.	Dr. M. Singh. 1. Cattle shed construction, importance of hygiene & cleanliness management practices, using rubber mats at Red Cross Bhawan on October 27, 2020 and January 08, 2021. 2. Artificial insemination- procedural details, management of animals in pregnancy. 3. Calf rearing & Calf management practices for production of healthy cow/buffaloes.

	4. Vermi compost usage & dosage for major crops, analysis of nutrients, packing & marketing of vermicompost at Rural Self Employment Training Institute, Bathinda
96.	Dr. M.P. Singh 1. Dairy Farming- breeds of cows and buffaloes, desi cow/breeds, up gradation of cattle by cross breeding, selection of animals at Red Cross Bhawan on 26.10.2020 2. Nutrition & Feeding of dairy animals; preparation of feeds & use of Azola; home made concentrate for dairy farming. Cost effective feeding 3. Fodder crops- description, cultivation aspects; classification of fodder crops based on composition at RSETI, Bathinda
97.	Dr. S. Kaur. 1. Dairy animals- Important diseases & their control at Red Cross Bhawan, Bathinda on 28.10.2020 & 06.01.2021 2. Vaccination, cause, management & treatment of disease of mastitis, sterility. 3. Production of clean milk-practices, milk products. 4. Milk marketing- Co-operative setup, milk producers societies 5. Role of women in dairy farming at rural self employment training institute, Bathinda
98.	Dr. R.S. Sethi. Anatomical Basis of Biotechnology. In national webinar on conceptualization of modern anatomy: theory & practice by Pt. Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Vishwavidyalaya, Mathura, August 5, 2020
99.	Dr J.S. Arora. Sequence Manipulation Suite: for handling molecular data. In e-training on biocomputational interventions to analyze canine & livestock genomes by COABT, GADVASU, Ludhiana on October 8, 2020.
100.	Dr. R.S. Sethi. The predictive and prognostic application of immunohistochemistry in the diagnosis of disease . In national web conference on “Advances in Teaching and Research in Veterinary Anatomy in India” by NTR COVS, Gannavaram on October 27-29, 2020
101.	Dr C.S. Mukhopadhyay. Primer design for eukaryotic gene expression, recent advances in analytical biochemistry techniques, its applications and interpretations at COVS, MAFSU, Parbhani, November 09, 2020
102.	Dr. B.V.S. Kumar. Purification of recombinant protein by affinity chromatography. In training program on recent advances in analytical biochemistry techniques, its applications and interpretations by COVAS, Parbhani, November 02, 2020.
103.	Dr. R.S. Sethi. CRISPR/Cas9 for optimization of health and reproduction in animals. In 21 days international e- training on physio-biochemical and biotechnological approaches for optimization of health and reproduction in animals by Deptt. of Vety. Physiology and Biochemistry, NDVSU, Mhow, Jabalpur, December 1, 2020
104.	Dr S.P. Singh. Preparation of growth media and culture isolation of <i>Leptospira</i> .

	In training course on emerging bacterial infections of canine with special reference to leptospirosis” at COABT, GADVASU, December, 5, 2020.
105.	Dr. B.V. Sunil Kumar. Heat shock proteins in cancer progression. In training on Advances in mammary tumor diagnosis and treatment at COABT, GADVASU, Ludhiana from December 15, 2020.
106.	Dr. R. K. Choudhary. Immunohistochemistry and immunocytochemistry-a powerful tool for in situ protein expression. In virtual international conference on promising genetic and genomic technology-frontier in selection and animal improvement by Dept of Animal Genetics and Breeding, Veterinary College and Research Institute, Orathanadu and Dept of Animal Genetics and Breeding, COVS, Pookode, India on January 27, 2021.
107.	Dr. R. K. Choudhary. RNAscope and its utility in gene expression analysis. In international training on biotechnological approaches in animal research and disease diagnosis by COABT, GADVASU, Ludhiana, from February 01-12, 2021.
108.	Dr C.S. Mukhopadhyay. Evolutionary and phylogenetic studies of viral diseases by using bioinformatics tools. In online training program on Skill development in viral disease diagnosis and prophylaxis by COABT, GADVASU, Ludhiana from January 5-11, 2021.
109.	Dr. C.S. Mukhopadhyay. Biocomputational novel identification of microRNAs from whole-genome shotgun sequences. In international training on biotechnological approaches in animal research and disease diagnosis by COABT, GADVASU, Ludhiana from February, 1-12, 2021.
110.	Dr. C.S. Mukhopadhyay. Accessing the most informative SNPs for parentage determination in bovines: haplotype and tapered-end SNP analysis. In online 5 th annual convention of SVBBI and national symposium on current challenges for animal biochemists and biotechnologists improving animal health and production in post COVID scenario at DUVASU, Mathura from March 24-25, 2021
111.	Dr C.S. Mukhopadhyay. Understanding the scripting differences between R and Python. In e training course on skill development on advanced bioinformatics in genome analysis of livestock and pets by COABT, GADVASU, Ludhiana from March 5-25, 2021.
112.	Dr. J. Kumar. Potential of remote sensing in aquatic resource identification. In national webinar on role of agriculture and allied sciences towards global food security jointly organized by Society of Biological Sciences and Rural Development, Prayagraj, Uttar Pradesh and Ram Sewak Singh Mahila College, Sitamarhi Bihar from June 13-15, 2020.
113.	Dr. V. K. Reddy. Recent advances in fish processing waste utilization. In national webinar on Fish processing – A way forward from June 15-19, 2020.

114.	Dr. A. Tyagi. Significance of pathogen characterization and whole genome sequencing in fish health management: A case study on <i>Aeromonas veronii</i> . In national webinar on advances in aquatic animal health management by COF, CAU, Tripura from June 23-25, 2020.
115.	Dr. A. Tyagi. Addressing anti-microbial resistance (AMR) in aquatic environment through genomics and meta-genomics approach. In national webinar & brain storming session on Antibiotic Resistance by NAAS, New Delhi on August 29, 2020.
116.	Dr. A. Singh. Deadly situation of COVID-19 pandemic: nutrition and food security in India. National webinar by Bajkul Milani Mahavidyalaya, Midinipur, West Bengal on September 27, 2020.
117.	Dr. V. I. Kaur. Best management practices for fish farming. Webinar series by DEE, GADVASU, Ludhiana on December 3, 2020.
118.	Dr. P. Singh. Integrated Fish Farming. Webinar series by DEE, GADVASU, Ludhiana on January 21, 2021.
119.	Dr. V. I. Kaur. Fish-cum-pig integrated farming system – practices and economics. In KVK scientist workshop on Recent advances in livestock farming to enhance farm productivity by DEE, GADVASU on February 04, 2021.
120.	Dr. P. Singh. Best management practices for shrimp farming. In farmers meet organized by Growel Feeds Private Limited, Shri Mukatsar Sahib on March 07, 2021
121.	Dr. V.I. Kaur. Fish Farming. In online three months training course on integrated crop production for young farmers of Punjab by Skill Development Centre, DEE, PAU, Ludhiana on March 15, 2021.
122.	Dr. S. Sivakumar. Advances in process technologies for fat-rich dairy products. In Online training of master trainers on fat and oilseed processing by ICAR-CIPHET, Ludhiana in collaboration with the Indian Institute of Food Processing Technology (IIFPT), Thanjavur (TN) on January 05, 2021.
123.	Dr. S.Sivakumar. Pragmatic approaches for veterinary graduates to start the business venture in milk processing and value addition at GBUA&T, Pantnagar on February 19, 2021.
124.	Dr. S. Sivakumar. <ol style="list-style-type: none"> 1. Equipment's and specifications of machineries in M & P processing theory Practical Aspects of Equipments and Specifications of Machineries in M& P Processing on March 01, 2021 2. Challenges and Innovations in Processing of fluid milk- Farm to Fork on March 04, 2021 3. Recent innovative approaches in manufacture of traditional dairy products scope and oppportunities on March 05, 2021. <p>In ODOP specific processing and value addition on Mil by Government of Odisha & OUAT, Bhubaneswar under PMFME Scheme.</p>

125.	Dr. S. Sivakumar. Up scaling women centric-dairy processing technologies by DST & NDRI, Karnal on March 30, 2021.
126.	Dr. V. Bansal. Value addition in milk and milk products. In online training by PAMETI, PAU on June 19, 2021 and ICICI foundation for inclusive growth on July 06, 2020.
127.	Dr. V. Bansal. Food safety in India with context to FSSAI focusing milk and milk products at PAMETI, Ludhiana on August 26, 2020.
128.	Dr. A. Sharma. Plant layout and maintenance, equipment and specifications of milk processing in online training by Punjab Agro on March 08-09, 2021.
129.	Dr. Gopika Talwar. Strategies for the selection of packaging materials and equipments/ machinery for packaging of dairy products in online training by Punjab Agro on March 08-09, 2021.
130.	Dr. A. Sharma. Dudh di pasteurization di mahtata ate bulk milk cooler, Dairy Da Muharat course by DEE, GADVASU, Ludhiana on March 26, 2021.
131.	Dr. Veena N. Concept of laboratory accreditation and implementation in online lecture by Deptt. Of LPT, OUAT, Bhubaneswar on March 01, 2021.
132.	Dr. H. Panwar. Antimicrobial resistance in food/dairy: significance, concerns and possible mitigation by antimicrobial peptides. In e-symposium on Biotechnological approaches in animal research and disease diagnosis by Skill Development and Training cell, CODST, Warud (Pusad) on February 11, 2021.
133.	Dr. V.P. Singh. Role of dairy sector in making Indian agriculture self-reliant. In workshop on Indian economy self-reliant: challenges and opportunities by Teaching Learning Centre, Central University of Punjab, Bathinda from March, 27-31, 2021.
134.	Dr. S. Singh. 1. Feasibility of ZTD in Southern India with the experience of IGP. ICAR-CIAE Regional Centre, Coimbatore, Tamil Nadu on August 25, 2020. 2. Crop Biofortification: a sustainable way to alleviate malnutrition in Rashtriya Poshan Maaha 2020 at KVK, Barnala on September 17, 2020. 3. In-situ crop residue management at KVK, Mohali on October, 19, 2020. 4. Sustainable farming at YS School Barnala on February 25, 2021. 5. Direct seeded rice production technologies at Department of Agriculture and Farmers' Welfare, Barnala on April 07, 2021.
135.	Dr. P. Gupta. 1. Importance of greens for women & children at KVK, Tarn Taran on September 21, 2020. 2. Women startup: A way forward at GBPUA & T, Pantnagar on October 22, 2020. 3. Post harvest management & processing of Turmeric at ATMA, SAS Nagar (Mohali) on March 21, 2021.
136.	Dr. Shasipal.

	<ol style="list-style-type: none"> Breeds of poultry and their importance; general management practices for poultry farming at KVK, Tarn Taran on September 18, 2020. Mastitis in dairy animals at Department of Agriculture, SAS Nagar, Mohali on February 23, 2021 and at Department of Dairy development Punjab on March 06, 2021.
137.	<p>Dr. V. Phulia</p> <ol style="list-style-type: none"> The modus operandi for doubling farmers' income on December 08, 2020 Special perspective on aquaculture, good management practices in carp culture- Part I and Part II on December, 15& 19, 2020 at GBPUAT, Pantnagar Sustainable approaches in fish farming to enhance fish farmers' income Rayat-Bahra University, S.A.S. Nagar on December 23, 2020.
138.	<p>Dr. M. Sharma. Turmeric cultivation at Agriculture Department, SAS Nagar, Mohali, on February 02, 2021.</p>
139.	<p>Dr. H. Kaur</p> <ol style="list-style-type: none"> Insect and disease management in organic farming on February 23, 2021. Pest Management in organic farming on February, 23, 2021. Pest Management in organic agriculture on March,30, 2021 at Department of Agriculture and Farmers Welfare, SAS Nagar (Mohali)
140.	<p>Dr Anil Kumar.</p> <ol style="list-style-type: none"> Crop residue management practices in Punjab at Amritsar College of Engineering & Technology, Amritsar on November 02, 2020. Vermicompost production, processing and application at KVK , Mohali on March 26, 2021.
141.	<p>Dr. P. K. Dhillon. Preparation of nutraceutical muffins and cookies at KVK, Mohali on February 17, 2021.</p>
142.	<p>Dr. S. Kumar. Recent advances in animal nutrition for intensive livestock developmental. ICAR- IGFRI, UAS Raichur and NADCL Jammu and Kashmir February 19, 2021</p>

Distinguished Visitors at Krishi Vigyan Kendras/RRTC, GADVASU

S. No.	Name and other details about the visitor	Date (s) of the visit
1.	Dr. Inderjeet Singh, Hon'ble Vice Chancellor, GADVASU, Ludhiana, Dr. H. K. Verma, Ex- DEE, GADVASU, Ludhiana, Dr. Rampal, DSW, GADVASU, Ludhiana, Dr. J. P. S. Gill, Director Research, GADVASU at KVK, Barnala	19.07.2020
2.	Dr. H. K. Verma, Ex- DEE, GADVASU, Ludhiana at KVK, Barnala	20.07.2020
3.	Deputy Commissioner, Barnala at KVK Barnala	01.10.2020

4.	Dr. Parkash Singh Brar, DEE, GADVASU, Ludhiana	06.10.2020
5.	Hon'ble Vice Chancellor Dr. Inderjit Singh GADVASU, Ludhiana Dr. K. S. Sandhu, Dean Fisheries College GADVASU and Dr, Mandeep Singh Bal at KVK, Barnala.	26.10.2020
6.	Director PAMITI, PAU, Ludhiana	29.10.2020
7.	Dr. Rajbir Singh, Director, ICAR-ATARI, Zone-I, Ludhiana & Director PAMITI, PAU, Ludhiana	30.10.2020
8.	Hon'ble Vice Chancellor, GADVASU, Ludhiana	14.12.2020
	Dr. Parkash Singh Brar, DEE, GADVASU, Ludhiana	
	Dr. Rajbir Singh, Director, ICAR-ATARI, Zone-I, Ludhiana	
	Dr. Nachiket Kotwaliwale, Director ICAR- CIPHET, Ludhiana	
9.	Hon'ble Vice Chancellor, GADVASU, LDH visited KVK farm Majra (Mohali)	12 .12.2020
10.	Dr. Inderjit Singh, Dr. Parkash Singh, DEE, Ludhiana visited KVK farm Majra (Mohali), Pig farm (S. Attar Singh, Kishanpura and S. Gyan Dairy farm (Gadanga)	12 .12.2020
11.	Dr. Inderjit Singh, and Dr. Parkash Singh, DEE, GADVASU Education, Ludhiana at KVK, Mohali	01.03.2020
12.	Dr. F. Tuteja, OIC, CIRB and Dr. Sudeep Dhaliwal, SMO Patti, Dr. Inderjeet Singh, Vice-Chancellor, Dr. Harinder Pal Singh, DDAH , Dr. Harmanpreet Singh, Area Coordinator, Nili Ravi Project, Dr. Tejbir Singh Randhawa, Project Coordinator, Nili Ravi PS Project , Dr. Harveen Kaur, DDAH, Ferozepur, Dr. Amarbeer Singh, V.O. Thatha Sahib, Dr. Jaswant Singh, V.O. Ferozepur, Dr. Lovedeep Singh, V.O. Zira, Dr. Devinder Singh, V.O. Gurdaspur, Dr. Sehajbir Singh Randhawa, V.O. CVH Majitha visited at KVK, Tarn Taran	17.03.2021
13.	MLA of Mukerian, Smt. Indu Bala visited RRTC, Talwara	09.07.2020
14.	Sh. Sunil Kumar Jakhar, President, Punjab Pradesh Congress Committee, S. Manpreet Singh Badal, Hon'ble Finance Minister, Punjab and Sh. Vijay Inder Singla, Hon'ble Public Works Department and Education Minister, Punjab visited at Sappanwali for the laid foundation stone of Multi-Specialty Veterinary Hospital and Regional Research-cum-Training Centre (MSVH &RRTC), Fazilka	12.01.2021
15.	Dr. Harish Nayyar, Special Secretary, Agriculture, Department of Agriculture & Farmer Welfare, Government of Punjab visited KVK, Booh	15.02.2021



Sh. Sunil Kumar Jakhar, President, PPCC, S. Manpreet Singh Badal, Finance Minister and Sh. Vijay Inder Singla, Minister Public Works Department inaugurated MSVH & RRTC, Fazilka



Dr. Harish Nayyar, Special Secretary, Agriculture, Department of Agriculture & Farmer Welfare, Government of Punjab visited KVK, Tarn Taran



Distinguished visitors at KVK, Barnala



Distinguished visitors at KVK, Mohali



Inauguration of Animal Science Lab and Bee Keeping Mini Mission-1 under National Bee Keeping and Honey Mission by Hon'ble VC at KVK, Tarn Taran



Smt. Indu Bala, MLA, Mukerian at RRTC, Talwara

DISTINGUISHED VISITORS AT GADVASU, LUDHIANA

S. No.	Name and other details about the visitor	Date (s) of the visit
1.	Sh. O.P. Soni, Cabinet Minister, Medical Education and Research Sh. Bharat Bhushan Ashu, Cabinet Minister, Food, Civil Supplies and Consumers Affairs visited at GADVASU for inauguration of COVID-19 Viral Testing Laboratory	10.08.2020
2.	Dr. Rajiv Siwach, Chief General Manager , NABARD visited at university farm	28.10.2020 & 16.03.2021
3.	Team from Punjab State Agriculture Production Planning Committee with Sh. Rana Gurjit Cabinet Minister	01.04.2021
4.	Visitor from Haryana Govansh Anusandhan Kendra, Pinjore	18.08.2021
5.	Dr N K Rakha, Director IIT, Ropar	9-10.03.2021
6.	Dr Aruna T Kumar, Former Editor of Indian journal of Animal Science.	12 .03.2021
7.	Dr. Pushpendra P. Singh along with team of scientists from IIT, Ropar visited COF for an Interdisciplinary Brain storming meet on 'Cyber-Physical Systems	05.02.2021
8.	Members of Board of Management, GADVASU visited University Campus	19.02.2021
9.	Col D.V. Nehra, CO, R&V, NCC unit	17.12.2020
10.	<ul style="list-style-type: none"> •Dr Sushovan Roy, Professor & Head, Department of Medicine, Durg Anjora •Dr. Munmum Sharma, Professor cum Head, Department of Anatomy, Veterinary College, Khanapara, Guwahati •Dr. A V Kahnvilkar, Associate Professor, Department of LPM, Krantisinh Nana Patil College of Veterinary Science, Shirwal, Pune, Maharastara as VCI team members visited College of Veterinary Science, Rampura Phul 	04-05.03.2021
11.	Shri. V.K. Janjua, IAS, Additional Chief Secretary, Department of Animal Husbandry, Dairy Development & Fisheries, Punjab	06.08.2021



Dr. Pushendra P. Singh and Scientists from IIT, Ropar at Fish Farm



Dr. Rajiv Siwach, Chief General Manager, and team members of NABARD



Sh. O.P. Soni, and Sh. Bharat Bhushan Ashu, Hon'ble Cabinet Minister(s) Inaugurated COVID-19 Viral Testing Laboratory



Shri. V.K. Janjua, IAS, Additional Chief Secretary, Department of Animal Husbandry, Dairy Development & Fisheries



Distinguished visitors interacting with the students of the COABT, GADVASU



Dr. Inderjeet Singh, Vice-Chancellor handing over signed copies of MoU to Dr. Gill and Sh. Mittal



Col D.V. Nehra, CO, R&V, NCC unit at Rampura Phul

National and International Linkages

a) National Partners

(i) ICAR

- ICAR-NRC on Pig, Guwahati, Assam - under the AICRP research project on pig
- ICAR-CIRG, Makhdoom, Mathura - under the AICRP research project on goats
- ICAR- Indian Veterinary Research Institute DBT sponsored project under canine research centre and network (CRCN)
- ICAR-CIPHET, Ludhiana - Member of Scientific Advisory Committee of KVK and resource person in training programmes; Research & Training

(ii) Punjab Government Departments/Agencies

- PGIMER, Chandigarh for patent drug for testing dogs for its wound healing ability
- PGIMER, Chandigarh collaborative project on use of Goats as animal model for developing shunts for patients undergoing kidney dialysis
- Punjab Dairy Development Board – for training of KVK Scientists as resource persons
- Department of Fisheries, Punjab – Collaboration for Extension Activities and Training
- Department of Horticulture, Punjab - Collaborative Extension Activities related to horticulture
- Punjab Agricultural Management & Extension Training Institute (PAMETI), PAU, Ludhiana - Collaborative Training Programs for Farmers

and Students

- State Department of Agriculture – Collaborative Extension Activities (Trainings, Camps, Melas)
- Soil conservation, Tarn Taran - Member of Scientific Advisory Committee of KVK
- PAU, Ludhiana - Member of Scientific Advisory Committee of KVK, Frontline Demonstrations, Resource Persons for Trainings; PG/Ph.D. Research & Teaching
- Integrated Child Development Scheme (CDPO), Tarn Taran (Different blocks) – Training of Anganwadi workers
- Farm Advisory Service Scheme (FASS) - KVK Scientists as resource persons for various extension activities in coordination with State Department of Agriculture & ATMA
- ATMA/NMSA - KVK Scientists trainings as resource persons for extension activities
- Punjab National Bank Farmers Trainings Center, Maharaj, Bathinda (Rampura Phul)

(iii) Leading National Institutes

- National Institute of Technology Rourkela - MoU for Research Collaboration under Impacting Research Innovation and Technology (IMPRINT), Scheme of the Ministry of Human, Resource Development, Government of India
- National Institute of Technology (NIT), Rourkela for collaborative research work on development of skin patches, impregnated with stem cells secretome for the problematic wounds of dogs and bioinformatics of production diseases of livestock animals
- IVRI, Izatnagar; RAJUVAS Bikaner; DUVASU Mathura and TANUVAS Chennai - All India Network Program on Diagnostic Imaging and Management of Surgical Conditions in Animals
- Fisheries ICAR Institutes (CIFRI, CIFA, CIBA, DCFR, CIFT, CMFRI, MFEDA) - Educational Tour of UG (B.F.Sc.) students and PG, PhD and Faculty Research
- NIVEDI, Bengaluru Karnataka - under the project On Animal Disease Monitoring & Surveillance
- Agriculture Skill Council of India - Skill Development Trainings to farmers and rural youth

- NABARD - Member of Scientific Advisory Committee of KVK and resource person in training programmes; Collaborative Research Project and Training Programs
 - National Bureau of Fish genetic Resources (NBFGR), Lucknow - Collaborative Research Projects
 - Rajiv Gandhi Center for Aquaculture (RGCA), Chennai, Tamil Nadu - Procurement of certified fish/shrimp seed
 - Center for Development of Advanced Computing (C-DAC), MeITY, Mohali under Research and Training
 - Ornamental Fisheries Research and Training Institute
 - IIT , Delhi : Collaboration for testing of suture materials
 - National Institute of Technical Teachers Training & Research (NITTTR), Chandigarh for Collaborative Research Projects.
 - Central Council for Research in Ayurvedic Science, Ministry of Ayush Collaborative Research centre for veterinary Ayurveda.
 - IIT, Ropar for apprenticeship of students
 - IIT, Guwahati and college of Veterinary Science, Khanapara: for collaboration of research work under DBT and DBT-NER project
- (iv) Private business houses/ Corporate Houses**
- Small Animal Clinician's Association(SACA) Chandigarh - conducting continuing education programs for small animal clinicians
- b) International Partners**
- Polar Genetics Inc, Leduc, Alberta, Canada
 - The University of Sydney and University of Tasmania, Australia - Collaborative project development under Australian Alumni Grant Scheme
 - Department of Animal Nutrition & Management, Faculty of Veterinary Medicine & Animal Science, Swedish University of Agricultural Sciences (Slu), Sweden – Collaboration for Ph.D. Research

Research Publications (National and International) Review Articles

1. Agarwal, S., Singh, T., Verma, P., Udheiya, R., Mohindroo, J., Umeshwori, N., & Kumar, A. (2020). Comparative evaluation of minimally invasive and mini-incision bone plating techniques for the repair of radius fractures in dogs. *The Pharma Innovation Journal*, 9(4), 164-170. (5.03)
2. Ahmed, A., Deshmukh, S., Banga, H. S., & Sodhi, S. (2020). Assessment of antigenic specificity of polyclonal antisera raised against *Avibacterium paragallinarum* by ELISA. *Veterinary and Animal Science*, 9, 100119. <https://doi.org/10.1016/j.vas.2020.100119> (7.82)
3. Ahmed, A., Deshmukh, S., Banga, H. S., & Sodhi, S. (2020). Assessment of antigenic specificity of polyclonal antisera raised against *Avibacteriumparagallinarum* by ELISA. *Veterinary and Animal Science*, 9, 100119. <https://doi.org/10.1016/j.vas.2020.100119> (4.41)
4. Anupama, S., Gill, J. P. S., Banga, H. S., & Bedi, J. S. (2020). Study of genotoxicity, histopathological and biochemical alterations induced by lindane in Swiss Albino Male mice. *Journal of Experimental Zoology, India*, 23(1), 301-312. (5.51)
5. Aparna, Kansal, S. K., Hundal, J. S., Verma, H. K., & Singh, J. (2020). Acquisition and retention of knowledge about animal feed technologies in veterinary medical education. *Current Journal of Applied Sciences and Technology*, 39(21),104-111. <https://doi.org/10.9734/cjast/2020/v39i2130828>. (4.71)
6. Arpit, Chandra, M., Kaur, G., Narang, D., & Arora, A. K. (2020). Studies on antimicrobial resistance in *Escherichia coli* isolated from broiler. *Indian Journal of Poultry Science*, 55(3), 239-242. <https://doi.org/10.5958/0974-8180.2020.00035.5>. (5.87)
7. Bakshi, M. P. S., Hundal, J. S., & Wadhwa, M. (2020). In vitro evaluation of kinnow waste as substitute of cereal grains in the concentrate mixture and empty pea pods as that of berseem hay in total mixed ration for livestock. *Indian Journal of Animal Sciences*, 90 (3), 439–445. (6.28)
8. Bansal, V., & Mishra, S. K. (2020). Reduced-sodium cheeses: implications of reducing sodium chloride on cheese quality and safety. *Comprehensive Reviews in Food Science and Food Safety*, 19(2), 733–758. <https://doi.org/10.1111/1541-4337.12524>. (15.92)
9. Bedi, J. S., Dhaka, P., Vijay, D., Aulakh, R. S., & Gill, J. P. S. (2020). Assessment of air quality changes in the four metropolitan cities of India during COVID-19 pandemic lockdown. *Aerosol and Air Quality Research*, 20(10), 2062-2070. <https://doi.org/10.4209/aaqr.2020.05.0209>. (9.13)

10. Begill, N., Bhople, B. S., & Kumar, A. (2020). Microbial population and beneficial properties of rhizospheric soil as influenced by different amendments in various land use systems: A Review. *International Journal of Current Microbiology and Applied Sciences*, 9(4),1584-1600. <https://doi.org/10.20546/ijcmas.2020.904.186>. (5.38)
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