



28th Annual Report 2016 - 17

Pulikulam breed
of cattle registered by
Breed Registration
Committee of ICAR - NBAGR
Accession No.
INDIA_CATTLE_1800_PULIKULAM_03035



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**Tamil Nadu Veterinary and
Animal Sciences University**

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PREFACE



Livestock sector plays a pivotal role in the economy of rural India. There are about 88.14 lakh white cattle, 7.81 lakh buffaloes, 47.87 lakh sheep, 81.43 lakh goats, 1.8 lakh pigs and 1173.4 lakh poultry as per 19th Livestock Census in Tamil Nadu. Livestock sector contributes to 4.34 % of Gross State Domestic Product (GSDP) and 36.26% to state GDP of Agriculture and allied activities. The contribution of livestock to meet the protein requirements of the people is significant. Milk, meat, and eggs are the major food items contributed by the livestock and in addition skin, wool, fibre and manure are obtained. The estimated milk production, which was 54.74 lakh Metric Tonnes (LMT) during 2005-06 in Tamil Nadu has increased to 75.56 LMT during 2016-17. The estimated meat production (including poultry meat) which was 1,18,600 MT during 2005-06 has increased to 5,72,939 MT during 2016-17. Likewise, the estimated egg production which was 62,225 lakh numbers during 2005-06 has increased to 1,66,824 lakh numbers during 2016-17.

To enhance the production and productivity of livestock and to meet the existing protein demand, several initiatives and steps are being taken up by TANUVAS in the area of Education, Research and Extension. This University has metamorphosed into a nationally and globally recognized centre of higher education in the field of veterinary and animal sciences and food sciences. This University has three faculties namely Veterinary and Animal

Sciences, Basic Sciences and Food Sciences, six constituent colleges - four veterinary colleges at Chennai, Namakkal, Orathanadu and Tirunelveli, one College of Food and Dairy Technology at Koduvalli, Chennai and one College of Poultry Production and Management at Hosur. The University has a strong research base. There are two directorates on animal production and animal health with their constituent laboratories and farms and a separate research directorate to oversee the research activities. In addition a directorate of clinics to monitor the clinical activities and two directorates namely directorate of extension education and directorate of distance education to monitor the extension activities functioning under the university. There are twelve research stations and twelve research laboratories carrying out research in specific areas like animal health, animal production, veterinary biologicals, zoonosis, livestock feed analysis, disease diagnosis and surveillance, pharmaco-vigilance etc

TANUVAS has participated in ranking scheme introduced by ICAR and NIRF of MHRD. The University has secured 38th rank among Universities and 60th in the overall Institutional ranking. This year the University has also received ICAR award for securing the most number of Junior Research Fellowship (20 Nos).

I am also glad to inform that in pursuit of excellence in quality assurance in delivery of



laboratory services to farmers, two premier labs of TANUVAS namely Phamaco-vigilance Lab for Animal Feed and Food Safety at Madhavaram and Animal Feed Analytical and Quality Assurance Lab at Namakkal have been accredited by National Accreditation Board for Laboratories (NABL). The Department of Livestock Products Technology (Meat Science) MVC, Chennai, one of the AICRP centres has won the ICAR-Chaudhary Devi Lal outstanding All India Co-ordinated Research Project Award.

The University ensures that it significantly contributes to the society and the farmers in the form of products, processes and packages of practices. The significant contributions worth mentioning during the reporting period are:-

- ✳ Seven MoUs have been signed between TANUVAS and stakeholders of which four were signed for transfer of TANUVAS products with Genomix Healthcare India Pvt. Ltd., Hyderabad, Venkateshwara Hatcheries Ltd., Pune, Brilliant Bio-Pharma Ltd., Hyderabad (2Nos.), two MoUs have been signed for research on documentation on “Use of plants in animal practice” and on “Livestock genome” with Central Council for Research in Siddha (CCRS), Ministry of AYUSH and Genome Life Sciences, Chennai and one with Chittagong Veterinary and Animal Sciences University, Chittagong, Bangladesh for academic and educational co-operation and research collaboration.
- ✳ A new GLP – Clean Room Laboratory having ISO class 7/8 standards was commissioned

under the Department of Biotechnology (DBT) – TANUVAS partnership programme on “Translational Research Platform for Veterinary Biologicals (TRPVB)” a “first of-its-kind” unique facility among academic institutions of India.

- ✳ TRPVB, TANUVAS developed an immunosorbent assay (ELISA) kit, titled “Bru Alert Kit” for the diagnosis of Brucellosis in man and animals.
- ✳ Kodi Adu goat and Chevadu sheep of Tamil Nadu were registered as Breeds by Indian Council of Agricultural Research – National Bureau of Animal Genetic Resources (NBAGR).
- ✳ A total of 59 farm and utility equipments were designed and developed at University Innovation and Instrumentation Centre (UIIC) during the year 2016-2017.
- ✳ Two mobile applications on “TANUVAS Training Calendar” with modules on event creation, voice call, text SMS, adding member, grouping members and hierarchical model and “TANUVAS Feed Calculator” with modules on cow weight calculation and feeding chart and the same were hosted for public access.

The contribution of the Heads of Institutes, Research stations and outreach centres and their staff members in providing the necessary inputs and the Editorial team of the Directorate of Research in compiling and editing the Annual report are highly appreciated. I hope and reckon this Annual Report would reflect the true performance of the multi-faceted activities of the University.

VICE-CHANCELLOR

Tamil Nadu Veterinary and
Animal Sciences University
Chennai – 600 051



Acknowledgement



I am immensely pleased and privileged in furnishing this annual report for the year 2016-17. The support extended by the Board of Management and other statutory committees of the University for the progress of this institution is immense. The whole hearted support of authorities from the Government of India and Tamil Nadu is highly acknowledged.

The livestock farmers are confronted with varietal problems in the management of livestock and poultry and it is the need of the hour to find amicable solutions by undertaking research on problem areas. The scientists of TANUVAS and the young aspiring research scholars were motivated to submit research projects to National and International funding agencies and 32 new projects / schemes to the tune of Rs.2634 lakhs were obtained from various funding agencies during the current year.

The University is currently carrying out 148 research projects worth Rs. 13,020 lakhs funded by agencies like Government of Tamil Nadu, Indian Council of Agricultural Research, NADP (RKVY), Department of Science and Technology, Department of Biotechnology, Department of Animal Husbandry, Dairying and Fisheries of Government of India, Ministry of Food Processing Industries, NABARD and other private funding agencies.

The Government of Tamil Nadu is providing liberal grants for the research initiatives of the University, which are focussed towards the upliftment of farmers, landless labourers and unemployed youth. The Government of Tamil Nadu has sanctioned nine schemes to the tune of 1651.11 lakhs. One of the important scheme sanctioned is the Establishment of Ethno Veterinary Herbal Product Research and Development at Thanjavur to the tune of Rs. 1,373 lakhs under Tamil Nadu Innovation Initiatives (TANII). Tamil Nadu Livestock Development Agency has also provided Rs. 53.49 lakhs to undertake research of native cattle breeds of Tamil Nadu namely Pulikulam and Bargur. The research findings are transformed into innovative technologies and commercialised for the betterment of livestock and the associated farming community.

The University is highly thankful to various National, International and Private funding agencies in reposing faith in the research aptitude of the scientists of the university which has given an impetus to the research frontier of the University. I thank all the staff members who were involved in the preparation of annual report for their sincere efforts in generating the data and compilation.

DIRECTOR OF RESEARCH
Tamil Nadu Veterinary and
Animal Sciences University
Chennai – 600 051



**Bargur breed
of cattle registered by
Breed Registration
Committee of
ICAR - NBAGR**

Accession No.
INDIA_CATTLE_1800_BARGUR_03003

INTRODUCTION

HISTORICAL PERSPECTIVE

Veterinary Education in Chennai began in 1876 in an Agricultural School at Saidapet offering diploma and certificate courses. Later In 1902, sensing the need for veterinarians, Mr. Fuller the then Secretary to Government of India, Civil Veterinary Administration advised the Government of Madras to commence classes in Veterinary Education.

Major W.D. Gunn who was serving as Officer in charge of Hissar Cattle farm was deputed to Civil Veterinary Department, Madras to carry out the task of establishing a Veterinary college at Madras. The Madras Veterinary School



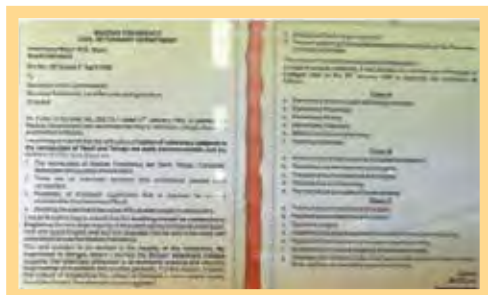
was opened in the year 1903 in a rented building known as "Dobbin Hall" situated about 175 yards from Society for Prevention of Cruelty to Animals (SPCA) on a monthly rent of Rs.60/- with Major W.D.Gunn as the part-time Principal. The college started

offering a three year course - Graduate of Madras Veterinary College (GMVC) with 20 students on roll as on 01.10.1903.

Major W.D. Gunn, Superintendent, Civil Veterinary Department of Madras requested the Secretary to Commissioner, Revenue Settlement Land Records and Agriculture to allot a land in a more central location nearer to SPCA instead of Saidapet. Further, he also added that the course may be of three years duration with the mode of instruction being English instead of Tamil or Telugu.

The Government of Madras accepted the proposal and accorded permission to locate the Veterinary Institute at Vepery and to name the Institute as Government Veterinary Institute. Since the rented building could not be provided with all facilities, the Government decided to construct a permanent building on Vepery High Road. Upon construction of the red brick building, with terrace roof, high arches and minarets in 1904 the Madras Veterinary School moved to its new premises. The





exposed red brick building, a striking example of Indo-Saracenic architecture was designed by Mr. Henry Irwin and built by Mr. P. Masilamony Moodaliar. Based on the recommendation of the Royal Commission on Agriculture, the college was upgraded to impart degree in veterinary science and was affiliated to the University of Madras

in 1935, the first Veterinary College in India to be affiliated to a University. The University of Madras also recognized the College as a Centre for Postgraduate education. In view of the robust growth of the institution, the Government of Madras decided to bifurcate and constitute a separate Department of Veterinary Education and Research and transferred certain units hitherto under the control of Animal Husbandry Department to the Department of Veterinary Education and Research (DVER). Upon bifurcation, Madras Veterinary College, Livestock Research Station at Kattupakkam, Poultry Research Station at Nandanam and Sheep Breeding Research Centre at Sandynallah were brought under the control of DVER.



Subsequently with the formation of Tamil Nadu Agricultural University (TNAU), MVC became a constituent college of TNAU in 1976. Realizing the need for another Veterinary College, the Government of Tamil Nadu opened another College at Namakkal in 1985 which also became a constituent College of TNAU.

Subsequently, realizing the importance of education and research in animal and fisheries sciences, the Government of Tamil Nadu announced a University exclusively by the name of Tamil Nadu Veterinary and Animal Sciences University

(TANUVAS), the first veterinary and animal sciences university in South East Asia on 20th September 1989 with headquarters at Chennai for the development of Veterinary and Animal Sciences and for furthering the advancement of learning and prosecution of research in Veterinary and Animal Sciences.



Upon formation of TANUVAS, the two Veterinary Colleges at Chennai and Namakkal and the Fisheries College at Thoothukudi became constituent colleges of TANUVAS. In addition the Research stations at Kattupakkam, Sandynallah, Nandanam and Pottaneri; Outreach centres at



Coimbatore, Dharmapuri, Erode, Nagercoil, Namakkal, Pudukottai, Rajapalayam, Thanjavur, Tirunelveli, Tiruppur, Trichy and Vellore; Farmers Training Centre at Kancheepuram and KVK at Kattupakkam became constituent units of TANUVAS.

Veterinary Education which was started as one of the subject in the Agricultural School at Saidapet in 1876 has over the years grown by leaps and bounds and presently Tamil Nadu Veterinary and Animal Sciences University has become the number one Veterinary University in the country and presently has six constituent colleges, twelve instructional/research stations, 12 laboratories and 26 outreach centres within its

ambit. The following are the mandate of Tamil Nadu Veterinary and Animal Sciences University:

- ✧ To impart quality education to undergraduate, post-graduate and doctoral students in the faculty of Veterinary and Animal Sciences and Food Sciences
- ✧ To carry out research in livestock and poultry production, protection and value addition of products
- ✧ To disseminate knowledge on important technologies to line departments and farming community for the sustenance and growth of livestock and poultry in the State through extension programmes.



HIGHLIGHTS OF THE YEAR 2016 - 17



TANUVAS secured the first position in the category of Veterinary and Fisheries Sciences at ICAR in PG Admission with its alumni bagging 20 Junior Research Fellowships (JRF).

- ❖ TANUVAS secured 38th rank in the National Institutional Ranking Framework (NIRF) released by the Ministry of Human Resource and Development (MHRD), Govt. of India.
- ❖ Animal Feed Analytical and Quality Assurance Laboratory (AFAQAL), Namakkal and Pharmacovigilance Laboratory for Feed and Food Safety (PLAFFS), Chennai were accredited by NABL for chemical testing in Animal feed and Agricultural products in accordance with ISO/IEC 17025:2005 for a period of two years from 2017.
- ❖ ICAR, New Delhi has awarded “Chaudhary Devi Lal Outstanding AICRP Award” to the AICRP on Post - Harvest Engineering and Technology functioning at Madras

Veterinary College, Chennai in connection with its best performance.

- ❖ Breed Registration Certificates were awarded for Kodi Adu goat and Chevaadu sheep of Tamil Nadu by ICAR-NBAGR.





- ✳ In commemoration of 25 years of existence of TANUVAS, the Silver Jubilee Valedictory function was held at MVC on 11.11.2016
- ✳ TANUVAS started a new certificate course on Veterinary Nursing Assistant on 26.12.2016 at Regional Research and Training Centre, Pudukkottai. A total of 50 candidates registered for the course.
- ✳ The Centre for Computer Networking and Data Services (CECONDS) was established on 11.01.2017 at TANUVAS headquarters Madhavaram Milk Colony, Chennai and was inaugurated by Dr.S.Thilagar, Vice-Chancellor, TANUVAS.
- ✳ A "Food Testing Laboratory for Meat and Meat Products" established at Madras

Veterinary College with financial assistance from Ministry of Food Processing Industries, Government of India, was inaugurated by Dr. K. Alagusundaram, Deputy Director General (Agri. Engineering), Indian Council for Agricultural Research on 21.01.2017.

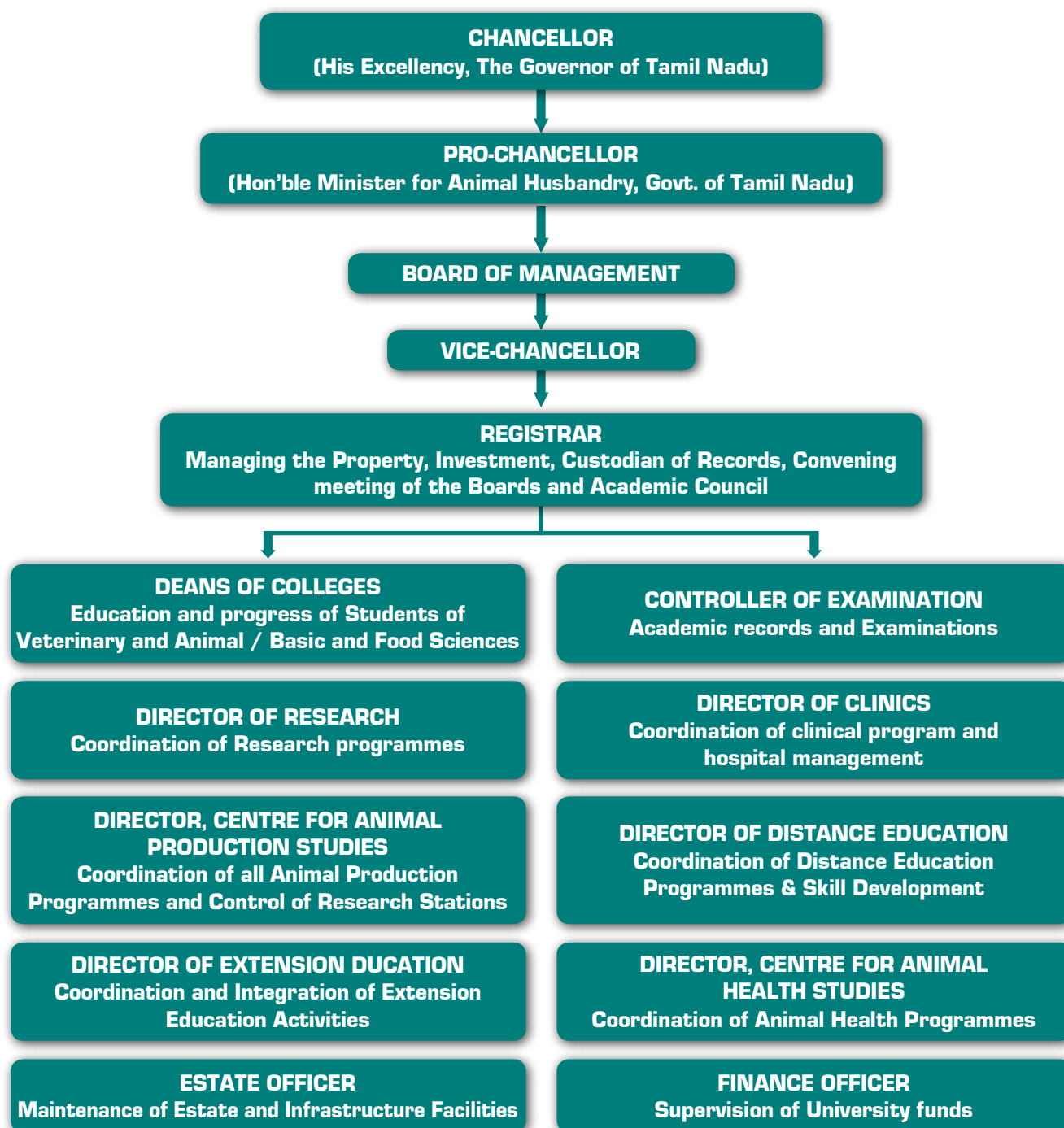


**Umblachery breed
of Cattle registered by
Breed Registration Committee
of ICAR - NBAGR**

Accession No.
INDIA_CATTLE_1800_UMBLACHERY_03029



ORGANOGRAM





Policy making Bodies

BOARD OF MANAGEMENT

Overall Administration

PLANNING BOARD

Planning and developing the standard of education and research

ACADEMIC COUNCIL

General regulations of teaching and examination

RESEARCH COUNCIL

Planning research activities

EXTENSION EDUCATION COUNCIL

Planning Extension Education Activities

BOARD OF STUDIES

(VETERINARY FACULTY / BASIC SCIENCES /
FOOD SCIENCES)

Curriculum framing for undergraduate /
postgraduate programmes / Diploma / PG
Diploma programmes



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Vice-Chancellor and Chairman, TANUVAS

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Principal Secretary to Government, Animal Husbandry, Dairying and Fisheries Department, Govt. of Tamil Nadu, Chennai

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Secretary to Government, Finance Department, Govt. of Tamil Nadu, Chennai

Th.S.S. Poovalingam

Secretary to Government, Law Department, Govt. of Tamil Nadu, Chennai

Th. T. Abraham, I.A.S.

Director of Animal Husbandry and Veterinary Services,
Govt. of Tamil Nadu, Chennai

Dr.P.Mathialagan

Registrar and Member Secretary, TANUVAS, Chennai

(Class-II Other Members)

Prof. (Dr.) Rishendra Verma

Ex-Joint Director, IVRI&NDRI, Rajendra Nagar, Izat Nagar, Barielly, U.P.

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Elleys Nagar (P), Dharapuram (T), Tiruppur

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Managing Director, Surabhi Hatcheries and Surabhi Breeding Farms, G2C/12,
Puliakulam Road, Coimbatore

Tmt. Krishnammal Jegannathan

Secretary, Land for Tillers Freedom (LAFTI), Vinobha Ashram, Kuthur,
Nagapattinam

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Director, Central Institute of Brackishwater Aquaculture, Chennai

Dr. G. Periyasamy

Veterinary Assistant Surgeon, Mobile Veterinary Dispensary, Veterinary Hospital
Campus, Kallakurichi

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Madurai - Rameswaram Road, Paramakudi

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Additional Director (Retired), No.31/31, CMS Nagar, Cumbum, Theni District

Dr. M. Sundaralingam

379/A, 1st Main Road, Natesan Nagar, Virugambakkam, Chennai – 600 092



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Vice-Chancellor and Chairman,
TANUVAS, Chennai

Dr.P.Mathialagan

Registrar and Member Secretary,
TANUVAS, Chennai

Class - I Ex-officio Members

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Principal Secretary to Government,
Animal Husbandry, Dairying and
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Director of Animal Husbandry and
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Dean, Madras Veterinary College,
Chennai

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Dean, Veterinary College and
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Dean, Veterinary College and
Research Institute, Orathanadu

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Dean, Veterinary College and
Research Institute, Tirunelveli

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Chennai

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Dean, College of Poultry Production
and Management, Hosur

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Dean, Faculty of Basic Sciences,
Madras Veterinary College, Chennai

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Chennai

Dr.R.Jayaprakash

Director of Clinics, Madras Veterinary
College, Chennai

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Director of Extension Education,
TANUVAS, Chennai

Dr.S.A.Asokan

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Nandanam, Chennai

Dr.P.I.Ganesan

Director, Centre for Animal Health
Studies, TANUVAS, Chennai

Dr.V.Ramesh Saravana Kumar

Director, Centre for Animal
Production Studies, TANUVAS,
Chennai



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Professor, Dept. of Livestock Products Technology (Meat Science), MVC., Chennai

Dr. Thanga Tamil Vanan

Professor, Dept. of Livestock Production Management, MVC, Chennai

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Professor and Head, Pharmacovigilance Laboratory for Animal Feed and Food Safety, MMC, Chennai

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Dr. K.Balasundaram

Professor and Head, Dept. of Veterinary Anatomy and Histology, VC&RI, Namakkal

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Director of Farms, Centre for Pig Production and Research, Mannuthy, Thrissur, Kerala

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Dean, Faculty of Veterinary Science, Sri Venkateswara Veterinary University, Tirupathi



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Thiru P. Balakrishna Reddy

Hon'ble Minister for Animal Husbandry, Government of Tamil Nadu
and Pro-chancellor

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Dean, Veterinary College and
Research Institute, Namakkal

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Dean, Veterinary College and
Research Institute, Orathanadu

Dr.S.A.Asokan

Director of Distance Education,
TANUVAS, Nandanam, Chennai

Dr.D.Baskaran

Dean
College of Food and Dairy
Technology, Koduvalli, Chennai

Thiru K.Velmurugan

Finance Officer, TANUVAS,
Chennai

Dr.K.Mani

Dean, College of Poultry Production
and Management, Hosur

Er. S. Kuppusamy

Estate Officer (i/c), TANUVAS,
Chennai



CONSTITUENT UNITS OF THE UNIVERSITY

Constituent colleges (6)

Madras Veterinary College, Chennai
 Veterinary College and Research Institute, Namakkal
 Veterinary College and Research Institute, Orathanadu.
 Veterinary College and Research Institute, Tirunelveli
 College of Food and Dairy Technology, Koduvalli
 College of Poultry Production and Management, Hosur

Instructional / Research Stations (12)

Post graduate Research Institute in Animal Sciences, Kattupakkam
 Sheep Breeding Research Station, Sandynallah
 Mecheri Sheep Research Station, Pottaneri
 Poultry Research Station, Madhavaram, Chennai
 Instructional Livestock Farm Complex, Madhavaram, Chennai
 Instructional Livestock Farm Complex, Namakkal
 Instructional Livestock Farm Complex, Orathanadu
 Instructional Livestock Farm Complex, Thirunelveli
 TANUVAS Regional Research and Education Centre, Pudukottai
 Institute of Animal Nutrition, Kattupakkam
 Central Feed Technology Unit, Kattupakkam
 Bargur Cattle Research Station, Bargur

Centre for Advanced Faculty Training (CAFT) (2)

Veterinary Clinical Medicine, Madras Veterinary College, Chennai
 Poultry Science, Veterinary College and Research Institute, Namakkal

Centre of Excellence Laboratories (12)

Animal Biotechnology and Immunology, Madras Veterinary College, Chennai
 Central University Laboratory, Madhavaram, Chennai
 Poultry Disease Diagnostic and Surveillance Laboratory, Namakkal
 Animal Feed Analytical and Quality Assurance Laboratory, Namakkal
 Pharmacovigilance Laboratory for Animal Feed and Food Safety, Chennai
 Avian Disease Laboratory, Thalaivasal
 Veterinary University Training and Diagnostic Centre, Madurai
 Zoonoses Research Laboratory, Madhavaram, Chennai
 Bacterial Vaccine Research Centre, Madhavaram, Chennai
 Viral Vaccine Research Centre, Madhavaram, Chennai
 Laboratory Animal Medicine, Madhavaram, Chennai
 Centralised Instrumentation Laboratory, MVC, Chennai
 Centralised Clinical Laboratory, MVC, Chennai

Outreach Centres

Veterinary University
 Training and Research
 Centres (20)

Coimbatore, Dharmapuri, Dindigul, Erode, Karur, Melmaruvathur, Nagercoil, Cuddalore, Rajapalayam, Salem, Thanjavur, Tiruppur, Tiruchirapalli, Vellore, Villupuram, Krishnagiri, Thiruvannamalai, Ramanathapuram, Nagapattinam and Perambalur

Farmers Training Centres (3)

Kancheepuram, Theni and Thiruvarur

Krishi Vigyan Kendras (3)

Kattupakkam, Kundrakudi and Namakkal

**Chevaadu breed
of Sheep registered by
Breed Registration Committee of
ICAR - NBAGR on 21.06.2016**

Accession No.
INDIA_SHEEP_1800_CHEVAADU_14041



RESEARCH

A total of 148 research projects, with a total outlay of Rs.13020 lakhs sponsored by various funding agencies, were in operation at TANUVAS during 2016-17 in the faculty of Veterinary and Animal Sciences, Basic Sciences and Food Sciences. The abstract of the same is furnished below:

RESEARCH PROJECTS IN OPERATION

| Sl. No. | Funding Agencies | No. of Projects | Budget (Rs. in lakhs) |
|--------------------|---|-----------------|-----------------------|
| 1 | Indian Council of Agricultural Research (ICAR), New Delhi (100% funding - 30 projects and 75% funding - 5 projects) | 35 | 1905.23 |
| 2 | Department of Biotechnology (DBT), New Delhi | 31 | 3689.25 |
| 3 | Department of Science and Technology (DST), New Delhi | 21 | 877.15 |
| 4 | Department of Animal Husbandry, Dairying and Fisheries, Government of India, New Delhi (National Livestock Mission; National Programme for Bovine Breeding and National Agricultural Development Programme) | 17 | 2357.61 |
| 5 | National Bureau of Animal Genetic Resources (NBAGR), Karnal | 1 | 58.5 |
| 6 | National Bank for Agricultural and Rural Development (NABARD), Mumbai | 10 | 38.45 |
| 7 | Government of Tamil Nadu (TANII, State Planning Commission, TNLDA and Other Tamil Nadu Government Agencies / Departments) | 12 | 3887.04 |
| 8 | Private Agencies M/s. Boehringer Ingelheim Pvt. Ltd, Mumbai (2) Ayurved Ltd, Katha Village, Himachal Pradesh (4) M/s. Indian Immunologicals Ltd., Hyderabad M/s.Saraswathy Foundations Ltd., Thoothukudi M/s. Mahindra Consulting Engineers Ltd., Madurai M/s. SAVAVET, Sava Health Care Limited, Pune M/s. Phyto Specialities Pvt. Ltd., Chennai M/s. Kemin Industries South Asia Pvt. Ltd., Chennai M/s. Himalaya Drug Company, Mekali, Bangalore M/s. Sihil Pharma, Chennai M/s. Hatsun Agro Production Ltd., Karapakkam, Chennai | 15 | 51.68 |
| 9 | International Agencies BBSRC, UK (2) IAEA, Austria SEPPIC, France UKIERI, India / UK M/s Evonik (SEA) Private Ltd, Singapore | 6 | 155.56 |
| Grand Total | | 148 | 13020.47 |



The following 31 new projects were sanctioned by different external agencies to the tune of Rs.1260.61 lakhs during 2016-17.

| Sl. No. | Title of the scheme | Name of the PI | Funding Agency | Budget (Rs. in lakhs) |
|---------|---|--------------------------|----------------|-----------------------|
| 1 | Understanding the epidemiology of <i>Culicoides</i> borne diseases (CBDs) in wild and domestic ruminants | Y.Krishnamohana Reddy | ICAR | 1.50 |
| 2 | Improving the livelihood security of farmers through technological interventions in Tiruvallur District of Tamil Nadu | N.K. Sudeep Kumar | ICAR | 95.54 |
| 3 | Establishment of climate resilient Integrated farming system | S. Sendur kumaran | ICAR | 3.00 |
| 4 | Tribal Livelihood through scientific livestock and poultry farming in Kolli hills of Namakkal district of Tamil Nadu | D. Kannan | ICAR | 26.60 |
| 5 | Development of rapid multianalyte diagnostic assay using antimicrobial peptides based nanoparticle for detection of food borne pathogens | S. Rathnapraba | DBT | 27.73 |
| 6 | Identification of Virulence factors associated with <i>Theileria annulata</i> infection in Indian cattle | P. Azhahianambi | DBT | 28.47 |
| 7 | Hybrid magnetic nanoparticle aptamer bio sensor for on-farm early pregnancy diagnosis in cattle | K.G. Tirumurugaan | DBT | 43.36 |
| 8 | Development, testing and evaluation of whole and recombinant antigen based ELISA for monitoring the health of laboratory animals Phase-II | R.P. Arvinth Babu | DBT | 52.45 |
| 9 | Evaluation of NKT cell based glycolipid adjuvants with rabies vaccines to improve immunogenicity and long-term protection | K.G. Tirumurugaan | ICMR | 7.23 |
| 10 | Validation of the safety and therapeutic efficacy of <i>Poorana chandirodayam</i> in Dimethylhydrazine dihydrochloride induced colon cancer in rats | S. Preetha | AYUSH | 65.29 |
| 11 | Cognitive deficits in canines, their impact on olfactory detection and cognitive optimization for sniffer dogs | P. Selvaraj | DST | 45.76 |
| 12 | Diffusion of novel food technologies for generations of healthy India | D. Baskaran | DST | 275.60 |
| 13 | Development of oral parvo virus vaccine combined with probiotic as spray | R.Mahaprabhu | DST | 39.22 |
| 14 | Production of health promoting eggs from backyard poultry in Namakkal district | M.Moorthy | DST | 13.13 |
| 15 | Popularisation of target selective anthelmintic technique among the sheep farmers in Tirunelveli District | A.Serma Saravana Pandian | NABARD | 5.98 |
| 16 | Technological interventions to improve productivity in sheep | P.Balachandran | NABARD | 9.67 |



| Sl. No. | Title of the scheme | Name of the PI | Funding Agency | Budget (Rs. in lakhs) |
|---------|--|---------------------|---|-----------------------|
| 17. | Development of mobile based technology transfer application system to empower the small ruminant farmers in Tirunelveli district | S.Senthil Kumar | NABARD | 5.80 |
| 18. | Assessment of Anthelmintic incorporated mineral block for sheep and goat production in backward blocks of Madurai district | V.Palanichamy | NABARD | 2.28 |
| 19. | Low cost engineering and processing technologies for value addition of milk | D.Baskaran | All India Council for Technical Education | 3.91 |
| 20. | Creation of Seed hub centre for Indigenous production of Quality seeds for pulses | K.Velmurugan | Directorate of Oilseeds Development | 150.00 |
| 21. | Establishment of Veterinary Forensic Sciences Laboratory | G.Sarathchandra | NADP | 77.00 |
| 22. | Establishment of Innovation and Instrumentation Centre to fabricate farm equipment/devices for sustainable livestock farming | P.Tensingh Gnanaraj | NADP | 75.20 |
| 23. | Strengthening of diagnostic modalities in Teaching Veterinary Hospitals of Tamil Nadu | S.Balasubramanian | NADP | 162.75 |
| 24. | Monitoring the performance of private AI workers trained through TNLDA | P.Selvam | TNLDA | 2.84 |
| 25. | Oestrus synchronization to improve fertility and productivity in cows and buffaloes of Tamil Nadu | A.Vijayarajan | TNLDA | 20.00 |
| 26. | Efficacy evaluation of nutritional supplements to dairy herd in relevance to milk production | A.Yasotha | M/s. Ayurvet India Ltd. | 0.85 |
| 27. | Efficacy of commercial products in optimizing milk production in crossbred dairy cows during summer stress | T.Sivakumar | M/s. Ayurvet India Ltd. | 0.67 |
| 28. | Study on growth performance of desi chicken fed with non conventional feed stuffs-Oats waste and Moong Dal | P.Tensingh Gnanaraj | M/s. Saraswathy Foundations | 1.00 |
| 29. | Validation studies on the efficacy of KemTRACE® Broiler and different organic trace minerals on the performance of commercial broilers | N.Arulnathan | Kemin Industries South Asia Pvt. Ltd. | 4.00 |
| 30. | Prevalence of Bovine trichomonosis in India using Inpouch TF Media | M.Raman | M/s. Sihil Pharma | 7.43 |
| 31. | Evaluation of VARAM (growth promoter) on the production performance of broiler chicken | D.Kannan | M/s. Hatsun Agro Product Ltd. | 6.35 |
| | Total | | | 1260.61 |



Apart from 148 Research projects, 73 plan projects with a financial outlay of Rs. 9,592.38 lakhs funded by Government of Tamil Nadu are also in operation. During this year, the State Government sanctioned a project entitled "Establishment of Ethno Veterinary Herbal Product Research and Development Centre" under Tamil Nadu Innovation Initiatives (TANII) to the tune of Rs. 1373 lakhs.

Research Collaborations

The scientific competence and excellence of the scientists of this University in conducting various research programmes led to fiscal support from various National and International organizations / agencies. The University maintains close liaison with various National and International Institutions / organizations to exchange information and to acquire current and advanced knowledge in the faculty of Veterinary and Animal Sciences, Basic Sciences and Food Sciences for dissemination.

Research Co-ordination and Management

TANUVAS is actively engaged in research activities through different research projects funded by National and International agencies as well as Government of Tamil Nadu. The Directorate of Research looks into strategic planning of research programmes, establishment of linkages with research organizations at national and international level, research monitoring through internal and external mechanisms and research documentation.

Research Project Approval Committee (RPAC)

The RPAC with the Director of Research as the Chairman, the concerned Deans and Directors and two technical experts as members periodically scrutinize all the research proposals submitted by the faculty members of TANUVAS and forward the proposals to various funding agencies with the approval of the Vice-Chancellor, TANUVAS.

During the reporting period, 49 RPAC meetings were conducted, in which 258 project proposals were approved and sent to various funding agencies for obtaining financial assistance to TANUVAS.

Research Council

The Research Council of TANUVAS is the policy making body on all the research activities carried out in the University with the Vice-Chancellor as its chairman and Director of Research as its Member-Secretary. The Research Council shall consider and make recommendations in respect of:

- ✧ Identifying thrust areas and formulation of research programmes and projects by various constituent units of TANUVAS in the field of Veterinary, Animal and Food Science with a view to promote effective cooperation
- ✧ Develop infrastructure facilities required for implementing research projects
- ✧ Linking teaching, research and extension education and facilitating the research workers
- ✧ Orienting research activities to meet the needs and wants of the farming community
- ✧ Analyze the reports of on-going/ completed research projects submitted by the scientists concerned
- ✧ Any other matter pertaining to Animal Husbandry/ Veterinary Sciences Research which may be referred by State / Board of Management / Vice-Chancellor or any other authorities of the University/Agencies

The Research Council meets once in a year to identify priorities, approve research activities and review the on-going research works in the University. During the reporting period, the 26th Research Council meeting was conducted on 10.03.2017 at Madras Veterinary College, Chennai. During the Research Council meeting, action taken on the recommendations of previous Research Council meeting was discussed. New projects sanctioned, reports on external funded projects completed were also discussed. The ongoing schemes / plan projects were reviewed and recommended for further continuance. In addition, thrust areas for future research were identified for implementation in the subsequent years.



**Kodi Adu breed
of Goat registered by
Breed Registration
Committee of
ICAR - NBAGR on 21.06.2016**
Accession No.
INDIA_GOAT_1800_KODI ADU_06026



RESEARCH HIGHLIGHTS

ANIMAL HEALTH

Generation of recombinant Newcastle Disease virus (D58 strain) by reverse genetics

- ✧ The virus rescue system was first validated by constructing a NDV mini-genome comprising of 5' and 3' UTRs of D58 strain of NDV flanking the open reading frame of EGFP.
- ✧ The three subgenomic fragments (A1-A3 carrying the modified NP epitope) were cloned in modified pBR_JKRL and the modified virus was rescued in BSR/T7 cells by co-transfection with expression plasmids co RNP complex.
- ✧ Biological characterisation of the rescued virus was done and it had an MDT of > 60 h confirming the lentogenic nature of the strain.

Induction of innate immune response by avian infectious bronchitis virus in chicken

- ✧ IFN- γ gene was prominently upregulated by H120 strain in trachea, lungs and spleen compared to B17.
- ✧ The pro-inflammatory cytokine, IL-1 β gene was comparatively upregulated in trachea by B17 and in lungs by H120 and B17 in spleen.
- ✧ The expression of TLR-7 was upregulated to appreciable levels in trachea, lung and spleen tissues by both H120 and B17.

Biological and phylogenetic characterisation of Pigeon Paramyxovirus (PPMV-1) isolates

- ✧ The PPMV-1 isolates D167 and D168 were estimated to have a MDT time of 48 and 70 h and ICPI values of 1.57 and 1.3 respectively. Both viruses were found to have similar amino acid motif 112RRQKRF117 at the FPCS site.
- ✧ The two isolates were found to have an evolutionary distance of more than 0.1 with SE value 0.006 with other genotypes of class II viruses. The within genotype distance was found to be within 0.03 to 0.1 and this justified the positioning of viruses in the respective clades.
- ✧ The PPMV-1 isolates D167 and D168 were found to have a unique restriction pattern against HinfI, BstOI and RsaI.

Virological and genomic characterisation of *Peste des petits ruminants* virus isolates

- ✧ The PPRV field isolates, tested for PPRV by RT-PCR targeting F and N genes, belonged to lineage IV and clustered with Indian isolates.
- ✧ No mutation was found after LK passage (P10), while vero passage lead to 79 base changes and 8 amino acids.



PCR – RFLP based detection of acaricide resistant ticks under field conditions

- ✳ Resistance to deltamethrin was found in *Rhipicephalus microplus* tick isolates of Thanjavur, Tiruchirapalli, Perambalur, Nilgiris and Dharmapuri districts.
- ✳ Alpha esterase value for resistant tick isolates ranged from 8.56 to 20.3 $\mu\text{moles/min/mg}$ of protein and susceptible tick isolates from 1.1 to 2.4 $\mu\text{moles/min/mg}$ of protein (r^2 value 0.41 for alpha esterase).
- ✳ Beta esterase value for resistant tick isolates ranged from 2.46 to 5.2 $\mu\text{moles/min/mg}$ of protein and susceptible tick isolates ranged from 0.4 to 0.91 $\mu\text{moles/min/mg}$ of protein (r^2 value 0.41 for beta esterase).
- ✳ A novel PCR- RFLP technique was developed to identify point mutation in the *kdr* gene domain II region of *R. microplus* ticks at the 190th position using Eco88I.



Nanopheromone based environmental control of dog ticks

- ✳ Novel eco-friendly nanopheromone baits viz., nanogold, nanokeratin and chitosan microparticles (pheromones comprising of guanine, xanthine and adenine in the ratio of 25:1:1 without addition of any acaricide) were prepared for brown dog tick (*Rhipicephalus sanguineus*) and used in sticky traps.
- ✳ *R.sanguineus* when exposed to assembly pheromone nanogold complex resulted in 100 per cent larval, nymphal and adult attraction 24 hours post exposure while exposed to assembly pheromone nanokeratin complex resulted in 87 percent larvae, 84 per cent of nymphs and adults were lured 24 hours post exposure. The assembly pheromones encapsulated with chitosan microparticles lured 96 per cent larvae, 90 per cent nymphs and 89 per cent adults 24 hours post exposure.

Parasitological and molecular identifications of *Blastocystis* in food animals

- ✳ Phylogenetic analysis based on PCR-RFLP of SSU rRNA fragment grouped all the mammalian isolates in a monophyletic clade with one of the small ruminant isolates clustered with the pig isolates. The chicken isolates showed greater diversity among themselves by being clustered in two diverse clades.

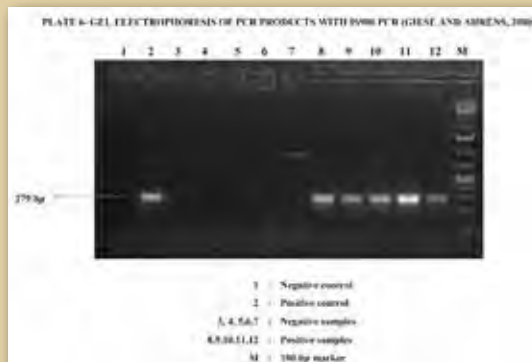


Molecular characterization and development of rapid diagnostic test using recombinant protein for cystic Echinococcosis

- ✿ The rAgB antigen was found to be more specific than rCBP in diagnosis of cystic echinococcosis.
- ✿ Standardization of LAT and Dot-EIA for routine screening of animals and human beings for cystic echinococcosis was carried out.

Current status of *Mycobacterium avium* subsp. *Paratuberculosis* excretors and the possible role as a zoonotic pathogen

- ✿ IS900 PCR was found to be highly sensitive which can be efficiently utilized for routine screening of MAP organisms and screening at periodical interval will be useful in early diagnosis of disease.
- ✿ Management practices such as frequency of deworming, system of rearing, frequency of removing the dung and use of disinfectant in the farm have significant influence in occurrence of MAP infection among the animals.



Epidemiological studies on bovine brucellosis

- ✿ Overall prevalence of bovine brucellosis in Tamil Nadu by i-ELISA and milk ELISA were 6.70 and 5.8 respectively the highest recorded at Tiruvannamalai.
- ✿ Highest prevalence rate was observed in Crossbred cattle which are above 7 years of age and had history of third trimester abortion.
- ✿ Fluorescent Polarization Assay (FPA) had high sensitivity than other serological test.

Epidemiological studies on Canine brucellosis

- ✿ The overall seroprevalence of canine brucellosis in Chennai city was assessed by Canine Brucella Antibody test Kit as 7.33 per cent. The prevalence was reported to be 13.33 per cent and 1.33 per cent from suspected and healthy populations respectively.
- ✿ Male dogs are having more prevalence compared to females. Statistical analysis revealed significant difference in the prevalence of brucellosis among age groups ($P < 0.05$). 33.33 per cent of seropositive animals got aborted between 46 and 55 days of gestation.



Identification of metastatic potential of mammary tumour in dogs

- ✧ The per cent incidence of mammary tumour in dogs among the tumour cases was 34.94. The highest incidence of mammary tumour was observed in the age range 8 to <12 years (50%). The tumour occurrence was high in pure breeds of dogs (73.75%) in which Spitz (32.20%) was predominantly affected.
- ✧ The variable expression of E-cadherin and higher expression of MMP-2 and C-erbB2 in carcinomas indicated their metastatic potential and 8 cases already showed metastasis.

Prophylactic effect of *Mahavallathi Lehyam* (MVL) on 7,12-dimethyl benz[a]anthracene (DMBA) induced mammary tumor in rats

- ✧ First mammary tumour appeared on 64th day after first dosing in the DMBA and DMBA+Tamoxifen group and 96th day in the DMBA+MVL treated group. Mammary tumours developed in all rats in the DMBA group, 80% in the tamoxifen group, while in the DMBA+MVL group 50% rats developed mammary tumours. Significant ($P<0.05$) decrease in the volume of mammary tumours was observed in the DMBA+MVL group compared to the DMBA and DMBA+Tamoxifen groups.
- ✧ The study revealed that MVL when compared to the DMBA and DMBA+Tamoxifen groups could prevent the development of mammary tumours in 50 and 30 per cent of rats and extend latency period by 32 days respectively.
- ✧ The MVL treatment also reduced the number of tumours in the affected animals thus found to have chemo-preventive potential against DMBA induced mammary tumour in Sprague Dawley rats.

Antihyper and anti-androgenic effect of *Evolvulus alsinoides* extract using polycystic ovarian model in rats

- ✧ Treatment with plant extract, *Evolvulus alsinoides*, at higher dose rate showed a good antiandrogenic effect with significant reduction in the progesterone, testosterone, ALT, AST.
- ✧ *Evolvulus alsinoides* is found to possess the capability to alleviate the effects of COD at higher dose level in certain parameters and had effect over parameters like progesterone, testosterone.

***In-silico* approaches to study the effect of A1 and A2 milk variants on type 1 diabetes mellitus incidence**

- ✧ The common variants of β -casein, A1 and A2 exhibit variation in physical and chemical properties. *In-silico* analysis of enzymatic digestion of A1 and A2 variants of β -casein, indicates that A1 variant is more susceptible for the digestion by low specificity chymotrypsin.
- ✧ BCM7 might act as an agonist to the MOR and develop type 1 diabetes mellitus. The pharmacodynamics result supports the function of BCM7 as neurologically important.

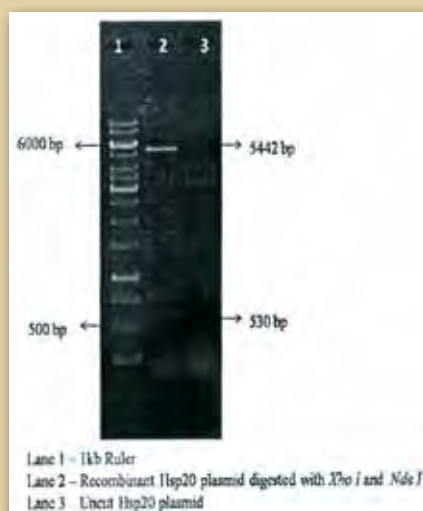


**Exploration
of fertility effect of
siddha medicines
(nandhi mezhugu with
kumatti kuzhambu)
in experimentally
induced cystic ovarian
degeneration in rat
model**

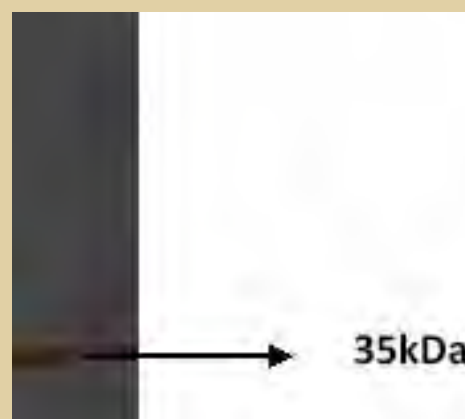
- ✧ Estradiol valerate treated rats showed cystic follicles in the ovary with increase in body weight and decrease in ovarian weight. Histopathology also showed that ovary had multiple cysts with thickened theca cell layer and thin granulosa cell layer.
- ✧ GnRH treatment produced atresia of the cystic follicles and an increase in ovarian weight. Serum testosterone level had decreased and progesterone level had increased significantly. Histopathology showed no cysts and ovaries had many healthy developing follicles with regressing corpus luteum. MMP-2 gene expression was increased significantly.
- ✧ Nandhi Mezhugu is found to be a potent siddha preparation for the treatment of cystic ovarian degeneration and reversal of cyclicity in anovulatory rats.

**Immunoinformatics
and cloning of vaccine
candidate epitopes of
*Mycobacterium
avium* subsp
*paratuberculosis***

- ✧ Identified immunogenic proteins by *in silico* methods
- ✧ Cloned and expressed 35kDa, Hsp20 and AhpC genes into expression vector pET21b.
- ✧ Recombinant proteins were confirmed by western blotting and purified using Ni-NTA affinity column chromatography.
- ✧ ELISA kit has been developed using recombinant proteins.
- ✧ 35 kDa and Hsp recombinant proteins were used for coating ELISA plate and used as a diagnostic kit for the detection of antibodies of *Mycobacterium avium* sub sp *paratuberculosis*.
- ✧ Developed recombinant antigen based ELISA kit will be useful for the detection of *Mycobacterium avium* sub sp. *paratuberculosis* antibodies



**12% SDS PAGE of the purified 35kDa
recombinant protein**

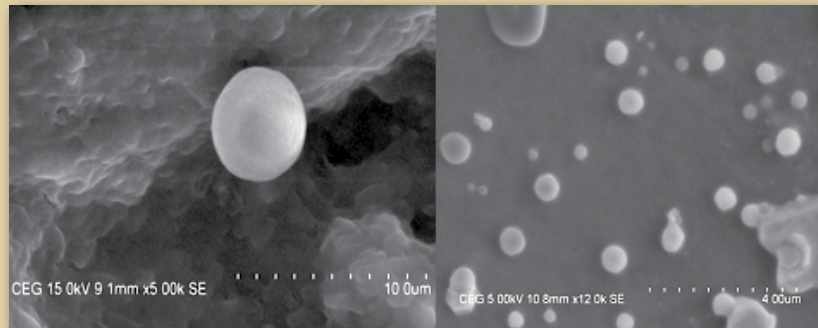


**Western Blot of purified recombinant
35kDa protein**



Bioplastic production by using slaughter house waste

- ✱ Poly Hydroxy Butyrate producing organisms *Enterococcus faecium* (KT722772), *Bacillus amyloliquefaciens* (KT722771), *Bacillus subtilis* (KU173952), *Bacillus tequilensis* (KU844284) were isolated from slaughter house waste rumen fluid.
- ✱ Inexpensive slaughter house waste rumen fluid was identified as a suitable medium for bioplastic production without any addition of substrates. The production of bioplastic (PHB) was found to be very high when slaughter house waste rumen fluid was used as a medium when compared to NDMM. *Bacillus subtilis* was found to be producing maximum bioplastic when slaughter house waste rumen fluid was used as a medium (12g/L).
- ✱ Produced Bioplastic was found to be 100% biodegradable in 75 days. Bioplastic microbeads were prepared and *in vitro* cytotoxicity of produced bioplastic and bioplastic microbeads were analysed using 3T3 L1 cell line and were found to be non-toxic.



Scanning electron micrograph of Bioplastic (PHB) microbeads

Molecular mechanisms of host responses to Newcastle disease virus infection

- ✱ *In vitro* studies revealed a positive correlation between the induction of CPE and the virulence of virus.
- ✱ *In vivo* pathogenesis studies revealed that clinical signs such as gastrointestinal and respiratory signs were observed in SPF-chickens and native chickens infected with 2K3, whereas, no clinical signs were observed in Japanese quails.
- ✱ Transcriptome data (RNA sequencing) of SPF-chickens and Japanese quail infected with LaSota and 2K3 revealed that a total of 83 and 123 genes were differentially expressed in 2K3 infected chicken and Japanese quail respectively. Proposed gene-interaction pathway based on common differentially expressed (IRG1, IL411 and predicted miRNA gene) genes in 2K3 infected chicken and quail indicated that positive antiviral mechanism was activated in Japanese quails and this could be the major reason for quails and other wild birds to be resistant to NDV infection and acting as carriers of virus.



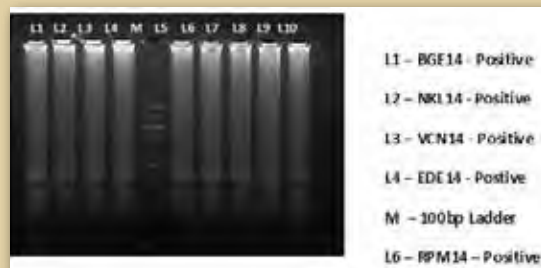
Understanding differential host disease resistance to *Peste des petits ruminants* (PPR) in small and large ruminants

- ❖ Five complete genomes of PPRV were sequenced and Phylogenetic analysis confirmed all the isolates belonged to lineage IV of PPRV and genetically distinct from the earlier isolates from India.
- ❖ Transcriptome analysis was carried out on RNA extracted from goat and cattle PBMCs infected with PPRV at 24 h PI. PPRV infection in goat PBMCs caused upregulation of 43 genes and downregulation of 12 genes while in cattle PBMCs there were 112 genes upregulated and 7 genes downregulated.
- ❖ Based on the results, it is postulated that the possible pathway for genetic disease resistance against PPRV in cattle is predominantly due to the upregulation of IFN alpha pathway.

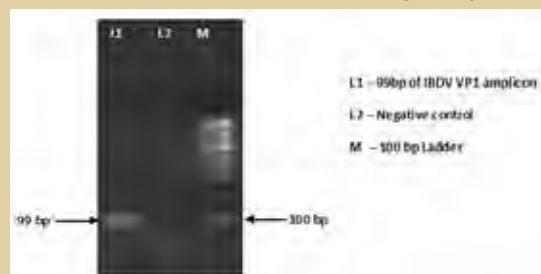


Genome analysis and genome based diagnostics for infectious bursal disease virus (IBDV)

- ❖ Complete genome sequencing of eight RT-PCR based RFLP was carried out for genotyping of IBDV isolates and observed that the method is not suitable for all the isolates obtained from field conditions.
- ❖ Reverse transcription loop-mediated isothermal amplification assay and reverse transcriptase-helicase dependent amplification assay were developed for the detection of IBDV targeting VP1 gene.
- ❖ The whole genome sequence of the Indian IBDV isolates has been submitted in GenBank for the first time in India.



Detection of different isolates of IBDV by RT-LAMP

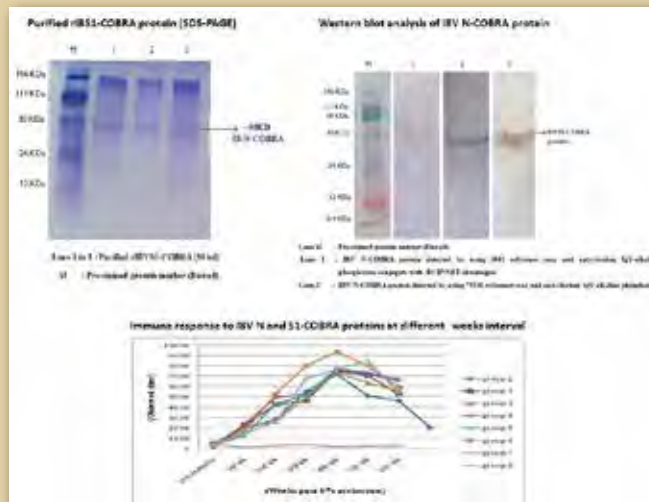


Standardization of RT-tHDA



Effect of computationally optimized broadly reacting Nucleoprotein on immune response to avian infectious bronchitis virus

- ✧ A synthetic Nucleoprotein of infectious bronchitis virus (IBV) was generated based on computationally optimized broadly reactive antigen (COBRA) against all the serotypes of IBV
- ✧ The broad reacting nature of the rIBVN-COBRA protein was confirmed in Western blotting by using reference sera from three different IBV serotypes namely, M41, 793B and QX
- ✧ IBV N and S1-COBRA protein is capable of inducing significant immune response in immunized chickens



Immunogenicity of live Classical Swine Fever Vaccine under field conditions

- ✧ A study was conducted for assessing the immunogenicity of live Classical Swine Fever Vaccine in pigs under farm conditions and 54 pigs of 9 – 15 weeks of age were immunized.
- ✧ Pre immunization blood samples and post immunization blood samples at 30, 60, 90, and 120 days post immunization (DPI) were collected. RNA was isolated from Peripheral Blood Mononuclear Cells and used for studying the expression of IFN- γ , IL-2, IL-10 and IL-12.
- ✧ IL-12 response showed significantly increased fold change during post immunization period with a peak expression at 30 DPI. Maximum IL-10 gene expression was observed at 60 DPI.
- ✧ Pre and post immunization antibody responses were monitored by Enzyme Linked Immunosorbent Assay. Antibody titres increased consistently from 30 days after primary immunization until 120 days. Montanide (gel 01) coupled PK -15 adapted live.
- ✧ Classical Swine Fever vaccine induced a good Th1 response followed by Th2 response



Immunogenicity of heat killed, chitosan coupled *Mycobacterium avium* sub sp. *paratuberculosis* vaccine.

- ✧ Immunogenicity of heat killed, chitosan nanoparticles coupled *Mycobacterium avium* subsp. *paratuberculosis* vaccine in goat kids in Tamil Nadu was assessed.
- ✧ Forty two goat kids of 4-16 weeks age were immunized subcutaneously with a dose of 2.44 mg/mL of heat killed, chitosan nanoparticles coupled *Mycobacterium avium* subsp. *paratuberculosis* (MAP) vaccine.
- ✧ IL-2 expression levels were significantly higher ($P < 0.01$) in the immunized animals.
- ✧ After challenge, a significant increase ($P < 0.05$) in interferon - γ response, Interleukin 2, Interleukin 12 and Interleukin 10 was noticed in immunized animals than control animals.
- ✧ The vaccine induced a good Th1 response followed by Th2 response.



Evaluation of neem and five leaf chaste plant extracts against acariosis in serpentines

- ✧ This study was carried out in captive serpentines which comprised Reticulated pythons(22), Indian Rock pythons(18), Rat snakes(19) and Spectacled cobras(3) that were reared at various conservation related places like, Chennai Snake Park Trust (CSPT) at Guindy, Arignar Anna Zoological Park (AAZP) at Vandalur and Rescue centre (RC) at Velachery.
- ✧ Five groups related to the medications comprising of *Azadirachta indica* – aqueous extract (group 1), *Azadirachta indica* - ethanolic extract (group 2), *Vitex negundo* - aqueous extract (group 3), *Vitex negundo* - ethanolic extract (group 4) and external application of Ivermectin (group 5) were used under the *in vitro* and *in vivo* conditions on the ticks collected from the captive serpentines.
- ✧ Usage of ethanolic extracts of *Azadirachta indica* and *Vitex negundo* was recommended in general against the tick- infestation on serpentines in captive wild animal places, as far as concerned with the herbal preparations used in this study.

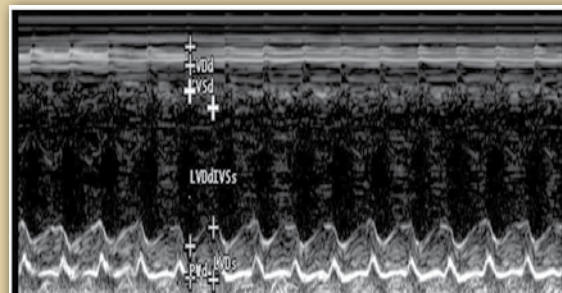


Screening of avian leukosis virus in suspected samples and in commercial vaccines

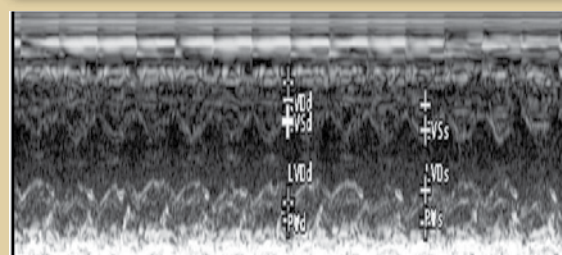
- ✧ A total of 30 suspected samples for avian leukosis virus (ALV) alongwith IBD, NDV vaccines were screened using ALV p27 gene specific primers.
- ✧ The expected amplicon size of 1250bp was observed in agarose gel electrophoresis. Then 12 positive samples were subjected to different sub-group specific primers. All the 12 samples were found to be positive for sub group E.
- ✧ The commercial vaccines like IBD and NDV were not contaminated with avian leucosis virus.
- ✧ The present study revealed that all the positive ALV samples belonged to sub type E an endogenous, non pathogenic virus.

Pharmacological evaluation of *Commiphora mukul* (guggul) on hypothyroidism in rats

- ✧ Propylthiouracil 15mg/kg b.wt for 45 days induced hypothyroidism in rats.
- ✧ *C. mukul* treatment reversed the defects associated with hypothyroidism like hyperlipidaemia, infertility, oligospermia, anaemia, oxidative stress and cardiac dysfunction. It also promotes hepatic and renal function. Most of the effects were better than the standard drug levothyroxine.
- ✧ The treatment with *Commiphora mukul* produced significant thyrogenic activity in dose dependent manner on par with standard drug levothyroxine.
- ✧ *C. mukul* 200mg per kg per day can be recommended for the treatment of hypothyroidism since favourable results are obtained at lower dose.



Hypothyroid animal showing left ventricle dilatation indicating dilated cardio myopathy



C. mukul 200mg treated animal showing normal left ventricle



Numerous sperm - Control (40X)



Oligospermia - Hypothyroid group (40X)



Molecular detection and characterization of Haemoprotozoan parasites in sheep

- ✳ DNA of *Theileria*, *Babesia* and *Anaplasma* species were detected in tick samples by PCR technique.
- ✳ Among the four species of haemoprotozoan encountered, *A. ovis* was found to be the predominant blood parasite followed by *T. ovis*, *B. ovis* and *T. lestoquardi*. DNA sequencing and phylogenetic analysis of PCR products of *T. ovis*, *T. lestoquardi*, *B. ovis* and *A. ovis* was carried out and compared with isolates of different countries. The homology and divergence between the species encountered in this study and other isolates were determined

Pathomorphological studies of Pneumonia in Small Ruminants

- ✳ The bacterial isolates obtained from lung swabs of small ruminants affected with pneumonia were *Escherichia coli* (46.51%), *Mannheimia haemolytica* (11.62%), *Pasteurella multocida* (9.30%), *Pasteurella trehalosi* (6.97%), *Staphylococcus spp.* (9.30%), *Corynebacterium spp.* (6.97%) and *Pseudomonas spp.* (9.30%).
- ✳ Microscopically, lungs affected with *Pasteurella multocida* produced characteristic changes of bronchopneumonia involving both alveoli and bronchi. Similarly, the lungs affected with *Escherichia coli*, *Pasteurella trehalosi*, and *Mannheimia haemolytica* also produced the characteristic changes of bronchopneumonia. Lungs affected by *Mycoplasma sp.* revealed the characteristic features of fibrinous pleuropneumonia. Lungs affected by *Corynebacterium spp.*, *Staphylococcus spp.* and *Pseudomonas spp.* showed the features of acute suppurative pneumonia.
- ✳ In viral pneumonia cases, lungs affected with combined infection of PPR with Orf showed the features of bronchopneumonia. The affected lungs showed severe haemorrhage in the septal area and distended alveoli.

Molecular epidemiology of canine haemoparasitic infections in dogs

- ✳ Prevalence of *B. canis*, *E. canis*, *H. canis*, *B. gibsoni* and *T. evansi* was found to be 9.33%, 8%, 5.33%, 2% and 1.33% respectively with a concurrent infection of *B. canis* along with *E. canis* (2.56 %), *H. canis* (2.56 %) and *B. gibsoni* (2.56 %)
- ✳ Non descript breeds, 1-2 years age and females are the risk factors associated with occurrence of haemoparasitic infections of canines in this study



Polymerase chain reaction for *Babesia canis*



Detection and molecular characterisation of *Mycoplasma synoviae* in commercial layer chicken

- ✧ Among different age groups of tested layers, 100 per cent seroprevalence of *M. synoviae* antibodies was recorded in aged layers at the old group of 70 weeks and above.
- ✧ The developed rapid serum plate agglutination test (RSPA) can be used for screening of *M. synoviae* infection. Sensitivity and specificity of developed RSPA is 94 and 100 per cent respectively with reference to gold standard ELISA test.
- ✧ *Mycoplasma synoviae* associated with Eggshell apex abnormalities (EAA) in the present study is the first report in India.

Clinico-Pathological and Ultrasonographic Evaluation of Fat Cow Syndrome in Cattle of Namakkal region

- ✧ Incidence of fat cow syndrome in cows was 10.29 per cent among various metabolic diseases.
- ✧ Highly significant elevation of mean aspartate aminotransferase, γ -glutamyltransferase and significant elevation of total bilirubin and highly significant hypoalbuminemia were noticed in animals with moderate and severe fatty liver when compared to the control group.
- ✧ On doppler ultrasonography, cows with severe fatty liver had decreased resistance index when compared to moderate and mild fatty liver groups. On histopathological examination, cows with fatty liver revealed intracytoplasmic fat droplets in the hepatocytes and nuclei were pushed towards the periphery by the large fat globules.

Enhancing the gut health and immune status in broiler chicken by encapsulated probiotic supplementation

- ✧ Supplementing the birds with encapsulated bacteria especially in combination significantly ($p < 0.05$) increased the body weight, carcass yield of the broiler chicken and improved feed conversion ratio from the second to sixth week as compared to non encapsulated probiotic feeding.
- ✧ Dietary supplementation of probiotics in the encapsulated form was more efficient in reducing the pathogenic intestinal bacteria count and increasing the immunity status as compared to the nonencapsulated probiotics resulting in increased body weight and better feed conversion ratio in broiler chicken.

Improving energy efficiency through supplementation of coenzyme q in broiler chicken

- ✧ The broiler birds supplemented with 20mg of CoQ₁₀/kg diet revealed increased mitochondrial protein concentration, CoQ₁₀ level, total antioxidants, total liver glycogen and muscle protein and decreased total cholesterol, muscle lipid and HMG CoA reductase activity.
- ✧ Addition of 20 mg of CoQ₁₀/kg diet improved the body weight gain and lowered the feed conversion ratio in the broiler chickens, along with reduction of thermal stress.



**Supplementation
of wet brewer's
spent grain on the
performance of salem
black goats**

- ✧ The does supplemented with WBSG without concentrate exhibited higher body weight and showed increased monthly body weight gain when compared to the control.
- ✧ Performance of kids supplemented with WBSG, in terms of weaning weight and mean daily weight gain were improved which might be due to increased levels of GH and IGF I levels in these kids.

**Patulin Prevalence
and Detoxification
Profile in Apple Juices
marketed in Chennai,
India**

- ✧ The study indicated 18% incidence of Patulin contamination in overall samples screened. Patulin could be quantified in 30% of fresh juices and fruit samples while, in packaged juices 11% of the samples were contaminated. HPLC analysis was conducted and found a contamination range of 21.63 to 111.2 ppb in overall samples.

**Cellular immune
response of
multivalent inactivated
bluetongue vaccine in
cattle calves and
buffalo calves**

- ✧ The oil adjuvanted bluetongue vaccine elicited higher immune response when compared to the aluminium gel vaccine
- ✧ The stimulation index was higher on 42d post vaccination (1.46 ± 0.022 in cattle calves and 1.42 ± 0.016 in buffalo calves) when compared to 28d post vaccination (1.38 ± 0.021 in cattle calves and 1.35 ± 0.027 buffalo calves)
- ✧ The percentage of CD4 population increased from 36.88 ± 0.405 to 37.54 ± 0.214 while CD8 population increased from 11.68 ± 0.199 to 13.03 ± 0.156 on 28d and 42d post vaccination in cattle calves
- ✧ In buffalo calves, the percentage of CD4 population increased from 35.88 ± 0.467 to 37.04 ± 0.406 while CD8 population increased from 11.21 ± 0.298 to 12.34 ± 0.386 on 28d and 42d post vaccination



ANIMAL PRODUCTION

Genetic analysis of reproduction and fitness traits in Nilagiri and Nilagiri Synthetic breeds of sheep

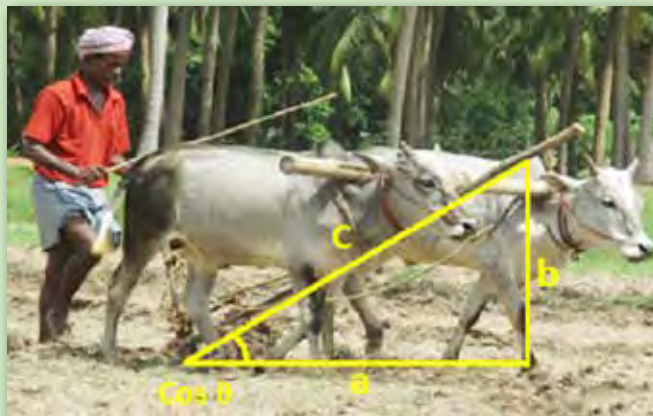
- ✧ High positive genetic correlation between litter size at birth and weaning indicates scope for indirect selection. High repeatability for litter size at birth shows that selection of ewes for future performance based on single record will yield better response.
- ✧ Inbreeding was found to have a depressive effect on most of the fitness traits in both the genetic groups. Breeding based on co-ancestry is suggested to restrict inbreeding.
- ✧ Presence of *FecB* mutation in heterozygous form was found to increase prolificacy, compared to the wild type genotype.

Phenotypic and molecular genetic studies on draughtability in Umblachery cattle of Tamil Nadu

- ✧ Overall means of draughtability traits like stride length and speed were found to be 1.20 meters and 0.95 meter/sec respectively. For an average draft load of 27.5 kg obtained in this study, the mean horse power developed by Umblachery bullocks was 0.39.

- ✧ Optimum draft load at which Umblachery bullocks could give uniform and maximum power output was 75 to 78 kg.

- ✧ Microsatellite locus, VEGFA - (ACAT)_n was found to be significantly associated with serum lactate and creatine kinase, with 373/373 and 365/365 bp as favorable genotypes. Microsatellite locus, VEGF-(GA)_n was found to be highly significantly ($P < 0.01$) associated with serum lactate, with 175/177 and 177/177 bp as favorable genotypes.



Calculation of draft [Cos θ – (a/c) the angle the beam of plough makes with the horizontal ground]

- ✧ SNPs ACE 2620 (A>G) and BDKRB2 41872 (G>A) were found to be significantly associated with body weight and creatine kinase respectively with GG genotypes in both SNPs as favorable genotypes.
- ✧ ACE-1, BDKRB2 and VEGFA genes could be used as potential candidate markers for assessing draughtability.



Genetic studies on semen production in Murrah buffalo bulls reared in Tamil Nadu

- ✧ South-west monsoon (June to August) and summer (March to May) were found to be the best season for semen production in Murrah buffalo bulls maintained under the Cauvery delta zone of Tamil Nadu.
- ✧ The mean age at first semen collection and semen freezing were 1149.71 days (~38 months) and 1160.67 days (~39 months) and the mean semen production and frozen semen production periods were 1313.97 days (~44 months) and 1292.23 days (~43 months).
- ✧ Murrah bulls aged above 42 months, with 540 kg and above body weight and with scrotal circumference >30 cm produced better quality semen and more number of frozen semen doses per ejaculate.
- ✧ Selection of bull calves with higher body weight and scrotal circumference at an early age could be used as a strategy for genetic improvement of Murrah buffalo bulls.

Exploring the scope of rabbit gut transmitted *Saccharomyces cerevisiae* supplementation to ruminants on methane production in paddy straw based ration

- ✧ Rabbit gut transmitted *S. cerevisiae* could be produced by feeding rabbits with *S. cerevisiae* (6×10^8 CFU / head / day) and collecting their faeces on 15th day for isolation of Rabbit gut transmitted *S. cerevisiae*.
- ✧ *S. cerevisiae* and Rabbit gut transmitted *S. cerevisiae* at all doses (0.5×10^6 , 0.5×10^7 and 0.5×10^8 CFU) significantly ($P < 0.01$) improved *in vitro* true dry matter degradability, total gas production, total volatile fatty acids, propionate production, microbial population, partitioning factor and metabolisable energy.
- ✧ There was a non-significant reduction in methane production per 100 mg of truly digested substrate in Rabbit gut transmitted *S. cerevisiae* supplementation than *S. cerevisiae* in paddy straw based ration.

Potential of fodder cultivation as a means of carbon capture

- ✧ Carbon sequestration activities that improve soil carbon content have the potential to improve agricultural productivity in marginal lands in Tamil Nadu and will potentially improve carbon sequestration in the soil and increase productivity.
- ✧ Soil carbon sequestration was utilized as a mitigation measure for climatic change.
- ✧ Improved manure treatment techniques standardized through the project, has been found to increase the manurial value as well as yield of fodder crops subsequently leading to increased carbon sequestration.



Split-up suckling on the performance of Large White Yorkshire piglets

- ✳ The piglets under split up suckling system had a significantly higher fortnight body weight gain and higher weaning weight.
- ✳ Loss of piglets due to crushing and competition for teats during suckling was prevented.
- ✳ Raising piglets especially of low birth weight under split up suckling shall be considered as a viable option for the practicing commercial pig farmers.

Growth performance of Large White Yorkshire weaned piglets fed with organic acid supplemented swill feed

- ✳ The organic acid supplemented groups gained better in terms of body weight and diarrhoea score resulting in better slaughter weight.
- ✳ For better growth performance and carcass characteristics, 1.0 per cent citric acid supplemented swill feed can be recommended to the farmers for weaned grower pigs.

Effect of early chick nutrition on the production performance of Japanese Quail (*Coturnix coturnix japonica*)

- ✳ The Japanese quails supplemented with high density diet along with glucose either with probiotic or threonine achieved better cumulative feed efficiency and significantly higher villi height, villi width, crypt length and crypt depth in all parts of small intestine like duodenum, jejunum and ileum.
- ✳ Highly significant improvement in eviscerated and ready to cook yield was noticed in high density diet along with glucose and probiotic. However, economic analysis revealed better returns in the groups subjected to early chick nutrition.

Effect of supplementation of yeast on production performance of commercial broiler chicken

- ✳ Yeast supplementation at 0.2 % level in broiler chicken diet up to 42 days had the best broiler performance index with good economic returns
- ✳ Dietary yeast supplementation at 0.2 % in broiler ration recorded significantly less population of *E. Coli*, whereas more number of beneficial *Lactobacillus* and yeast organism in small intestine was observed.
- ✳ Yeast supplementation did not have any impact on humoral as well as Cell Mediated Immune (CMI) responses in broiler chicken.

Effect of feeding ghee residue on the production performance of native chicken

- ✳ Biological experiment revealed that at 12 weeks of age, dietary inclusion of 5 per cent ghee residue (Containing the moisture, crude protein, crude fibre, ether extract, nitrogen free extract and total ash @ of 12.10, 19.86, 3.49, 47.12, 25.63 and 3.90 per cent, respectively) had significantly higher body weight and better feed conversion ratio than other treatment groups.
- ✳ The cost effectiveness of the native chicken fed with 5 per cent ghee residue showed increased net profit per kg live weight in the group fed.



Effect of dietary supplementation of vitamin E and selenium on semen characteristics and reproductive performance of male breeder turkey

- ✧ Anti-oxidant supplementation has shown a significant improvement in the total fertility and total hatchability percentage of turkey eggs. The toms fed with the diet supplemented with the combination of Vitamin E and selenium significantly reduced the incidence of early embryonic mortality of turkey embryos.
- ✧ Fertility of the turkey eggs showed a highly significant ($P \leq 0.01$) positive correlation with spermatozoa livability ($r=0.675$), host reactive sperms ($r=0.437$), seminal plasma ACP ($r=0.508$) and ALP levels ($r=0.424$); while seminal plasma level of GPT had shown a highly significant ($P \leq 0.01$) negative correlation (-0.098) with the fertility.

Assessment of reproductive efficiency in ostrich (*Struthio camelus*)

- ✧ Evaluation of semen characteristics in ostrich revealed that the mean values for frequency of semen collection, semen volume, pH, mass activity, per cent motility, concentration (10^9 per ml), percentage of live and total abnormal spermatozoa of ostrich as 17.36 days, 1.38 ml, 7.28, 4.26, 79.21, 2.69, 85.71 and 15.30, respectively.
- ✧ The estrogen, FSH and LH levels were found to increase during the northeast monsoon and reached peak during winter followed by summer and then maintained baseline level during southwest monsoon. Similarly, the highest number of total follicles were observed during winter (6.39), followed by summer (3.70) and southwest monsoon (3.03) then gradually decreased towards northeast monsoon (0.74).
- ✧ The artificial insemination had shown significantly higher values of per cent fertility (23.20), total hatchability (12.80) than naturally mated (9.60 and 5.08 per cent respectively) ostrich hens.

AICRP on post harvest engineering technology

- ✧ The technology devised to extract collagen and chondroitin sulphate from animal by-products resulted in better utilization of animal by-product and also decreased environmental pollution.
- ✧ The flaying cradle has been designed and fabricated which would facilitate hygienic flaying and hence minimized contamination of the carcass and ultimately resulted in superior meat to the consumer.
- ✧ Drying beef in the Solar drier for a period of six hours under the Sun, followed by 16 hours of electrical drying and another six hours drying under the Sun is effective in bringing down the moisture of beef from 76.07 to 19.60 per cent.



Effect of different mechanical tenderisation methods on spent meat quality

- ✧ Blade tenderization along with vacuum tumbling is a suitable mechanical tenderization technique for improving the quality of red and white meat which significantly decreased the fibre diameter and myo-fibrillar fragmentation index.

Development of restructured buffalo meat steaks

- ✧ A technology for value addition of low value buffalo cheek meat has been evolved by incorporating 2 per cent salt, 0.2 per cent Sodium Tri-Polyphosphate (STPP) and 1 per cent Transglutaminase (TG) in low value buffalo cheek meat, which is comparable to intact muscle in terms of physicochemical and sensory qualities and also found to be more economical.

Development of shelf stable chicken sausages using hurdle technology

- ✧ Hurdle technology for the preparation of shelf stable chicken sausages, without compromising its palatability has been evolved
- ✧ Inclusion of chitosan at 1.5 per cent and ascorbic acid at 0.05 per cent was chosen as the ideal level of inclusion of antibacterial and antioxidant respectively in chicken sausages.
- ✧ The sausages incorporated with sorbitol + lactic acid + Glucono-Delta-Lactone + chitosan + ascorbic acid at optimal levels and subjected to vacuum packaging were superior in quality.

Development of molecular techniques for detection of *staphylococcus aureus* and its enterotoxin in meat

- ✧ Loop-mediated isothermal amplification (LAMP) assay has been developed for the detection of *Staphylococcal enterotoxin B (seb)* gene. The developed LAMP is highly specific and 100 times more sensitive than PCR for detecting *Staphylococcal Enterotoxin B* gene.

Optimization of energy and protein requirement for sex separated commercial broiler chicken under environmentally controlled housing system.

- ✧ Energy and protein content of the diet had significant influence on the body body weight gain, feed consumption, feed conversion ratio, carcass characteristics, cut up part yield and net profit of male and female broilers reared separately.
- ✧ The interaction between feeding broilers with different levels of energy and protein and sex separated feeding on carcass characteristics showed significant difference on the eviscerated percentage in all the treatment groups.



Development of ghee residue candy incorporated with orange peel

- ❖ Ghee residue candy incorporated with orange peel was developed
- ❖ Orange peel incorporated at 10% level was acceptable for 30 days of storage at refrigerated temperature

Dietary L-Valine on production performance of commercial layer chicken

- ❖ The dietary inclusion of L-valine at 0.10 and 0.15 percent levels had significantly improved the egg production and feed efficiency in commercial White Leghorn layers.
- ❖ The data on cost effectiveness of commercial White Leghorn layer diet supplemented graded levels of L-valine revealed that 0.05, 0.10 and 0.15 percent L-valine inclusion level had higher profit margin over control group. Among these 0.05 percent L-valine inclusion had comparatively better profit of 0.05 paise per egg when compared to other treatment groups.

Sodium butyrate as an antibiotic substitute for commercial broiler

- ❖ Birds fed CSB had higher eviscerated weight as percentage of live body weight when compared to other treatment groups. The ready-to-cook weight, weight of heart, liver, gizzard, giblet and abdominal fat as percentage of body weight and intestine length were not influenced.
- ❖ Coated sodium butyrate (0.09 % and 0.18 %) and uncoated sodium butyrate (0.03 % and 0.06 %) at both the levels without antibiotic resulted in comparable performance in terms of body weight gain, feed intake, feed efficiency and HI against Ranikhet Disease level when compared to that of birds fed with antibiotic (Oxytetracycline-50 ppm).

Development of retort processed shelf stable dietetic paneer

- ❖ Dietetic paneer was developed by incorporation of finger millet flour at 0.5%,1%,1.5% and 2% by simultaneous reduction of milk fat to 2%,3%,4% and 4.5% level.
- ❖ Based on organoleptic evaluation dietetic paneer made with 1% level of finger millet flour and 3% level of milk fat is selected as ideal for further processing.
- ❖ The dietetic paneer developed by incorporating 1.5% level of finger millet flour and 2.0% level of milk fat and retort processed with 5% brine solution as a storage medium shows good physico chemical, microbiological qualities with increased functional and nutritional properties without altering textural and sensory properties with extended shelf life of 90 days at room temperature.



Development of value added herbal paneer

- ✳ A study was carried out to prepare herbal paneer with different levels of betel and mint leaf juice. The resultant herbal paneer samples were subjected to physico-chemical, sensory, textural, microbiological analysis during different storage period viz., 0, 7, 14, 28 days.
- ✳ The keeping quality of vacuum packed herbal paneer (1 and 1.5% level of betel leaf and mint leaf juice incorporated paneer sample) can be extended up to 28 days at refrigerated condition.

Development of Functional Yoghurt

- ✳ Functional yoghurt was developed by incorporating flax seed oil at 1.0%, 1.5%, 2.0% and 2.5% level by simultaneous reduction of milk fat. Based on sensory evaluation, functional yoghurt made with 2.0% level of flaxseed oil was selected.
- ✳ Functional yoghurt produced with 2% flaxseed oil and 10% guava pulp with enhanced functional and health attributes like increased omega 3 fatty acid, dietary fibre, seems to be the ideal choice recommended for production of an acceptable functional yoghurt.

Tenderization of spent goat meat by using various preparation of ginger

- ✳ Among the different ginger preparations, the ginger extract at 10 per cent level showed the positive effect of tenderization of spent goat meat without affecting much of its physico chemical and sensory parameters.
- ✳ Among the various durations of marinating time, 16 hours marination time had positive effect on sensory characteristics, while reducing shear force value and hardness value. Thus ginger extract at 10 per cent level with the marination time of 16 hours could be used to tenderize the spent goat meat.

Efficacy evaluation of early nutrition (CHIKIMUNE) in improving growth performance, immunity and gut development in broiler chicks

- ✳ Supplementation of Early nutrition and natural growth promoter also revealed significantly better performance in carcass yield and cost economics.
- ✳ Commercial broilers supplemented with early nutrition (Chikimune) (AV/NNC/17) @ 3g/chick/day during first 48 hours after hatch and followed by supplementation of Natural Growth Promoter (AV/AGP/10) @ 250g/tonne of feed in the pre starter, starter and finisher feeds from 3rd day to 42nd day could achieve higher growth rate, meat yield, better immune response and more profit.



EXTENSION STUDIES

Establishing a non-projected visual teaching aid production unit

- ✿ TANUVAS Dairy Farming Technology Display Kit (TANUVAS-DFTD kit) was developed and the study revealed that the impact was 10.33 per cent higher when lecture method was integrated with DFTD kit. MoU has been made with M/s. Media Vision, Chennai for an amount of Rs. 2,00,000 for commercialization of the kit.
- ✿ DFTD kit was supplied to all TANUVAS outreach centres including KVKs and FTCs and also to various veterinary dispensaries and veterinary hospitals in several districts of the state for conducting training programme for dairy farmers and a total revenue of Rs. 9,21,105 was generated.

Monitoring the performance of Private Artificial Insemination (AI) workers trained through TNLDA

- ✿ As the Private Artificial Insemination work had notable economic impact, the unemployed youth may be further trained and posted in unreach able villages of Tamil Nadu for performing AI in bovines.
- ✿ The AI charges paid by the farmers found to vary widely, as it depends not only on expenses towards AI straws and liquid nitrogen but also on transport expenses. Hence, efforts may be taken for regularization and fixation of AI charges by taking into consideration of distance covered and it should be made transparent among the public.
- ✿ The farmers should be made aware about the role and functions of Veterinarians and that of Para-veterinarians including PAIWs, so that they could identify the right person for the right job based on requirements, which will ultimately result in efficient service delivery to the livestock farmers.

Production performance of buffalo in milk shed areas of Tamil Nadu

- ✿ The cost of production per litre of milk varied from Rs. 32.50 in small farmers to Rs. 25.43 in large farmers with an average of Rs.28.53 per litre of milk.
- ✿ Farmers rearing buffaloes perceived higher feed cost as the foremost constraint. With respect to constraints on technology, complexity involved in rearing buffaloes was the prime constraint and lack of technical knowledge in preparing value added products was perceived less. Unawareness of the supplies by the Government and lack of fodder were the foremost institutional and management constraint respectively. Low price of milk was opined as the most serious constraint by the farmers.



Impact of TANUVAS training programmes on women livestock farmers

- ✿ The socio-economic profile revealed that majority of trainees were belonging to landless category, educated upto primary and secondary level of education, belonging to young age group with a low level of experience having a medium family size and were members of local women organizations.
- ✿ The result of multiple linear regression revealed that participation in TANUVAS training programmes, education, experience, membership in local women organization and information seeking behavior had a significant influence on the empowerment of women dairy farmers.

Economic dimensions of migratory sheep farming in Southern Agroclimatic Zone of Tamil Nadu

- ✿ Socio-economic profile revealed that majority of the sheep farmers were Hindus, most of them belonged to backward community and majority (more than 50 per cent) of them were illiterate. Most of the farmers belonged to middle age group (35-45 years) and majority of the farmers had 20-40 years of sheep farming experience (55 per cent).
- ✿ The overall return per rupee of investment was found to be 1.42. The farms need to produce 415 Kg/annum to attain breakeven point and to operate the sheep farm without any profit or loss, the farmers had to rear a minimum number of 42 number of animals.
- ✿ The factors like variables flock size, education, occupation, experience, landholding and distance of migration were found to influence the profitability.
- ✿ The analysis of sheep farming revealed that flock size, labor charges, medicine and vaccination charges were underutilized in overall category of farmers and the mean technical efficiency of the farms was 88 per cent.

Analysis of commercial desi bird venture in Namakkal district

- ✿ In commercial desi bird venture, majority of the respondents had the flock size of 50 to 200 birds but cent percent of the backyard poultry farmers had up to 20 birds. Most of the commercial farmers and cent per cent of the backyard poultry farmers obtained chicks from their own flock and reared non-descriptive chicken.
- ✿ Majority of the commercial desi bird farmers followed semi intensive system of rearing and cent per cent of the backyard poultry farmers practiced backyard extensive system of rearing.
- ✿ Most of the respondents had better benefit cost ratio in commercial desi bird venture. The average net income per annum generated from commercial and backyard farming was Rs.2.2 lakh and Rs. 4000/- respectively. The contribution of poultry to total family income in commercial desi bird venture and backyard poultry farming was 30 per cent and 2.20 per cent respectively.
- ✿ Incidence of diseases and predator problem were the major constraints in commercial desi bird venture.



CLINICS

Therapeutic evaluation of continuous renal replacement therapy in dogs with acute kidney injury

- ✧ Labrador was the most commonly affected followed by German shepherd. The concentration of canine Kidney Injury Molecule-1 (KIM-1) was highly significant between live and dead animals. These levels indicate that KIM-1 increases with severity of acute kidney injury.
- ✧ No significant difference was observed between polyacrylonitrile (AN69, Filter type-1) membrane and PAES (HF20, Filter type-2) membrane with respect to BUN and Creatinine clearance in dogs with acute kidney injury.
- ✧ Filter type-1 and type-2 had comparable levels of BUN and creatinine post-CRRT. Treatment with high dosage (45 ml/kg/hr) arm did not result in superior outcome as compared to low dosage (35 ml/kg/hr) arm.
- ✧ Hypothermia, shivering, neck edema, dialysis disequilibrium syndrome and access negative pressure were the major complications documented during CRRT.

Clinical evaluation and optimization of apheresis protocols for blood components and cell harvesting in dogs

- ✧ This study proved that canine clinical apheresis for blood component harvesting is feasible in day to day clinical practice with no major clinical complications.
- ✧ Apheresis can be deployed to meet out day to day needs for platelet transfusions. This study highlighted the utility of apheresis platform for haemopoietic cell harvesting in day to day clinical scenarios, for therapeutic usage in dogs.

Diagnostic and therapeutic evaluation of haemorrhagic gastroenteritis in puppies

- ✧ Majority of the affected puppies had clinical evidence of systemic inflammatory response syndrome. The haematological changes observed were leukopaenia in the non-survivors; leukocytosis and neutrophillia; and neutropaenia. The biochemical changes observed in the affected puppies with haemorrhagic gastroenteritis were hypoalbuminemia, hyperbilirubinemia and hypokalemia.
- ✧ The faecal ABST sensitivity pattern in the affected puppies was gentamicin > Azithromycin > Enrofloxacin > Cefotaxime > Tetracycline.
- ✧ The puppies under various groups were treated according to the protocol and they recovered between day 5 to 8, as evident on scoring/grading based on changes in appetite, vomiting frequency, stool consistency and frequency, dehydration, and the level of consciousness.

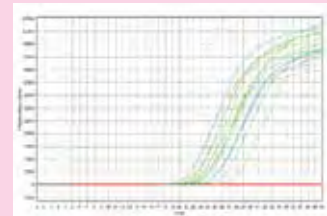


Clinicopathology and medical management of haematuria in dogs

- ✧ Incidence of cystitis was highly reported in Pugs followed by Labrador Retriever and it was found to be common in younger (0-4yrs) age groups. Spitz dogs with middle to higher aged (>8yrs) were found to be mostly predisposed for renal diseases, urolithiasis and bladder tumor. Aged intact male dogs of breeds like Labrador and German shepherd were found to be highly susceptible for the prostate gland disorder. Female dogs were found to be highly susceptible for cystitis and bladder tumor.
- ✧ Cystic, pyelonephritis, prostatic abscess and prostatic cysts responded to the enrofloxacin followed with amikacin and cefotaxime. Three cases of transitional cell carcinoma responded to the piroxicam. Urinary alkalizer potassium citrate and urinary acidifier Vitamin C along with dietary management were found to be effective in dogs with nephrolithiasis and urolithiasis.

Expression profile of interferon stimulated genes (ISGs) in peripheral blood for early pregnancy diagnosis in buffaloes

- ✧ Expression of both ISG 15 and MX 2 genes was higher in primiparous animals when compared to pleuriparous animals which indicates higher sensitivity of leucocytes to interferon tau in primiparous animals.



Expression of ISG15 and MX2 genes



Agarose gel electrophoresis of total RNA

- ✧ The higher expression of interferon stimulated genes at early pregnancy corresponds to the translation of related proteins, which if identified could be used as a bio marker for early pregnancy diagnosis.

Evaluation of endometrial cytology and nuclear morphometry in diagnosis of uterine disorders in bitches

- ✧ Endometrial cytology can be employed in correlating the normal cases brought for breedig advice with cases of reproductive failure, so that causes for the later may be identified with one step forward in diagnosis of infertile cases



Histopathological evidence of reduction in thickening of stromal region and the endometrial glands indicative of anestrus



Hyperplastic endometrial epithelium with coiled endometrial glands indicative of diestrus

- ✧ Nuclear morphometry can also be employed in predicting the reproductive capacity of the bitch by measuring the nuclear parameters of endometrial samples



Detection of circulating tumor cells using antitumor antibodies

- ✳ It was found that polystyrene is a suitable material for antibody binding. Despite the turbulence simulated, tumor cells could bind the antibodies, and presence of tumor cells was confirmed by fluorescence.
- ✳ The specificity of the test was assessed by allowing the lymphocytes, which lack EpCAM, to bind antibody coated micro slide. There was no fluorescence indicating that the lymphocytes could not bind to the antibodies.
- ✳ Thus, CTCs can be detected using polystyrenemicroslides coated with antitumor antibodies with high sensitivity and specificity. Further, it will be a good diagnostic technique for detecting CTCs and thereby diagnosing tumors.

Expression of glucose transporter gene in experimentally induced diabetic rats fed with different vegetable oil

- ✳ Administration of rice bran oil and mustard oil has anti hyperglycemic and hypolipidemic effects.
- ✳ Among the two oils, mustard oil has beneficial role in reducing the blood glucose level through increased insulin activity and upregulation of GLUT 4 gene expression in muscle tissue of STZ-induced diabetic rats.

Influence of heparin binding protein in vitro characteristics of frozen buffalo semen

- ✳ In vitro sperm characteristics viz, sperm motility, viability, morphology, plasma membrane integrity, acrosomal integrity, mitochondrial membrane potential, DNA integrity and lipid peroxidation status were assessed after addition of heparin binding protein.
- ✳ It had influence on sperm characteristics which are required for successful fertilization with oocytes.

Surgical conditions investigated



Intra-articular use of silver nano particles in the management of septic arthritis in calves



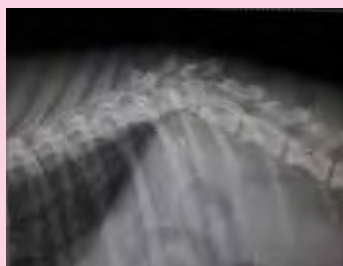
Surgical conditions investigated



Studies on reconstruction of large skin defects following mammary tumor excision in dogs



Use of cortical bone plates seeded with allogenic adipose derived stem cells and platelet rich plasma for fracture healing using fish collagen and hydroxy apatite scaffolds in goats



Rehabilitation of neuro-musculo-skeletal disabled dogs by surgical, physical therapy, regenerative medicine and different prosthetic aids



Silver Nanoparticles coated titanium implants in fixation of long bone fractures in dogs



Minimally invasive plate osteosynthesis for diaphyseal fractures of radius and tibia in ruminants

- ✿ The application of MIPO for diaphyseal fractures of radius and tibia using LCP offered a stable fracture fixation with soft tissue sparing promoted early fracture healing without disturbing the fracture environment.
- ✿ The 3.5 mm diameter with six to ten holes LCP and the cortical screws ranging from 12 to 28 mm length were found suitable in small ruminant body weight ranging from 10.8 to 21.4kg. The 4.5 mm diameter with 10 holes LCP and the cortical screws ranging from 36 to 50mm length were found suitable for body weight 65.2 and 82.7 kg for diaphyseal fracture fixation of tibia under MIPO technique
- ✿ The Clinical evaluation revealed early limb usage and ambulation on 30th postoperative day following MIPO technique. The radiographic evidence of faster healing with minimal callus was observed in all the animals. The biochemical evaluation of serum calcium, phosphorus and alkaline phosphatase revealed significant increase only in serum calcium level on 60th postoperative day. Histopathological evaluation revealed complete ossification at the fracture site indicated early fracture healing.

Minimally invasive plate rod fixation technique for tibial fractures in dogs

- ✿ Clinical research was conducted on 12 diaphyseal fractures of tibia in dogs and divided into two equal groups *viz.*, group I and II. The fractures were treated with plate rod technique by minimally invasive plate osteosynthesis (MIPO) and open reduction in a group I and group II.
- ✿ In both the group normograde pinning was applied. For plate rod technique 1-2 mm K-wire, 3.5 mm LCP and 12 mm to 30 mm cortical screws was found suitable for management of tibial fractures in dogs weighing from 6.6 to 23.7 kg.
- ✿ The clinical evaluation in group II animals observed early pain free ambulation, callus formation with excellent functional outcome in group I compared to group II.
- ✿ Plate rod technique was found to be suitable for management of tibial fractures in dogs and MIPO plate rod technique owing to its relative stability and rapid healing in dogs.



Conception rate following synchronization of ovulation and fixed time breeding in Tellicherry goats

- ✧ The study was conducted to compare the efficacy of different synchronization of ovulation protocol on kidding and fecundity rates in Tellicherry goats during winter and summer seasons
- ✧ The study has recommended ovsynch plus intravaginal sponge protocol for increasing kidding and fecundity rates in Tellicherry goats in winter and summer seasons
- ✧ Synchronization of ovulation protocol could be used to augment fertility in Tellicherry goats
- ✧ Ovsynch plus intravaginal sponge protocol could be used to enhance kidding and fecundity rates Tellicherry goats during winter and summer seasons

Enhancing fertility response in postpartum anestrus cows with estradiol and insulin

- ✧ It was found that the synchronization of ovulation protocol could be used to enhance the ovulation rate and conception rate to a considerable level in postpartum anestrus cows
- ✧ Heatsynch with supplementation of insulin could be the best protocol to improve conception rate in postpartum anestrus cows under field condition.

Ovarian morphometry and its haemodynamics during estrous cycle and early pregnancy in buffaloes

- ✧ Based on the morphometric and haemodynamic analysis of preovulatory follicle (POF) and corpus luteum (CL) and steroid hormonal profile, it was concluded that induction of estrus with PIVD + PGF₂ α protocol found to be an effective tool to achieve pregnancy rate as that of natural estrus without the necessity of estrus detection in buffaloes
- ✧ The size and volume of POF and CL were increased and RCL size and volume of RCL was decreased in pregnant buffaloes when compared to non-pregnant buffaloes. Similarly, the size and volume of POF and size and volume of CL was increased and size and volume of RCL was decreased in induced oestrus than that of natural oestrus in buffaloes



FOOD SCIENCE

Characterization of Electrical Resistance Preservation of Processed Food

- ✧ Fruit pulp of papaya and pine apple and fruit juice of mango and mosambi were used and the food sample had a shelf life of 60 days

- ✧ Milk had shelf life of 28 days while orange juice had 3 months of shelf life.

Development of a Lab Model Equipment for Liquid Food Preservation through Electric Field Application

Development of functional shrikhand with fruit peel extracts

- ✧ This research was aimed to develop a functional shrikhand with incorporation of fruit peel extracts from pomegranate and orange fruits
- ✧ Based on studies 20 % aqueous and 15 % ethanol extracts of pomegranate and orange fruit peels were highly accepted
- ✧ 20 % aqueous extract of fruit peel incorporated shrikhand shows high storage life and sensory qualities

Surveillance of Ochratoxin A and Aflatoxin B1 in processed oats

- ✧ Treatments like pressure cooking, boiling water and microwave cooking were used to assess the decontamination level of toxins
- ✧ The highest reduced Ochratoxin A was observed in boiled water followed by pressure cooking and microwave cooking method
- ✧ For Aflatoxin B1 highest reduction was observed in boiled water followed by microwave cooking and pressure cooking method
- ✧ This study was used to assess the level of decontamination of cooking methods in processed oats.

Design of Coconut based Chocolate Novelties

- ✧ This study was conducted to study the coconut variants viz., coconut oil, coconut cream and coconut milk as substitute of cocoa butter
- ✧ The optimized chocolates were subjected to nutritive, fatty acid profile, texture and thermal analysis
- ✧ Coconut oil chocolate showed high consumer acceptance with a significant increase in lauric acid
- ✧ The textural properties and thermal behaviour of developed chocolates showed significant results
- ✧ There was also a significant reduction in cost of production of coconut based chocolates



**Decontamination
effect of turmeric
(*Curcuma longa*) on
chicken meat**

- ✿ Turmeric powder treatment shows significant reduction in microbial load
- ✿ This technique was used for the reduction of microbial growth in meat and meat products

**Fortification of
omega 3 fatty acids
in processed cheese
spread**

- ✿ This research was aimed to develop functional cheese spread with incorporation of omega 3 fatty acids
- ✿ The incorporation level was optimized as 15% flax seed and 10 % for fish oil.
- ✿ The shelf life of the product was 90 days at refrigerated temperature
- ✿ The cost of production is slightly higher than the control

**Development of
fruit based symbiotic
Smoothie**

- ✿ The present study was aimed to develop symbiotic smoothie with addition of fruit juices
- ✿ The level of inclusion of pomegranate and yoghurt is 40:60 and for jamun and yoghurt is 20:80
- ✿ *Lactobacillus plantarum* was used for preparation of functional smoothie
- ✿ The developed product has a shelf life of one week



Kangayam breed
of Cattle registered by
Breed Registration Committee
of ICAR - NBAGR

Accession No.
INDIA_CATTLE_1800_KANGAYAM_03010



COMMERCIALIZATION, TRANSFER, PATENTING OF TECHNOLOGIES



Release of Blu Alert Kit by
Shri. Y.S. Chowdary, Hon'ble Minister of State for Science and Technology
and Earth Sciences and Shri. Sudarshan Bhagat, Minister of State for
Agriculture and Farmer's Welfare Govt. of India

The technologies developed by TANUVAS during 2016-17 are as follows:-

- * Bru alert kit - Monoclonal based ELISA with high sensitivity for Brucella antibody detection; TANUVAS Surgical Scrub kit, Nano Heal and Nano Dermal Cream for use in the teaching hospitals of Veterinary Colleges; Mastiguard – Teat Protect and TANUVAS SCC count kit for the benefit of the dairy farmers. The above mentioned technologies were developed at Translational Research Platform for Veterinary Biologicals (TRPVB), TANUVAS, Chennai.
- * Omega 3 enriched Chicken meat balls - To increase the shelf life, chicken meat balls have been enriched by incorporating Indian goose



Release of Mastiguard kit by Hon'ble Vice-Chancellor,
TANUVAS

berry; Functional chicken patties with millets. The above mentioned technologies on value added meat products were developed by the Department of Livestock Products Technology (Meat Science), VC&RI, Namakkal.



TECHNOLOGIES COMMERCIALIZED



**Transfer of technology on Bluetongue inactivated attenuated vaccine on
24.01.2017 - Signing of Memorandum of Understanding with
TANUVAS – ICAR -M/s. Brilliant Bio-Pharma Pvt. Ltd., Hyderabad**

- ✿ During the reporting period, two technologies namely TANUVAS live attenuated Goat pox vaccine developed by the Central University Laboratory, TANUVAS, Chennai and Bluetongue inactivated attenuated vaccine with seed virus for sheep developed by the Viral Research Centre-Viral Vaccine, Chennai have been transferred to M/s. Brilliant Bio-Pharma Ltd., Hyderabad for commercial production by signing a Memorandum of Understanding (MoU).

EDUCATION

EDUCATIONAL PROGRAMMES

Admission

The details of admission strength, number of students admitted, overall strength and number of students successfully completed pertaining to the regular courses during the year 2016-17 at TANUVAS are summarized below:

| Courses | Admission strength | Admitted during 2016-17 | Overall strength during 2016-17 | Successfully completed during 2016-17 |
|--|--------------------|-------------------------|---------------------------------|---------------------------------------|
| B.V.Sc. & A.H. (inclusive of NRI-9, FN-5; Kashmiri migrants-2; Livestock Inspectors-3) | 336 | 329 | 1455 | 230 |
| B. Tech. in Food Technology | 21 | 21 | 98 | 18 |
| B. Tech. in Poultry Technology | 20 | 20 | 90 | 18 |
| B. Tech. in Dairy Technology | 20 | 20 | 61 | - |
| M.V.Sc. (Including NRI:5) | 119 | 86 | 297 | 123 |
| M. Tech. (Food Technology) | 10 | 10 | 26 | 8 |
| Ph.D. (Veterinary) | 96 | 19 | 68 | 30 |
| Ph.D. (Biotechnology) | 5 | 2 | 2 | - |
| Ph.D. (Food Technology) | 5 | 5 | 10 | 2 |
| M.Phil. in Biotechnology | 8 | - | - | - |
| M.Sc. Bioinformatics | 10 | - | - | - |
| M.Sc. Biostatistics | 3 | - | - | - |
| M.Sc. (Biotechnology) | 10 | 2 | 2 | - |
| PG Diploma in Bioinformatics | 6 | - | - | - |
| PG Diploma in Companion Animal Practice | 6 | - | - | - |
| PG Diploma in Veterinary Laboratory Diagnostic Technique | 6 | 1 | 1 | - |
| PG Diploma in Business Management in Animal and Fisheries Science | 6 | - | - | - |
| MBA in Food and Livestock Business Management | 10 | 10 | 10 | - |
| Veterinary Nursing Assistant | 50 | 50 | - | - |
| Total | 747 | 575 | 2120 | 429 |



TANUVAS is also offering the following PG Diploma courses under distance education mode to update the skills of field veterinarians on the latest technologies in veterinary science.

| Sl. No. | Courses offered | Enrolment during the year 2016-17 |
|---------|---|-----------------------------------|
| 1 | Small Animal Orthopedics (PGDORT) | - |
| 2 | Veterinary Ophthalmology (PGDOPH) | - |
| 3 | Small Animal Dermatology (PGDSAD) | 3 |
| 4 | Small Animal Emergency and Critical Care Medicine (PGDECM) | 10 |
| 5 | Ethno Veterinary Practices (PGDEVP) | 8 |
| 6 | Feed Manufacturing Technology (PGDFMT) | 4 |
| 7 | Commercial Poultry Production and Management (PGDCPPM) | 1 |
| 8 | Diversified poultry production (PGDDPP) | - |
| 9 | Regenerative Medicine (PGDRM) | - |
| 10 | Small Animal Diagnostic Ultrasound (PGDDUS) | 10 |
| 11 | Zoonoses (PGDZ) | 3 |
| 12 | Bovine Infertility and its Management (PGDBIM) | 3 |
| 13 | Wild Animal Disease Management (PGDWADM) | 10 |
| 14 | Veterinary Clinical Laboratory Diagnosis (PGDVCLD) | 1 |
| 15 | Veterinary Endoscopy (PGDVEN) | 2 |
| 16 | Bovine Production Diseases (PGDBPD) | - |
| 17 | Advanced Reproductive Biotechnology in Animal Models (PGDARB) | 3 |
| 18 | Acaro-Entomology (PGAENT) | - |
| 19 | Dairy Processing and Quality Assurance (PGDDPQA) | - |

| | | |
|-------|---|----|
| 20 | Post Harvest Technology and Quality Assurance of Meat and Meat Products (PGDQAMP) | 1 |
| 21 | Participatory Rural Appraisal (PGDPRA) | - |
| Total | | 59 |

Academic Research

During the year under report, 122 scholars registered for M.V.Sc., M.Tech. and Ph.D. programmes. The theses submitted by 163 scholars were accepted by the University for the award of M.V.Sc., Ph.D., and M.Phil. degrees.

Scholarships

During 2016-17, a total of 1425 students were awarded scholarships to the tune of Rs. 212.08 Lakhs. The Collegewise details are furnished below :

| Sl. No. | Name of the College | No. of students benefited | Amount (Rs. In Lakhs) |
|---------|---------------------|---------------------------|-----------------------|
| 1. | MVC, Chennai | 592 | 107.83 |
| 2. | VC&RI, Namakkal | 303 | 50.51 |
| 3. | VC&RI, Tirunelveli | 155 | 14.75 |
| 4. | VC&RI, Orathanadu | 202 | 16.83 |
| 5. | CFDT, Koduvalli | 119 | 18.83 |
| 6. | CPPM, Hosur | 54 | 3.33 |
| Total | | 1425 | 212.08 |

STUDENT AMENITIES AND ACTIVITIES

Hostel

During the reporting period, a total of 1511 UG and PG students were provided with residential accommodation in the constituent colleges of TANUVAS and the details are furnished hereunder:

| Sl. No. | College | No. of Students | | |
|---------|--------------------|-----------------|-------|-------|
| | | Boys | Girls | Total |
| 1 | MVC, Chennai | 392 | 245 | 637 |
| 2 | VC&RI, Namakkal | 184 | 143 | 327 |
| 3 | VC&RI, Tirunelveli | 114 | 86 | 200 |
| 4 | VC&RI, Orathanadu | 99 | 66 | 165 |
| 5 | CFDT, Koduvalli | 51 | 62 | 113 |
| 6 | CPPM, Hosur | 42 | 27 | 69 |
| Total | | 882 | 629 | 1511 |



The Hostel Amenities Committee meets once in four months and reviews the functioning of the hostel. One part-time Medical Officer visits the hostel to attend to the health needs of the students.

University Students Counselling and Placement Cell (USCPC)

- ✳ USCPC website (www.tanuvplacements.ac.in) has been developed and functioning. The companies and students are requested to register in the USCPC website so as to make the placement activity simple and faster.
- ✳ During 2016-17, 20 veterinary graduates got placement as SRF/JRFs in various projects functioning at TANUVAS
- ✳ The placement details of B.Tech students are as follows:

| Sl. No. | Name of the Company | No. of students placed |
|---------|--|------------------------|
| 1 | M/s Big Dutchman, Hyderabad | 4 |
| 2 | Aviagen India Poultry Breeding Company Pvt. Ltd, Udumalpet | 2 |
| 3 | Venco Research and Breeding Farm Pvt. Ltd., Hosur | 5 |
| 4 | CPF (India) Pvt. Ltd., Vellore | 3 |
| 5 | CARIS Pure Processing Pvt. Ltd., Kancheepuram | 3 |
| 6 | PePe Poultry Farm, Sundakampalayam, Namakkal | 1 |

Library

Library facilities are available in all the constituent colleges of TANUVAS. Facilities like microfilming, reprography, E-mail, information retrieval through CD-ROM and databases are available. These libraries have been networked to national and international agencies so that the readers can have access to the resources of other libraries in the world and vice versa.

Student Activities

Activities of National Cadet Corps- Remount and Veterinary Unit

Madras Veterinary College, Chennai

The senior division (SD) NCC, R&V coy 1 of Madras Veterinary College consisting of two companies commanded by NCC Officers, (Dr) R. Balamurugan and (Dr) K. Padmanath are functioning with the allotted vacancy of 70 SD boy cadets and 25 SD girl cadets. The activities carried out by the NCC cadets for the year 2016-17 are furnished below:

- ✳ 52 SD boy cadets and 18 SW girl cadets attended the Combined Annual Training Camp conducted by 1 (TN) R&V SQN NCC at JG National Higher Secondary School, Tambaram from 05.10.2016 to 14.10.2016.
- ✳ 24 SD boy cadets attended the Army Attachment Training Camp conducted by 1 (TN) R&V SQN NCC at RVC Centre and College, Meerut Cantt from 15.10.2016 to 29.10.2016.
- ✳ Dr. R. Balamurugan attended the NCC Officer Pre-Commission Training course no. NCC OPC-16 from 13.09.2016 to 11.11.2016 at RVC Centre and College, Meerut Cantt. and promoted as Lieutenant in NCC



- ✳ 43 cadets passed "C" certificate and 53 cadets passed "B" certificate examination during the year 2016-17.



Veterinary College and Research Institute, Namakkal

The 6/12 TN Battallion NCC (ARMY) units of VC & RI, Namakkal has a total of 50 cadets. The activities undertaken by the NCC cadets during 2016-17 are detailed below:

- ✳ Twenty six NCC cadets attended the Combined Annual Training Camp (CATC) at Karunya University, Coimbatore from 24.12.2016 to 04.01.2017.
- ✳ NCC Volunteers participated in the cultural events and obtained medals for Silambattam and group dance program during annual "NCC DAY CELEBRATION -2016" organized by Tamil Nadu 12 Battallion NCC unit, Salem at Glazebrooke Public School, Salem
- ✳ Seven cadets passed 'C' certificate and 19 cadets passed B' Certificate examination during the year 2016-17.

National Service Scheme

NSS programme is being implemented at all the constituent colleges of TANUVAS with 750 vibrant student NSS volunteers.

Madras Veterinary College, Chennai

- ✳ Veterinary health camps were organized at Sivanvayal, Bandikavanur, Nallankavanur, Vadathur and Thottikalai villages of Tiruvallur district from 01.04.2016 and 07.04.2016 benefiting 350 animals
- ✳ World Veterinary Day was observed on 30.04.2016 by conducting Veterinary health Camp at Madras Veterinary College, Chennai
- ✳ A Blood Donation camp was organized on 07.11.2016 and 60 Volunteers donated 57 units of blood to Rajiv Gandhi Government General Hospital, Chennai. Apart from this, a total of 48 units of blood was donated by the NSS volunteers on demand.
- ✳ On 26.11.2016 Tree plantation camp and Bovine infertility treatment camp were organized at Bandikavanoor and

Karayanmedu. 100 saplings were planted and 50 dairy animals were treated.

- ✳ With the support from GSS Jain Gurukul, Vepery, Veterinary camp was organized on 27.11.2016 at Natham – Nallur village and 150 animals were treated for various ailments
- ✳ Brucellosis screening test was conducted on 24.12.2016 at Gaushala, Thiruvallur and about 50 animals were dewormed
- ✳ Veterinary health camp was conducted on 04.02.2017 at Karikalavakkam and 250 animals were treated
- ✳ With the support from Mar Gregorious Arts and Science College, Mogappair, Veterinary health camp was conducted on 18.02.2017 at Thumbakkam and 150 animals were treated for various ailments

VC&RI, Namakkal

- ✳ A Blood donation camp was organized at college campus on 23.11.2016 and 55 NCC volunteers donated 55 units of blood to the blood bank of General Government hospital, Namakkal



- ✳ Awareness programme on "Demonstration of elementary fire fighting" was organized at VC&RI campus on 23.02.2017
- ✳ A Special Veterinary Health Camp was conducted on 01.03.2017 at Naagaiyanallur village, Thottiyam in coordination with NSS unit of Kongunadu College of Engineering and Technology, Thottiyam, Trichy.



- ❖ International Women's Day Celebrations-2017 was organized at VC&RI campus on 08.03.2017.
- ❖ Two NSS Volunteers of VC&RI, Namakkal participated in National Integration Camp and won First prize in cultural activities
- ❖ World Tuberculosis Day 2017 was organized at Karaikurichi Village, Namakkal district on 24.03.2017.

VC&RI, Orathanadu

- ❖ A blood group identification programme was conducted for 87 school children of Government High School, Kovilur village on 21.07.2016 to facilitate their health status.



- ❖ NSS volunteers participated in the State Level Culturals (Ilangathir-2017) conducted by Ministry of Culture, Government of India at South Zone Cultural Centre, Thanjavur from 09.01.2017 to 12.01.2017. R. Rama Krishnan, NSS volunteer won "Ilangathir 2017 Award" for State Level Solo Drama Competition.



- ❖ A veterinary health camp and digital transaction camp were conducted at Neduvakkottai village of Kovilur panchayat on 31.01.2017. A total of 113 cattle were treated, 30 goats were dewormed and 140 birds were vaccinated against Ranikhet with oral pellet vaccine. Pregnancy diagnosis and Artificial Insemination were also carried out for large animals. TANUVAS mineral mixture was distributed to 75 farmers. Digital transaction procedure was explained to 50 farmers and 30 students by staff of IOB, Thanjavur district.



- ❖ Oral hygiene awareness programme was conducted by NSS volunteers at the VC&RI campus on 17.02.2017 in view of World Cancer Day 2017.
- ❖ A special camp under National Service Scheme inclusive of human health was conducted at Neduvakkottai, Kovilur village panchayat from 20.03.2017 to 26.03.2017





VC&RI, Tirunelveli

- ✳ With the sponsorship of M/s Annai Chickens Pvt. Ltd, Tirunelveli, World Egg Day-2016 was observed by NSS volunteers on 14.10.2016.

College of Food and Dairy Technology, Koduvalli

- ✳ Blood grouping cum Blood Donation Awareness Camp was organized by the NSS volunteers in collaboration with Tamil Nadu AIDS Control Society on 15.02.2017 and Blood grouping was done to 139 students and 22 staff.
- ✳ NSS special camp was organized from 24.03.2017 to 30.03.2017 at Guruvoyal village. During the camp, activities like Awareness on digital transactions, Tree plantation; Training on Yoga, Training on value added Meat and Milk products preparation; Village level survey; Veterinary health camp; cultural programmes and competitions to school students were organized.

Student Association Activities

The Student Association is actively functioning at various constituent college of TANUVAS and the salient activities are mentioned below:

Madras Veterinary College

- ✳ Inter-class cultural competition "PEGASUS'16" was conducted from 02.01.2017 to 08.01.2017.
- ✳ Thirty one students of II and IV year participated and won the "runners trophy" in the "PONFIMA 2017", an inter-collegiate cultural competition organised by Fisheries College and Research Institute, Ponneri on 24.03.2017.
- ✳ College Day was celebrated on 18.03.2017

Veterinary College and Research Institute, Namakkal

- ✳ Muthamizh Vizha was celebrated on 20.12.2016
- ✳ College day was celebrated on 22.12.2016

Veterinary College and Research Institute, Orathanadu

- ✳ College day was celebrated on 04.01.2017

College of Food and Dairy Technology, Koduvalli

- ✳ College day was celebrated on 14.02.2017. The cultural programs were conducted on the name of VIRUKSHA – XV. Rangoli, Face painting, Short film, singing and Dance competitions were conducted and prizes were distributed.

Sports Activities

- ✳ The Madras Veterinary College sports team participated in the Inter-Collegiate Hockey Tournament organized by Dhyan Chand Hockey Academy among Professional colleges (Medical and Engineering colleges) from 01.04.2016 to 03.04.2016 at Y.M.C.A College, Nandanam, Chennai. Madras Veterinary College sports team was declared the Runners and won the cash award of Rs.10,000/-.
- ✳ The 3rd Dr.Porchezian Memorial Inter-Professional Hockey Tournament-2016 was organized by Madras Veterinary College during June-2016 and the prizes awarded are as follows:
 - ✳ Madras Veterinary College Hockey team - Winners
 - ✳ Dr. M.Venkatachalam. I M.V.Sc - Man of the Match
 - ✳ Dr. J.Karthick, I M.V.Sc. - Best Defender
 - ✳ Dr.P.Balaji. Ph.D. - Best Center Forward
 - ✳ Sundara Selvam.C, IV.B.V.Sc - Highest Goal Scorer
- ✳ TANUVAS Football team participated in the Tamilnadu Inter-University Foot Ball Tournament for Men held during December-2016, organized by Tamil Nadu Physical Education and Sports University, Chennai



- ❖ Inter Professional Volleyball Tournament - 2017 for men was organized by Madras Veterinary College during March-2017 and Madras Veterinary College Volleyball team was declared the Runners.
- ❖ Madras Veterinary College hockey team participated in the Inter-Collegiate hockey tournament organized by Anna University, Chennai (ANNA FEST-2017) held during March-2017 and won the bronze medal.
- ❖ The Annual Sports day of MVC was organized on 18.03.2017
- ❖ B. Santhosh Kumar, student of VC&RI, Namakkal won the Chief Minister Trophy in the 200m butterfly swimming competition conducted by Sports Development Authority of Tamil Nadu at Namakkal.
- ❖ M. Priya, student of VC&RI, Namakkal won the first position in the district level Javelin throw competition and got selected for state level participation. She also participated in the Chief Minister trophy athletic meet 2016 conducted at M.G.R. Stadium, Madurai and secured 5th place in Javelin Throw event.
- ❖ S.Gobi, student of VC&RI, Namakkal secured first place in individual singles in the 35th Junior National Tenni-Koit Championship 2016 at Hyderabad organized by Telangana Tenni-Koit Association.



- ❖ Annual Sports day of VC&RI, Namakkal was conducted on 21.12.2016 and the winners are as follows:

- ❖ Individual Champion among Men – S. Gopi
- ❖ Individual Champion among Girls – M. Priya



- ❖ Annual Sports day of VC&RI, Orathanadu was conducted on 03.01.2017 and the winners are as follows:

- ❖ Individual Champion among Men – K. Kathirvel
- ❖ Individual Champion among Girls – R.Lekhasuriya
- ❖ The overall championship was won by Red house

- ❖ V.Vaishnavi, student of VC&RI, Orathanadu won First Prize in Chief Minister's Trophy (2016-17) - district level 100 meters backstroke swimming tournament, held at Theni district during November 2016. She also won the Second prize in Chief Minister's



Trophy (2016-17) - district level 400 meters Individual Medley Swimming Tournament, held at Thanjavur district during November 2016

- ✧ The Annual Sports day of VC&RI, Tirunelveli was conducted on 30.12.2016 and the winners are as follows:

- ✧ Individual Champion among Men – Jedithiya Gabriyel
- ✧ Individual Champion among Girls – C. Srividhya

- ✧ The overall championship was won by IV year students

- ✧ Sports day was celebrated on 14.02.2017 at CFDT, Koduvalli. All the indoor and outdoor games, group events and athletic events were conducted for both boys and girls.

- ✧ Sports day was celebrated on 19.02.2017 at CPPM, Hosur. All the indoor and outdoor games, group events and athletic events were conducted for both boys and girls.



HONOURS / AWARDS

Madras Veterinary College, Chennai

| Sl. No. | Name of the faculty | Name of the Award / honour | Type of Award / Awarding body | Details of the Award |
|---------|------------------------------------|------------------------------|--|---|
| 1 | Anandaraja R., <i>et.al.</i> | Best oral presentation award | Certificate (College of Science and Technology, Visakhapatnam) | Paper presented entitled Pathogenicity profile of <i>Vibrio parahaemolyticus</i> in farmed Pacific white shrimp, <i>Penaeus vannamei</i> |
| 2 | Anandaraja R., <i>et.al.</i> | Best oral presentation award | Certificate (International conference on aquatic animal health and parasitic disease- ICAAP-2017" - Annamalai University, Chidambaram) | Paper presented entitled Multiplex PCR for the detection and differentiation of <i>Vibrio parahaemolyticus</i> in farmed penaeid shrimp, <i>Penaeus vannamei</i> using the <i>toxR</i> and <i>tlh</i> genes |
| 3 | Cauveri. D, <i>et.al.</i> | Best Poster Award | Certificate (XIV Annual Convention of SOCDAB – College of Veterinary and Animal Sciences, Mannuthy) | Poster presentation entitled Nucleotide variation in Leptin (LEP) gene – a comparison between the indigenous and exotic breeds of sheep |
| 4 | Kannan T.A. | Best Paper Award | Certificate (Indian Association of Veterinary Anatomists) | Paper presented entitled Characterization of Spermatogonial stem cells in Mice |
| 5 | Karthickeyan S.M.K and T.Sivakumar | Editorial Excellence Award | Certificate (Agricultural Research Communication Center, Karnal) | Editorial Board Member of Indian Journal of Animal Research |
| 6 | Naveen Kumar V., <i>et.al.</i> | Best Master's Thesis Award | Certificate and shield (Genesis Urban and rural development society) | Thesis entitled Epidemiological studies on bovine brucellosis |



| Sl. No. | Name of the faculty | Name of the Award / honour | Type of Award / Awarding body | Details of the Award |
|---------|--------------------------------------|--|--|--|
| 7 | Meenakshi Sundaram S. | TANUVAS Foundation Day Award | Certificate (TANUVAS) | Fellow of Indian Society of Animal Production and Management |
| 8 | Robinson J.J. Abraham, <i>et.al.</i> | Best Book for the year 2016 | Certificate (Agricultural Scientific Tamil Society, New Delhi) | Book on Clean meat production |
| 9 | Ramani, R. <i>et.al.</i> | Best Oral Presentation | Certificate | Paper presented entitled A comparison of physio-chemical and organoleptic properties of emu meat, beef and poultry sausages |
| 10 | Ramani C. | Best oral presentation award Best oral presentation award | Gold Medal (Indian Society for Veterinary Surgery) | Paper presented entitled A high volume study on use of Phacoemulsification technique for cataract extraction and intra ocular lens implantation in dogs (2006-2015)- a review of 524 eyes Paper presented entitled Ocular B- Mode ultrasonography for the assessment of posterior segment in dogs: A review of 44 cases |
| 11 | Velavan A. | Best oral presentation award | Certificate (National Symposium on "Biomaterials and Stem cells for tissue repair and regeneration in Veterinary Surgery" at MVC, Chennai) | Paper presented entitled Surgical management of pelvic fractures in dogs |
| 12 | Sivakumar T. | Loyola Environmental Award and Loyola Award for Social Concern | Certificate (Loyola College, Chennai) | Contribution in the field of veterinary science |
| 13 | Sivaselvam S.N. | Reviewer Excellence Award | Certificate (Agricultural Research Communication Centre [ARCC], Karnal) | Reviewer of Asian Journal of Dairy and Food Research |
| 14 | Soundararajan C. | Shri.S.M.Ismail Oration Award – 2015 | Certificate and Medal (26 th National Congress of Veterinary Parasitology - Veterinary College, Shimoga) | Contribution in the field of Veterinary Helminthology |



| Sl. No. | Name of the faculty | Name of the Award / honour | Type of Award / Awarding body | Details of the Award |
|---------|-----------------------|---|---|--|
| 15 | Soundararajan C. | Achiever award 2016 Best Oral Presentation Award Best Poster presentation Award Best Oral presentation Award | Certificate and Gold Medal (Agricultural Scientific Tamil Society) Certificate Certificate | Contribution in Veterinary Science Paper presented entitled Effect of two newly identified Star gooseberry- (<i>Sauropus androgynus</i>) and Kaatu Pugayilai (<i>Lobelia nicotinaefolia</i>) on the growth performance of native chicken Poster presentation entitled Scanning electron microscopy (SEM) study of a snake tick, <i>Amblyomma gervaisi</i> Paper presented entitled Tick infestation on human beings in Nilgiris and Kancheepuram district of Tamil Nadu |
| 16 | Azhahianambi P. | Best Oral Presentation Award | Certificate | Paper presented entitled Identification and characterisation of SNPs containing A/G in Gamma interferon gene promoter region as a host resistance marker in various sheep breeds |
| 17 | Bino Sundar S.T. | Best Oral Presentation Award | Certificate | Paper presented entitled Field evaluation of the sex attractant pheromone Z-9-Tricosene based food baited glue traps to lure-and-kill house flies, <i>Musca domestica</i> (Diptera: Muscidae) in an organised poultry farm |
| 18 | Anandaraja R., et.al. | Best oral presentation award | Certificate | Paper presented entitled Diagnosis of pancocate liver disorders due to <i>Vibrio parahaemolyticus</i> in Pacific white shrimp |
| 19 | A. Kumaravel | Tamil Arignar Award | Certificate (2 nd National Agricultural Scientific Tamil Conference - TNAU, Coimbatore) | Contribution to scientific Tamil |

Faculty of Basic Sciences

| Sl. No. | Name of the faculty | Name of the award / honour | Type of Award / Awarding body | Details of the Award |
|---------|---------------------------|--------------------------------|---|---|
| 1. | Serma Saravana Pandian A. | Best Poster Presentation Award | Certificate (National conference cum workshop on "Making India Food Clean and Safe" at MVC, Chennai) | Poster presentation entitled Assessing the conjoint demand for quality attributes of butter in Trivandrum city, India |



Veterinary College and Research Institute, Namakkal

| Sl. No. | Name of the faculty | Name of the Award / honour | Type of Award / Awarding body | Details of the Award |
|---------|-----------------------------------|--|---|--|
| 1 | Anbarasi P. | Best oral presentation award | Certificate (Agricultural Scientific Tamil Society) | Paper presented entitled Molecular Characterization of Bm86 antigen against Rhipicephalus |
| 2 | Arulmozhi A. | Best Popular article award Best Tamil orator award | Certificate | More number of tamil popular article publication Paper presented entitled Tamil can do Veterinary Science |
| 3 | Raja M.J. | Best oral presentation award | Certificate | Paper presented entitled Detection of disease preventive characteristics of Jack fruit leaves in disease resistance in broilers |
| 4 | Rani N. | Best Popular Article Award | Certificate (2 nd National Agricultural Scientific Tamil Conference - TNAU, Coimbatore) | More number of tamil popular article publication |
| 5 | Balasubramaniam G.A. | Best executive committee worker award, 2016 and Fellow of Indian Association of Veterinary Pathologists | Certificate (Indian Association of Veterinary Pathologists) | Contribution in Veterinary Pathology |
| 6 | Dharmaceelan D.S. and A.Kumaresan | Best paper presentation (Gold medal) | Gold Medal and Citation (Indian Society for Veterinary Surgery) | Paper presented entitled Surgical management of unusual case of ureter calculi in a dog Paper presented entitled Influence of Tramadol on MAC of Isoflurane in cattle and dog |
| 7 | Kalaiselvi G. | Best participation award | Certificate (ICAR, New Delhi) | High score of written exam conducted during summer school programme July 2016, CIFA, Bhubaneswar |
| 8 | Manokaran S. | Best paper presentation award | Certificate (Indian Society for Study of Animal Reproduction (ISSAR) at Sri Venkateswara Veterinary University, Tirupati) | Paper presented entitled Administration of GnRH seven days after ovsynch protocol on conception rate in repeat breeder cows |



| Sl. No. | Name of the faculty | Name of the Award / honour | Type of Award / Awarding body | Details of the Award |
|---------|----------------------------------|---------------------------------|--|---|
| 9 | Narmatha N. | Reviewer Excellence Award | Certificate (ARCC, Karnal) | Best reviewing of articles |
| 10 | Ponnudurai G. | Kalyana Sundaram memorial Award | Certificate (IAAVP) | Distinguished contribution for Poultry Parasites |
| 11 | Velusamy R. | Best oral presentation | Certificate (2 nd National Conference on "Frontiers in Exobiological sciences and its Application" | Paper presented entitled Prevalence of haemo protozoan diseases in cattle |
| 12 | Vijayakumar G. and S.Sivaraman | Best oral presentation award | Certificate (ISVM) | Paper presented entitled Evaluation of AQUA COW in the management of recumbent cow |
| 13 | Periyasamy V., <i>et.al.</i> | Best oral presentation award | Certificate (ISVM) | Paper presented entitled Successful management of Snake envenomation in a Horse-A case report |
| 14 | Sasikala K., <i>et.al.</i> | Best oral presentation award | Certificate (ISVM) | Paper presented entitled Endoscopic Evaluation and successful management of oesophagitis in Cattle-A review of five cases |
| 15 | Venkatesakumar E., <i>et.al.</i> | Best oral presentation award | Certificate (ISVM) | Paper presented entitled Endoscopic diagnosis of fungal pneumonia in buffaloes – review of 9 cases |
| 16 | Shalini A.S. and G.Vijayakumar | Best oral presentation award | Certificate (National symposium on "Innovative techniques, Emerging issues and Advancement in Veterinary Medicine to meet the challenges: Present and the future" at VCRI, Tirunelveli) | Paper presented entitled Endoscopic removal of button battery from the stomach of Golden retriever pup-A case report |



Veterinary College and Research Institute, Orathanadu

| Sl. No. | Name of the faculty | Name of the Award / honour | Type of Award / Awarding body | Details of the Award |
|---------|-----------------------------------|-------------------------------|--|--|
| 1 | Arunprasad A. | Gold Medal | Certificate [Indian Society for Veterinary Surgery (ISVS)] | Paper presented entitled Surgical management of pelvis fracture in dog |
| 2 | Vijayakumar M. and P.Senthilkumar | Appreciation award | Certificate ISVS Conference at MVC, Chennai | Paper presented entitled Surgical management of fracture induced suppurative osteomyelitis of left humerus in an Indian Aseel hen |
| 3 | Tamilmahan P. | Appreciation award | ISVS Conference at MVC, Chennai | Paper presented entitled Culture, characterization and differentiation potential of rat bone marrow derived mesenchymal stem cells |
| 4 | Senthilkumar S. | Gold Medal | ISVS Conference at MVC, Chennai | Paper presented entitled Surgical management of Diaphragmatic hernia in cattle-Review of 6 cases |
| | | Gold Medal | ISVS Conference at MVC, Chennai | Paper presented entitled Surgical management of ureteral and urethral calculi in a dog |
| 5 | Balakrishnan S. | Best popular article award | Certificate (2 nd National Agricultural Scientific Tamil Conference - TNAU, Coimbatore) | Collection of best popular articles during year 2016 |
| 6 | Babu Prasath N. | Award for Question and Answer | (2 nd National Agricultural Scientific Tamil Conference - TNAU, Coimbatore) | Question and Answer programme |
| 7 | Puvarajan B. | Best popular article award | (2 nd National Agricultural Scientific Tamil Conference - TNAU, Coimbatore) | Article entitled Major diseases affecting small ruminants during winter and modern health measures to be adopted for prevention |
| | | Best research paper award | | Research paper on Characterization of field Infectious laryngotracheitis virus by Poly Acrylamide Gel Electrophoresis(PAGE) |



| Sl. No. | Name of the faculty | Name of the Award / honour | Type of Award / Awarding body | Details of the Award |
|---------|---------------------|--|---|---|
| 8 | Balamurugan T.C. | Best oral Presentation | Certificate (National Conference on 'Biotechnology New Horizons and Hopes' - Madurai Kamaraj University, Madurai) | Paper presented entitled A Comparative study on serum gelatinase activity through gelatin zymography in various goat breeds |
| 9 | Raja S. | Young Scientist Award | Certificate (Indian Society for Study of Animal Reproduction) | Abortion due to adventitious placentation in a Jersey cross bred cow: a case report |
| 10 | Richard Churchil R. | Reviewer Excellence Award | Certificate (ARCC, Karnal) | Reviewer of Indian Journal of Animal Research |
| 11 | Sakthivel K.M. | Best paper presentation award | Certificate (Society of Extension Education, Agra) | Paper presented entitled Role and contribution of livestock in the livelihood of marginal and landless livestock farmers in rural Tamil Nadu, India |
| 12 | Sankar P. | Early Career Academic Grant Young Research Forum Award Certificate of Appreciation | Travel Grant (International Veterinary Congress, London) Certificate (Journal of Veterinary Medicine) | To attend the 3 rd International Veterinary Congress, London Paper presented entitled Effect of nano curcumin for management of subclinical mastitis Contribution in the Editorial Board activities |
| 13 | Veeraselvam M. | Best oral presentation award | Certificate [Indian Society for Veterinary Medicine (ISVM)] | Paper presented entitled Fecal DNA Analysis for diagnosis of Tuberculosis in Sloth Bears (<i>Melursus ursinus</i>) |
| 14 | Balakrishnan S. | Best poster presentation award Best poster presentation award | Certificate [Indian Society for Veterinary Medicine (ISVM)] | Poster presentation entitled Immune response in birds to inactivated infectious bursal disease oil emulsion vaccine Casual association of epidemiological risk factors involved in outbreaks of goat pox and survivability |



Veterinary College and Research Institute, Tirunelveli

| Sl. No. | Name of the faculty | Name of the Award / honour | Type of Award / Awarding body | Details of the Award |
|---------|----------------------------------|--|---|---|
| 1 | Mohanambal K. | Best Oral presentation award | Certificate (Indian Society for Veterinary Medicine) | Paper presented entitled Evaluation of immuno potentiating effect of Medicinal plant products in commercial layer flock vaccinated against New Castle Disease |
| 2 | Mohanambal K., <i>et.al.</i> | Best poster presentation award | Certificate | Poster presentation entitled Management of star gazing in Goose |
| 3 | Mohanambal K., <i>et.al.</i> | Best poster presentation award | Certificate | Poster presentation entitled Micro-filariasis in Dairy Cattle |
| 4 | Venkatesakumar E., <i>et.al.</i> | Best Oral presentation award | Certificate | Paper presented entitled Management of pus formed Urinary Bladder inflammation in Dalmatian Dog |
| 5 | Venkatesakumar E. | Best poster presentation award | Certificate | Poster presentation entitled Endoscopic Diagnosis of Fungal pneumonia in Buffaloes – review of cases |
| 6 | Shiju Simon M. and R.Ramprabhu | Best paper presentation award | Certificate | Paper presented entitled Ocular worm and its management in Horse |
| 7 | M.Shiju Simon and R.Ramprabhu | Best paper presentation award | Certificate | Paper presented entitled Haemoproteus rileyi Malkani 1936 in a Free ranged Indian Peacock (Paro Cristatus) |
| 8 | Rajathi S. | Best Popular Article Award | Certificate (2 nd National Agricultural Scientific | More number of Tamil popular article publication |
| 9 | Sundaravinayaki M. | Award for Best Poetry in Tamil | Tamil Conference - TNAU, Coimbatore) | Tamil Poetry to encourage dissemination of scientific knowledge |
| 10 | Suresh Kumar V. | Venus International Foundation Awards-2016 | Certificate (Venus International Foundation, Chennai) | Outstanding Faculty |



College of Poultry Production and Management, Hosur

| Sl. No. | Name of the faculty | Name of the Award / honour | Type of Award / Awarding body | Details of the Award |
|---------|---------------------|--|--|---|
| 1 | Ilaya Bharathi D. | Best article award | Certificate (Indian Poultry Science Association) | Article entitled Species differentiation using PCR RFLP. Published in Indian Poultry Science Journal in Avian Genetics |
| 2 | Jyothi Priya R. | Best poster presentation award | Certificate (IAVP South Zonal Conference - Sri Venkateswara Veterinary University, Tirupati) | Poster presentation entitled Intestinal herniation into the right ventral abdomen in a Broiler-A Case Report |
| 3 | Mani K. | Best research paper presentation Award | Certificate (Indian Poultry Science Association) | Paper presented entitled Performance of cross bred meat type chicken developed as an alternate to <i>desi</i> chicken for rural |

Centre for Animal Health Studies

| Sl. No. | Name of the institution / staff | Name of the Award / honour | Type of Award / Awarding body | Details of the Award |
|---------|---------------------------------|--|---|--|
| 1 | Gowthaman V. | Young scientist award | Certificate (World Poultry Science Association) | Contribution to Poultry Industry |
| 2 | Krishnamohan Reddy Y. | Certificate of appreciation | Certificate (TANUVAS) | Development of Bluetongue Virus Vaccine |
| 3 | Manimaran K., <i>et.al.</i> | Certificate of appreciation | Certificate (TANUVAS) | Development of Rapid plate agglutination test for detection of antibody against <i>M. gallisepticum</i> using serum samples |
| 4 | Tirumurugaan K.G. | Best Poster Presentation award Best Poster Presentation award | Certificate (ISVIB) Certificate (International Association of Brucellosis) | Poster presentation entitled Hybrid Nanoparticle as an Alternate Enzyme Source for Diagnostic Applications Poster presentation entitled Establishing a standard reference sera panel for validating sero-diagnostic tests for <i>Brucella</i> |



Centre for Animal Production Studies

| Sl. No. | Name of the faculty | Name of the Award / honour | Type of Award / Awarding body | Details of the Award |
|---------|---------------------|----------------------------|---|--|
| 1 | Murugeswari R. | Best oral presentation | Certificate (X Biennial Animal Nutrition Association Conference - College of Veterinary Sciences, Tirupati) | Paper presented entitled Effect of extruded feed on the growth and carcass characteristics of pigs |

Directorate of Extension Education

| Sl. No. | Name of the faculty | Name of the Award / honour | Type of Award / Awarding body | Details of the Award |
|---------|-------------------------------|---|---|--|
| 1 | Punnamurthy N. | Fellow of Indian Society of Veterinary Pharmacology and Toxicology Fellow of National Society For Ethno-pharmacology | Certificate (Indian Society of Veterinary Pharmacology and Toxicology) Certificate (National society for Ethno-pharmacology) | Contribution in the field of Veterinary Pharmacology and Toxicology Contribution in the field of veterinary medicine |
| 2 | Punnamurthy N., <i>et.al.</i> | Best oral presentation award | Certificate (Indian Society for Veterinary Medicine) | Paper presented entitled Ethno Veterinary Medicine |
| 3 | Ramakrishnan V. | Best oral presentation award Best Poster Presentation award | Certificate (Agricultural Scientific Tamil Society) Certificate (World Ayurveda Foundation) | Paper presented entitled Tamil can do Veterinary Science Poster presentation entitled Effect of herbal dewormer on haematology, serum biochemical parameters and body weight of sheep naturally infected with gastrointestinal nematodes. |

**Chippiparai breed
of Dog**





DISTINGUISHED VISITORS

| Date of visit | Name of the Visitor | Place of visit |
|---------------|--|---|
| 27.05.2016 | Dr. H.Rahman, Deputy Director General, Indian Council of Agricultural Research, New Delhi | Translational Research Platform for Veterinary Biologicals, Madhavaram, Chennai |
| 20.06.2016 | Dr.Wayne Ganpat , Senior Lecturer and Head of Department, West Indies | Instructional Livestock Farm Complex, Madhavaram, Chennai |
| 11.07.2016 | Dr. Vivek Kapur and Dr. Jayarao Bhusan Pennsylvania University, USA | Translational Research Platform for Veterinary Biologicals, Madhavaram, Chennai |
| 12.07.2016 | Dr.Edward Wright, London, United Kingdom Dr.Niger Temperton, University of Kent, UK Dr.Janet Daly, University of Nottingham, UK | Madras Veterinary College, Chennai |
| 19.07.2016 | Thiru Gagandeep Singh Bedi, I.A.S., Principal Secretary, Animal Husbandry, Dairying and Fisheries Department, Govt. of Tamil Nadu Dr. N. Subbaiyan, I.A.S., District Collector, Thanjavur | Veterinary College and Research Institute, Orathanadu |
| 02.08.2016 | Thiru. K.Rajaraman, I.A.S, Principal Secretary and Director, Entrepreneurship Development Institute | Translational Research Platform for Veterinary Biologicals, Madhavaram, Chennai |
| 02.08.2016 | Dr.Pendupe Duestser, Loma Linda University, California USA | Instructional Livestock Farm Complex, Madhavaram, Chennai |
| 09.08.2016 | Dr. G. Subha and Dr. S. Subhanu, King Institute of Preventive Medicine and Research, Guindy | Laboratory Animal Medicine, Madhavaram, Chennai |
| 30.07.2016 | Ms. Anuradha Prasad, Joint Secretary and Dr. K. K. Aravindan, Marketing Officer, Ministry of Food Processing Industries Government of India, New Delhi | Madras Veterinary College, Chennai |
| 29.08.2016 | Dr.K.Alagusundaram, Deputy Director General (Agriculture Engineering), ICAR, New Delhi Dr.R.K.Gupta, Director, Central Institute of Post Harvest Engineering and Technology, Ludhiana | Madras Veterinary College, Chennai |
| 02.09.2016 | Dr.S. Prabhakar, District Collector, Erode | Bargur Cattle Research Station, Bargur, Erode |



| Date of visit | Name of the Visitor | Place of visit |
|---------------|---|---|
| 26.09.2016 | Dr.Thilaikoothan, Practising Veterinarian, USA | Translational Research Platform for Veterinary Biologicals, Madhavaram, Chennai |
| 25.10.2016 | Dr. Manisha Khan and Dr. Kulpreet Bhui ITC Life Sciences & Technology Centre, Mangalore | Translational Research Platform for Veterinary Biologicals, Madhavaram, Chennai |
| 26.10.2016 | Dr.Giri Polavarapu, President and CEO, Genomix Biotech Inc, Atlanta, USA | Vaccine Research Centre – Viral Vaccine, Madhavaram, Chennai |
| 26.10.2016 | Dr. Rob Etches, President & CEO, Crystal Biosciences, USA | Madras Veterinary College, Chennai |
| 07.11.2016 | Dr. Bhushan Jayarao and Dr. Vivek Kapur, Pennsylvania State University, USA | Poultry Disease Diagnostic and Surveillance Laboratory, Namakkal |
| 08.11.2016 | Dr.Rahul Dhodapkar and Dr.Nonika Rajkumari, Associate Professors JIPMER, Pondicherry | Laboratory Animal Medicine, Madhavaram, Chennai |
| 28.12.2016 | Dr. R.K. Ravikumar, Scientist, National Innovation Foundation, Gandhinagar, Gujarat | Veterinary College and Research Institute, Namakkal |
| 30.12.2016 | Mr. P.Balakrishna Reddy, Hon'ble Minister of Animal Husbandry, GoTN, Chennai Mr. K. Veera Raghava Rao, District Collector, Madurai | Veterinary University Training and Diagnostic Centre, Madurai |
| 10.01.2017 | Dr.Yogesh Murkunde and Dr. B.Pramila, Sri Ramachandra University, Chennai | Laboratory Animal Medicine, Madhavaram, Chennai |
| 21.01.2017 | Dr.K.Alagusundaram, Deputy Director General (Agriculture Engineering), Indian Council of Agricultural Research, New Delhi | Madras Veterinary College, Chennai |
| 23.01.2017 | Dr. Devender Hooda, Huve Pharma, Ahmedabad | Laboratory Animal Medicine, Madhavaram, Chennai |
| 23.01.2017 | Team members, Charoen Pokphand Foods (India) Private Company Limited, Thailand | College of Poultry Production and Management, Hosur |
| 25.01.2017 | Dr. Kannan Ganapathy, University of Liverpool, UK | Poultry Disease Diagnostic and Surveillance, Namakkal |
| 31.01.2017 | Dr. Pendope Puonton Hughog, Loma Linda University, California, USA | Madras Veterinary College, Chennai |
| 17.01.2017 | Dr. N.Krishnakumar, I.F.S, Principal Chief Conservator of Forests, Department of Forests, Govt. of Tamil Nadu | Madras Veterinary College, Chennai |
| 13.02.2017 | Dr. Mike McGrew, The Roslin Institute, UK; Prof. Simon G. Best, Geron BIO-MED and Dr. Pravin Kini, Tropical Animal Genetics Pvt. Ltd., UK | Translational Research Platform for Veterinary Biologicals, Madhavaram, Chennai |



| Date of visit | Name of the Visitor | Place of visit |
|---------------|---|--|
| 21.02.2017 | Dr. Savithiri Sivakumar, CEO, Aaranya Biosciences, Chennai | Laboratory Animal Medicine, Madhavaram, Chennai |
| 26.02.2017 | Dr. Lakew Wondimu Abachiri, Vice-President, Ambo University, Ethiopia Prof. Singanan, Presidency College, Chennai | Madras Veterinary College, Chennai |
| 18.03.2017 | Dr. D.Venugopal, Assistant Director, Marine Products Export Development Authority, Cochin | Instructional Livestock Farm Complex, Madhavaram, Chennai |



Thiru Gagandeep Singh Bedi, I.A.S., Principal Secretary, Animal Husbandry, Dairying and Fisheries Department, Govt. of Tamil Nadu and Dr. N. Subbaiyan, I.A.S., District Collector, Thanjavur visiting VC&RI, Orathanadu



WOMEN EMPOWERMENT

TANUVAS organized several training programmes especially for rural women to empower them in Animal Husbandry activities. Some of the salient activities of TANUVAS in the area of women empowerment during the reporting period are listed below:

- ✧ A total of 64 on and off-campus training programmes on goat farming, dairy farming and fodder production were organised by VUTRC, Coimbatore for the benefit of 2006 farmers which included 673 women beneficiaries.
- ✧ A total of 189 on and off-campus training programmes on profitable dairy farming, turkey farming and goat farming were organized by VUTRC, Cuddalore for the benefit of 2524 farmers which included 1078 women.
- ✧ A total of 103 on and off-campus training programmes were organised by VUTRC, Dharmapuri on dairy cow management, urea enrichment of sugarcane tops, goat farming, pig farming, dairy farming and management, disease management in livestock and backyard poultry keeping for the benefit of 3322 farmers which included 1873 women beneficiaries.
- ✧ A total of 64 on and off-campus training programmes on dairy farming with value addition of milk, desi chicken rearing, sheep and goat farming, scientific livestock rearing and turkey rearing were organised at VUTRC, Dindigul benefiting 2097 farmers which included 1204 women.
- ✧ A total of 90 on and off-campus training programmes on dairy farming, goat farming, desi chicken farming, disease management, clean milk production and fish farming were organised at VUTRC, Erode benefiting 2463 farmers which included 1957 women beneficiaries.
- ✧ VUTRC, Karur conducted 67 on and off-campus training programmes on integrated dairy farming, scientific dairy farming and its management, profitable goat farming and its management, establishment of Korangadu pasture land in Karur District benefitting 2201 farmers which included 1482 women.
- ✧ VUTRC, Krishnagiri organized 48 on and off-campus training programmes on profitable dairy farming, desi bird rearing and management, turkey farming, emu farming, feeding and breeding of sheep and goat, and common breeds and selection of sheep and goat for the benefit of the 1712 farmers which included 1390 women.
- ✧ A total of 102 on and off-campus training programmes on profitable sheep / goat and dairy farming, preparation of concentrate feed for livestock and clean milk production were organized by VUTRC, Rajapalayam benefiting 2944 farmers which included 962 women.
- ✧ A total of 58 on and off-campus training programmes on quail farming for meat production, Intensive system of goat rearing and avenues for animal husbandry and



allied activities were organised by VUTRC, Melmaruvathur benefiting 1728 farmers which included 807 women.

- ✱ VUTRC, Salem organized 103 on and off-campus training programmes on desi chicken rearing, goat rearing, buffalo rearing, dairy farming and rabbit farming. The total number of women beneficiaries was 2723.
- ✱ VUTRC, Tiruppur organized 80 on and off-campus training programmes on goat farming, desi chicken farming, FMD prevention and control, concentrate feed preparation to dairy animals, azolla cultivation, selection of dairy animals, clean milk production, herbal method of control for Foot and Mouth disease, urea enrichment of paddy straw and enrichment of sugarcane tops, oral pellet vaccine for control of Ranikhet disease benefiting 2391 farmers which included 1968 women.
- ✱ A total of 78 on and off-campus trainings on conservation of native livestock and poultry, Ethno Veterinary Medicine (EVM)-A remedy for primary health care of livestock, dairy farming with Ethno veterinary practices and organic and sustainable agriculture were organized by VUTRC, Thanjavur for the benefit of 2492 farmers which included 919 women.
- ✱ VUTRC, Tiruvannamalai organized 82 on and off-campus training programmes on preventive measures of Foot and mouth disease, goat farming, livestock wealth, desi chicken rearing, recent advances in goat farming and advanced technologies in green fodder cultivation for the benefit of the 2609 farmers which included 1606 women.
- ✱ A total of 66 on and off - campus trainings were organized by VUTRC, Trichy on dairy farming with fodder production, sheep and goat farming, and poultry farming with

special emphasis on desi chicken benefiting 3606 farmers which included 1594 women.

- ✱ A total of 52 on and off-campus training programmes on livestock farming, backyard poultry farming, fodder development, low cost cattle feed computation using locally available feed ingredients, value added milk products preparation and ornamental fish farming were organised by VUTRC, Vellore for the benefit of 3184 farmers which included 1940 women.
- ✱ VUTRC, Villupuram organized 67 on and off-campus trainings on dairy farming with fodder production, sheep and goat farming, and poultry farming with special emphasis on desi chicken benefiting 1218 farmers which included 781 women.
- ✱ VUTRC, Nagercoil organized 87 on and off-campus trainings on backyard poultry rearing, country chicken farming benefiting 3039 farmers which included 2320 women.
- ✱ VUTRC, Ramanathapuram organized 45 on and off-campus trainings on various animal husbandry activities benefiting 641 farmers which included 313 women.
- ✱ VUTRC, Nagapattinam organized 97 on and off-campus trainings on various animal husbandry activities benefiting 2851 farmers which included 1454 women.
- ✱ VUTRC, Perambalur organized 74 on and off-campus trainings on various animal husbandry activities benefiting 3066 farmers which included 2373 women.
- ✱ A total of 53 on and off-campus training programmes on income generation through livestock farming, sheep and goat farming, desi chicken rearing and profitable turkey rearing were organised at Regional Research and Education Centre, Pudukottai benefiting 1988 farmers which included 1721 women.



- ❖ A total of 92 on and off-campus training programmes on scientific goat rearing, Japanese quail farming, Integrated farming system, mushroom production, honey bee farming, freshwater fish farming and value added meat, poultry and fish products were conducted by KVK, Kattupakkam benefiting 2636 participants which included 1378 women beneficiaries.
- ❖ Krishi Vigyan Kendra, Kundrakudi conducted 226 on and off-campus training programmes on poultry rearing, reproductive management in dairy cows, backyard desi bird rearing, techniques on azolla cultivation, preparation of value added wheat products, value added ragi products and value added tomato products benefitting 5338 farmers which included 2789 women.
- ❖ Krishi Vigyan Kendra, Namakkal conducted 167 on and off-campus training programmes on agriculture, horticulture, animal husbandry and fisheries activities for 6199 beneficiaries which included 3492 women.
- ❖ Farmers Training Centre (FTC), Kancheepuram organized 40 on-campus and 47 off-campus training programmes on feeding management in dairy cattle, management of infertility in dairy cattle, dairy cattle breed selection and breeding management benefiting 2545 farmers which included 1674 women.
- ❖ Farmers Training Centre, Theni organized 46 on-campus and 44 off-campus training programmes on different aspects of animal husbandry practices benefiting 1878 women.
- ❖ Twelve on-campus and eight off-campus training programmes were conducted by FTC, Tiruvarur on different aspects of animal husbandry practices benefiting 2628 farmers which included 1701 women.





HUMAN RESOURCE DEVELOPMENT

The faculty of TANUVAS attended various programmes, short courses, summer and winter schools during the reporting period for updating the knowledge and for implementing the same in their academic, research and extension activities. Likewise a number of seminars, workshops, training programmes were organised by constituent units of TANUVAS for sharing the technical knowledge with the faculty of other institutes.

Total number of faculty members of TANUVAS who attended the training programmes / Summer schools / Short-term courses / Workshops during 2016-17:

National - 415 ; International – 13

Training programmes / Summer schools / Short-term courses / Workshops organized by TANUVAS during 2016-17:

National - 46 ; International - 1

Madras Veterinary College, Chennai

| Title of the Programme | Place | Duration | Name of the sponsoring agency | No. of Participants |
|---|---|---------------------|---|---------------------|
| Principles and practices of imaging and endoscopy in farm and pet animal practice (Training) | Veterinary Clinical Medicine | 25.04.16 - 15.05.16 | Indian Army-RVC | 4 |
| Management of Animals in Emergencies (Training) | Veterinary and Animal Husbandry Extension Education | 09.05.16 - 14.05.16 | World Animal Protection | 36 |
| Principles and practices of imaging and endoscopy in farm and Companion animal practice (Training) | Veterinary Clinical Medicine | 07.07.16 - 27.07.16 | ICAR, New Delhi | 16 |
| Recent advances in vector borne disease diagnostics, therapeutics and transfusion practices in veterinary medicine (Training) | Veterinary Clinical Medicine | 03.08.16 - 23.08.16 | ICAR, New Delhi | 10 |
| Application of Bioinformatics in Genome Analysis (Workshop) | Bioinformatics Centre | 08.08.16 - 12.08.16 | On payment | 22 |
| Application of Bioinformatics in Proteome Analysis (Workshop) | Bioinformatics Centre | 19.09.16 - 23.09.16 | On payment | 22 |
| Animal Disaster Management Techniques (Training) | Veterinary and Animal Husbandry Extension Education | 26.09.16 - 28.09.16 | World Animal Protection | 36 |
| Karyotyping, Genetic Disorder Screening and Parentage Testing (Training) | Animal Genetics and Breeding | 21.11.16 - 24.11.16 | Kerala Livestock Development Board Ltd. | 3 |



| Title of the Programme | Place | Duration | Name of the sponsoring agency | No. of Participants |
|---|---------------------------------------|---------------------|---------------------------------------|---------------------|
| Biomaterials and stem cells for tissue repair and regeneration in veterinary surgery (National Symposium) | Veterinary Surgery and Radiology | 02.12.16 - 04.12.16 | Indian Society for Veterinary Surgery | 50 |
| Information retrieval system (Workshop) | Bioinformatics Centre | 05.12.16 | Payment mode | 84 |
| Advances in clinical diagnostic techniques in farm and pet animal practice (Training) | Veterinary Clinical Medicine | 01.02.17 - 21.02.17 | ICAR, New Delhi | 24 |
| Canine breeding and infertility management practice (Training) | Veterinary Gynaecology and obstetrics | 08.02.17 - 10.02.17 | Drools India Pvt. Limited | 8 |
| Computer aided drug designing (Workshop) | Bioinformatics Centre | 13.02.17 - 17.02.17 | On payment | 24 |
| Small animal Ophthalmic Surgery (Pet specialty practice) | Veterinary Surgery and Radiology | 14.02.17 - 16.02.17 | Drools India Pvt. Ltd. | 21 |
| Small animal soft tissue surgery | Veterinary Surgery and Radiology | 20.02.17 - 22.02.17 | Drools India Pvt. Ltd. | 10 |
| Clinical haematology, approach to anaemia and hands-on blood transfusion practices in dogs and cats (Seminar) | Veterinary Clinical Medicine | 25.02.17 | Payment mode | 50 |
| Vetinformatics (Workshop) | Bioinformatics Centre | 06.03.17 - 10.03.17 | Payment mode | 11 |
| Basic Orthopaedic (Training) | Veterinary Surgery and Radiology | 21.3.17 - 23.3.17 | Drools India Pvt. Ltd. | 10 |

Faculty of Basic Sciences, MVC, Chennai

| Title of the Programme | Name of the Department / Institute | Duration | Sponsoring Agency | No. of Participants |
|---|------------------------------------|---------------------|--|---------------------|
| Wildlife medicine (Training) | Wildlife science | 08.04.16 - 17.04.16 | Payment mode | 1 |
| Development of diagnostic antigen using recombinant DNA technology (Training) | Animal Biotechnology | 11.04.16 - 15.04.16 | Animal Husbandry Department, Govt. of Tamil Nadu | 8 |
| | | 18.04.16 - 22.04.16 | | 8 |
| Fodder cultivation technologies | Agronomy | 11.05.16 - 13.05.16 | National Dairy Development Board, Karnal | 2 |
| Sustainable animal production – Recent trends and future challenges in disease diagnosis (International workshop) | Animal Biotechnology | 11.07.16 - 13.07.16 | Trilateral programme TANUVAS, UKIERI and BBSRC | 20 |
| <i>in-vitro</i> maturation and fertilization of animal oocytes (National level Training) | Animal Biotechnology | 09.12.16 - 29.12.16 | Payment mode | 16 |



Veterinary College and Research Institute, Namakkal

| Title of the Programme | Name of the Department | Duration | Sponsoring Agency | No. of Participants |
|---|---|---------------------|--|---------------------|
| Computer Automated Semen Analysis (Training) | Veterinary Gynaecology and Obstetrics | 11.05.16 - 13.05.16 | Payment mode | 9 |
| Issues and approaches in organic poultry production in India (Training) | Poultry Science | 03.08.16 - 23.08.16 | Indian Council of Agricultural Research, New Delhi | 12 |
| Bovine Breeding – Assisted Reproductive Technologies (Training) | Veterinary Gynaecology and Obstetrics | 16.08.16 - 19.08.16 | Tamil Nadu Livestock Development Agency, Chennai | 14 |
| Artificial Insemination in cows (Training) | Veterinary Gynaecology and Obstetrics | 01.09.16 - 30.09.16 | Tamil Nadu Livestock Development Agency, Chennai | 39 |
| | | 21.11.16 - 20.12.16 | | 19 |
| Ultrasound imaging in canine (Training) | Veterinary Clinical Medicine | 17.10.16 - 21.10.16 | Payment mode | 10 |
| Breeding, feeding and health management of livestock (Training) | Veterinary and Animal Husbandry Extension | 24.10.16 - 26.10.16 | SAMETI, Pudukottai | 30 |
| | | 09.11.16 - 11.11.16 | | 30 |
| Augmentation in conservation and improving genetic resources of indigenous poultry for food security (Training) | Poultry Science | 09.11.16 - 29.11.16 | Indian Council of Agricultural Research, New Delhi | 11 |
| Echocardiography in canines (Training) | Veterinary Clinical Medicine | 01.12.16 - 02.12.16 | Payment mode | 4 |
| Pharmaceutical meet | Pharmacology and Toxicology | 18.01.17 | Pharmaceutical companies | 125 |

Veterinary College and Research Institute, Orathanadu

| Title of the Programme | Name of the Department | Duration | Sponsoring Agency | No. of Participants |
|--|---------------------------------------|---------------------|--|---------------------|
| Multipurpose Artificial Insemination Training for Rural India (MAITRI) | Veterinary Gynaecology and Obstetrics | 14.03.16 - 12.04.16 | Tamil Nadu Livestock Development Agency, Chennai | 16 |
| | | 02.11.16 - 01.12.16 | | 40 |



Veterinary College and Research Institute, Tirunelveli

| Title of the Programme | Place | Duration | Name of the sponsoring agency | No. of Participants |
|---|--------------------|---------------------|--|---------------------|
| Developing winning research proposals (Training) | VC&RI, Tirunelveli | 20.04.16 - 23.04.16 | Payment mode | 25 |
| Pharmaceutical meet -2016 | VC&RI, Tirunelveli | 23.11.16 | Pharmaceutical companies | 17 |
| Innovative techniques, Emerging issues and advancements in veterinary medicine to meet the challenges : present and future (National Symposium) | VC&RI, Tirunelveli | 22.02.17 - 24.02.17 | Indian Society for Veterinary Medicine | 100 |

College of Food and Dairy Technology, Koduvalli

| Title of the Programme | Place | Duration | Name of the sponsoring agency | No. of Participants |
|--|--------------|---------------------|-------------------------------------|---------------------|
| Making Indian Food Clean and Safe (National Conference cum Workshop) | MVC, Chennai | 20.01.17 - 21.01.17 | NABARD, Chennai and ICMR, New Delhi | 400 |

Centre for Animal Health Studies, Chennai

| Title of the Programme | Place | Duration | Name of the sponsoring agency | No. of Participants |
|--|--|---------------------|---|---------------------|
| Laboratory Animal Sciences (Training) | Laboratory Animal Medicine | 22.02.16 - 03.03.16 | Payment mode | 30 |
| Economically important and emerging diseases of livestock and poultry (Seminar) | Central University Laboratory | 07.06.16 | Govt. of Tamil Nadu | 75 |
| Veterinary clinical applications on confocal microscopy (Workshop) | Translational Research Platform for Veterinary Biologicals | 27.09.16 - 29.09.16 | Payment mode | 10 |
| Poultry Animal Biotechnology: Mighty Egg: Realizing Translational potential of egg bioreactor (Workshop) | Translational Research Platform for Veterinary Biologicals | 27.10.16 - 28.10.16 | Department of Biotechnology, New Delhi | 30 |
| Goat pox vaccine production (Training) | Central University Laboratory | 01.11.16 - 11.11.16 | Brilliant Biopharma Private Ltd., Hyderabad | 2 |



| Title of the Programme | Place | Duration | Name of the sponsoring agency | No. of Participants |
|---|--|---------------------|---|---------------------|
| Veterinary clinical applications of <i>in vivo</i> Imaging (Workshop) | Translational Research Platform for Veterinary Biologicals | 22.11.16 - 24.11.16 | Payment mode | 10 |
| | | 13.02.17 - 15.02.17 | | 10 |
| Veterinary Regulations and Translational Research (Workshop) | Translational Research Platform for Veterinary Biologicals | 05.01.17 - 06.01.17 | Department of Biotechnology, New Delhi | 41 |
| Cell culture techniques (Training) | Vaccine Research Centre-Viral Vaccine | 27.02.17 - 04.03.17 | Payment mode | 6 |
| Bluetongue virus propagation and vaccine production (Training) | Vaccine Research Centre-Viral Vaccine | 06.03.17 - 15.03.17 | Brilliant Biopharma Private Ltd., Hyderabad | 2 |
| Strategies for Bio-tech Entrepreneurship (Workshop) | Translational Research Platform for Veterinary Biologicals | 07.03.17 - 08.03.17 | Entrepreneurship Development Institute, Govt. of Tamil Nadu | 40 |

Directorate of Clinics, Chennai

| Title of the Programme | Place | Duration | Name of the sponsoring agency | No. of Participants |
|--|--------------|---------------------|-------------------------------|---------------------|
| 8 th Clinical case conference on farm and companion animal practice for veterinary students | MVC, Chennai | 12.08.16 - 13.08.16 | TANUVAS | 360 |



Certificate Course in Laboratory Animal Sciences accredited by the Federation of European Laboratory Animal Scientists Associations (FELASA) at MVC from 22.02.2016 to 03.03.2016



A National level Training of Trainers (ToT) Course on "Management of Animals in Emergencies" for National Disaster Response Force (NDRF) personnel from 09.05.2016 to 14.05.2016 at MVC, Chennai



National Training Programme on “Principles and practices in imaging and endoscopy in farm and companion animal practice” MVC, Chennai



International workshop on ‘Sustainable animal production-Recent trends and future challenges in disease diagnosis’ India



DBT sponsored workshop on “Poultry Biotechnology: Mighty Egg - Realizing translational potential of egg bioreactor”



ICAR sponsored national training programme on “Recent Advance in Vector borne disease diagnostics, therapeutics and transfusion practices in Veterinary Medicine”



Eighth Clinical Case Conference on “Farm and companion animal practice for veterinary students’



National Training Programme on "Principles and practices in imaging and endoscopy in farm and companion animal practice"



DBT sponsored workshop on "Veterinary Regulations and Translational Research"



35th Annual Convention of Indian Society for Veterinary Medicine



EXTENSION EDUCATION ACTIVITIES

The effective dissemination of information among the rural people is achieved through training programmes, exhibitions, radio and television programmes, pamphlets and bulletins. During the reporting period, veterinary health care services were provided to 1,10,014 livestock and poultry and a total of 72,190 farmers benefited from these programmes.



Video / Audio lessons

Video and audio lessons on livestock and poultry were distributed to the VUTRCs, FTCs, KVKs, Research Stations, Information centres, NGOs and line departments to serve as teaching tools. During the report period, 2159 video lessons



were screened and 50,646 farmers benefited. The Video / audio lessons are being sold to the farmers and entrepreneurs through outreach centres.

Continuing Education programmes

Continuing Education programmes are conducted for the University faculty, Officers of Animal Husbandry Department, Tamil Nadu Co-operative Milk Producers Federation Ltd., Tamil Nadu Livestock Development Agency and National Dairy Development Board. During the year, a total of 143 staff members were trained through seven programmes.

Training Programmes

The training programmes on various enterprises viz. dairy farming, sheep and goat farming, pig farming, rabbit farming, poultry farming, agro-forestry, fodder development, integrated farming, profitable livestock farming, backyard poultry farming, vermi compost preparation, azolla cultivation for livestock feeding, preparation of value added milk and meat products, etc., were offered to the farmers and entrepreneurs. During the period under report, a total of 1170 on-campus training programmes





and 966 off-campus training programmes were conducted for the benefit of 1,12,739 and 78,179 farmers respectively.

Sponsored Training Programmes

- ✳ With the coordination of Department of Animal Husbandry, Govt. of Tamil Nadu, sponsored training programmes were organized for the beneficiaries of Tamil Nadu Government schemes on "Free distribution of Milch Cows to the poor families in rural areas", "Free distribution of sheep and goat to the poor families in rural areas" and "Free distribution of poultry to the poor families in rural areas" through University outreach centres. During the reporting period, a total of 37 training programmes benefitting 1713



dairy farmers, 322 training programmes benefitting 19828 goat farmers and one training programme benefitting 75 Sheep farmers were conducted.

- ✳ A total of 67 training programmes benefitting 1930 goat farmers, 36 training programmes



benefitting 1174 dairy farmers and 26 training programmes benefitting 1134 desi chicken rearing have been conducted under Tamil Nadu Government scheme entitled "Pudhu Vazhvu Project".

- ✳ A total of 14 training programmes were organized for 507 beneficiaries of Tamil Nadu Government scheme on "Fodder development" through the University outreach centres.
- ✳ A total of 59 training programmes benefitting 3598 desi chicken farmers and six training programmes benefitting 183 broiler farmers were organized under the Tamil Nadu Government scheme on "Poultry Development"
- ✳ Farmers orientation programme for the beneficiaries of Tamil Nadu Livestock Development Agency were coordinated through the University outreach centres. During the report period, a total of 17 programmes benefitting 17000 farmers were conducted.



Advisory and Consultancy

The total number of advisory and consultancy services rendered in person, by post, telephone, e-mail, touch screen and by way of field visits during the year were 2,21,350.

Mass Media Coverage

A total of 214 radio programmes, 63 TV programmes were conducted during the reporting period.



Exhibition / Mass Contact Programmes

During 2016-17, 433 exhibitions / mass contact programmes were conducted benefiting 51522 farmers and 1,10,014 animals.



Foundation Day

TANUVAS Foundation Day 2016 and Livestock and Poultry Farmers Day was organized at Erode on 18.09.2016 and 19.09.2016. An Exhibition cum Farmers Technical workshop on the theme "Popularizing of novel low cost technological interventions for profitable livestock and poultry farming" was organized. More than 7000 farmers visited the exhibition.



Kisan Call Centre

The Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India has launched Kisan Call Centre, Level II which is functioning at the Directorate of Extension Education with a toll free telephone number 1551 for attending to the queries of farmers and entrepreneurs.

Touch Screen Information Kiosk

Touch screen information Kiosk facility has been provided at TANUVAS Extension centres and also at University headquarters. Software on dairy farming, goat farming, poultry farming, Japanese quail farming, marketing avenues and Right to Information Act-2005 have been installed in the Touch screen information Kiosks.



Agricultural Technology Information Centre (ATIC), Kattupakkam

Agricultural Technology Information Centre at Kattupakkam provides advisory services and product information through single window delivery system under the financial support of National Agricultural Technology Project of ICAR. During the period under report,

- ✱ A total of 1937 University publications, seven ICAR publications and 22 video lessons were sold
- ✱ Video lessons on various aspects of livestock farming, fisheries and value added product preparation were screened for the benefit of the farmers visiting ATIC. A total of 2809 farmers / entrepreneurs were benefited during the period.

Distance Education Programme

With an aim to provide learning opportunity to farmers, farm women and school dropouts, TANUVAS offers various courses in Animal Husbandry and Veterinary Science through print and online modes through the Directorate of Distance Education. The various courses offered and the number of students enrolled during 2016-17 are listed below:



Certificate Courses

| Sl. No. | Course title | Medium of instruction | Duration of the course | Mode of delivery | No of candidates enrolled |
|--------------|---|-----------------------|------------------------|-----------------------|---------------------------|
| 1 | Dairy Farming | Tamil | 3 Months | Print mode | 12 |
| 2 | Goat Farming | Tamil | 3 Months | Print mode | 4 |
| 3 | Sheep Farming | Tamil | 3 Months | Print mode | - |
| 4 | Piggery Farming | Tamil | 3 Months | Print mode | - |
| 5 | Rabbit Farming | Tamil | 3 Months | Print mode | 3 |
| 6 | Broiler Farming | Tamil | 3 Months | Print mode | - |
| 7 | Layer Farming | Tamil | 3 Months | Print mode | 4 |
| 8 | Japanese Quail Farming | Tamil | 3 Months | Print mode | - |
| 9 | Turkey Farming | Tamil | 3 Months | Print mode | - |
| 10 | Desi- Bird Farming | Tamil | 3 Months | Print mode | 14 |
| 11 | Livestock Fodder Production | Tamil | 3 Months | Print mode | - |
| 12 | Concentrate Feed Preparation | Tamil | 3 Months | Print mode | 1 |
| 13 | Hatchery Management | Tamil | 3 Months | Print mode | 1 |
| 14 | Value Added Milk Product Preparation | Tamil | 3 Months | Print mode | 1 |
| 15 | Value Added Meat Product Preparation | Tamil | 3 Months | Print mode | - |
| 16 | Waste Disposal Management | Tamil | 3 Months | Print mode | - |
| 17 | Bio-Security Measures | Tamil | 3 Months | Print mode | 1 |
| 18 | Clean Meat Production | Tamil | 3 Months | Print mode | - |
| 19 | Feed Mill Management | Tamil | 3 Months | Print mode | 1 |
| 20 | Animal Welfare | English | 6 Months | Print and Online mode | 13 |
| 21 | Optimizing Cattle Feeding Based on locally Available Fodder Resources | English | 6 Months | CD – ROM based | - |
| 22 | Livestock and Poultry Farm Manager | Tamil | 6 Months | Print mode | 1 |
| Total | | | | | 56 |

Skill Development Programmes

| Sl. No. | Courses offered | No. of candidates enrolled |
|---------|--|----------------------------|
| 1 | Dairy Farm Assistant | 23 |
| 2 | Dairy Plant Assistant | - |
| 3 | Milk and Milk Products Quality Control Assistant | 9 |
| 4 | Feed Mill Supervisor | 6 |
| 5 | Feed Analytical Technical Assistant | - |
| 6 | Livestock Farm Manager | 11 |
| 7 | Poultry Farm Manager | 3 |
| 8 | Hatchery Supervisor | 3 |



| | | |
|--------------|---|-----------|
| 9 | Poultry Farm Supervisor | 1 |
| 10 | Poultry Breeder Farm Supervisor | - |
| 11 | Turkey farming Assistant | 1 |
| 12 | Poultry Vaccinator | 1 |
| 13 | Laboratory Assistant | - |
| 14 | Surgery Theatre and Radiology Attendant | - |
| 15 | Small Animal Attendant | 1 |
| Total | | 59 |

Self-Employment Programmes

| Sl. No. | Courses offered | No. of candidates Enrolled |
|--------------|---|----------------------------|
| 1 | Dairy farming | 163 |
| 2 | Sheep Farming | 6 |
| 3 | Goat Farming | 120 |
| 4 | Fodder and Fodder Seed Production | 1 |
| 5 | Preparation of Fermented Dairy Products | 4 |
| 6 | Livestock Farm Waste Utilization | - |
| 7 | Rabbit farming | 17 |
| 8 | Pig farming | 16 |
| 9 | Japanese Quail Farming | 8 |
| 10 | Desi-chicken Rearing | 186 |
| Total | | 521 |

University Publication Division

The Publication Division of TANUVAS is engaged in publishing the following scientific and popular publications.

- ✳ **"Indian Journal of Veterinary and Animal Sciences Research"**, a bi-monthly scientific journal. The life membership fee is Rs.3000/- and annual subscription is Rs.500/-.
- ✳ A bi-monthly **"TANUVAS Technical Reporter"** in English
- ✳ **"Kalnadai Kathir"**, a popular bi-monthly Tamil Journal. The Life membership fee is Rs.1000/- and annual subscription is Rs.100/-
- ✳ A monthly **"News letter"** in English and **"செய்தி மடல்"** in Tamil



TANUVAS
Aseel Chicken



RESEARCH STATIONS, OUTREACH CENTRES, SERVICE UNITS AND LABORATORIES

Research Stations

TANUVAS has the following twelve research stations / instructional farms / units:

1. Post Graduate Research Institute in Animal Sciences, Kattupakkam
2. Mecheri Sheep Research Station, Pottaneri
3. Sheep Breeding Research Station, Sandynallah, Ooty
4. TANUVAS Regional Research and Education Centre, Pudukottai
5. Poultry Research Station, Madhavaram Milk Colony, Chennai
6. Bargur Cattle Research Station, Bargur, Erode District
7. Instructional Livestock Farm Complex, Madhavaram Milk Colony, Chennai
8. Instructional Livestock Farm Complex, Namakkal
9. Instructional Livestock Farm Complex, Tirunelveli
10. Instructional Livestock Farm Complex, Orathanadu, Thanjavur
11. Central Feed Technology Unit, Kattupakkam
12. Institute of Animal Nutrition, Kattupakkam





Post Graduate Research Institute in Animal Sciences, Kattupakkam

The stock position of the different units and revenue generated as on 31.03.2017.

| Sl. No. | Name of the Unit | Stock as on 31.03.2017 | Revenue Generated (Rs. in lakhs) |
|---------|---|------------------------|----------------------------------|
| 1. | Cattle and Buffalo | | |
| | Crossbred cattle (Jersey x Sindhi) | 130 | 43.06 |
| | Kangayam cattle (work cattle) | 2 | |
| | Murrah buffaloes | 57 | |
| 2. | Sheep | | |
| | Madras Red | 219 | 4.06 |
| 3. | Goat | | |
| | Non-descript | 51 | |
| | Kanni goat | 10 | |
| | Boer X Non-descript | 96 | |
| 4. | Pigs | | |
| | Large White Yorkshire | 159 | 55.60 |
| | Landrace | 51 | |
| | Duroc | 25 | |
| | F ₁ (Large White Yorkshire x Landrace) | 9 | |
| | Three-way synthetic | 11 | |
| 5. | Poultry | | |
| | Ostrich | 95 | 27.34 |
| | Japanese quail | 6240 | |
| | Duck | 524 | |
| 6. | Rabbit | | |
| | New Zealand White | 176 | 0.75 |
| | Soviet Chinchilla | 31 | |
| 7. | Farm produce | - | 2.41 |
| 8. | Slaughter proceeds | | 17.19 |
| | Total | | 150.41 |

Mecheri Sheep Research Station, Pottaneri

| Sl. No. | Name of the Unit | Stock as on 31.03.2017 | Revenue Generated (Rs. in lakhs) |
|---------|------------------|------------------------|----------------------------------|
| 1. | Sheep | 741 | 20.55 |
| | Mecheri sheep | | |
| 2. | Goat | 305 | 4.42 |
| | Salem Black | | |
| 3. | Farm produce | | 4.42 |
| | Total | | 24.97 |



Sheep Breeding Research Station, Sandynallah, Ooty

| Sl. No. | Name of the Unit | Stock as on 31.03.2017 | Revenue Generated (Rs. in lakhs) |
|---------|-------------------------------------|------------------------|----------------------------------|
| 1. | Sheep | | 12.94 |
| | Nilagiri | 568 | |
| | Sandyno | 552 | |
| | Dorset cross | 147 | |
| | Garole | 5 | |
| | Garole X Sandyno | 152 | |
| | Garole X Sandyno cross (G2S & G2SF) | 137 | |
| | Nari Swarna | 6 | |
| 2. | Geese | 12 | 0.09 |
| 3. | Farm produce | | 4.18 |
| | Total | | 17.21 |

TANUVAS Regional Research and Education Centre (RREC), Pudukottai

| Sl. No. | Name of the Unit | Stock as on 31.03.2017 | Revenue Generated (Rs. in lakhs) |
|---------|------------------|------------------------|----------------------------------|
| 1. | Cattle | 11 | 0.98 |
| 2. | Pigs | 37 | 0.35 |
| 3. | Turkey | 73 | 2.89 |
| 4. | Desi Chicken | 1146 | 3.39 |
| 5. | Sheep | 172 | - |
| | Total | | 7.61 |

Poultry Research Station, Madhavaram Milk Colony, Chennai

| Sl. No. | Name of the Unit | Stock as on 31.03.2017 | Revenue Generated (Rs. in lakhs) |
|---------|-------------------------|------------------------|----------------------------------|
| 1. | Japanese quails | 3518 | 46.12 |
| 2. | Japanese Quail (RFS) | 1000 | |
| 3. | Turkey | 81 | |
| 4. | Nandanam broiler II | 394 | |
| 5. | Nandanam broiler III | 921 | |
| 6. | Nandanam Chicken IV | 280 | |
| 7. | RIR | 67 | |
| 8. | Aseel | 662 | |
| 9. | Aseel Rhodo white cross | 109 | |
| 10. | Kadakanath | 327 | |
| 11. | Nicobari | 165 | |
| 12. | Gramapriya | 92 | |
| 13. | Fancy | 501 | |
| 14. | Guinea fowl | 246 | |
| 15. | WLH | 126 | |
| 16. | Geese | 31 | |
| 17. | Commercial Broiler | 300 | |
| | Total | | 46.12 |



Bargur Cattle Research Station, Bargur

| Sl. No. | Name of the Unit | Stock as on 31.03.2017 | Revenue Generated (Rs. in lakhs) |
|---------|------------------|------------------------|----------------------------------|
| 1. | Cattle | | 0.05 |
| | Bargur | 47 | |

Instructional Livestock Farm Complex, Madhavaram Milk Colony, Chennai

| Sl. No. | Name of the Unit | Stock as on 31.03.2017 | Revenue Generated (Rs. in lakhs) |
|---------|-----------------------|------------------------|----------------------------------|
| 1. | Cattle | | 1.87 |
| | Bargur | 2 | |
| | Deoni | 2 | |
| | Gir | 2 | |
| | Kangayam | 2 | |
| | Rathi | 1 | |
| | Sahiwal | 2 | |
| | Tharparkar | 1 | |
| | Crossbred | 34 | |
| | Buffalo | 8 | |
| 2. | Sheep | | 4.17 |
| | Madras Red | 2 | |
| | Mecheri | 2 | |
| | Tiruchi Black | 4 | |
| | Coimbatore | 1 | |
| | Sandyno | 3 | |
| | Ramnad White | 3 | |
| | Vembur | 1 | |
| | Katchaikatty Black | 1 | |
| | Chevaadu | 1 | |
| | Dorset X Nilgiri | 5 | |
| | Nilgiri | 1 | |
| 3. | Goat | | 3.53 |
| | Barbari | 2 | |
| | Tellicherry | 38 | |
| | Jamunapari | 1 | |
| | Sirohi | 2 | |
| | Beetal | 2 | |
| | Osmanabadi | 2 | |
| | Zhakrana | 2 | |
| | Salem Black | 1 | |
| 4. | Pigs | | 3.41 |
| | Large White Yorkshire | 193 | |
| 5. | Rabbit | | 0.36 |
| | New Zealand White | 53 | |
| | Soviet Chinchilla | 88 | |
| 6. | Farm produce | | 10.01 |
| | Total | | 23.35 |



Instructional Livestock Farm Complex, Namakkal

| Sl. No. | Name of the Unit | Stock as on 31.03.2017 | Revenue Generated (Rs. in lakhs) |
|---------|-----------------------|------------------------|----------------------------------|
| 1. | Cattle | | 8.33 |
| | Crossbred | 25 | |
| | Kangayam | 5 | |
| | Buffalo | 8 | |
| 2. | Sheep | | 5.32 |
| | Mecheri | 56 | |
| | Tiruchi Black | 5 | |
| | Vembur | 3 | |
| | Kilakaraisal | 3 | |
| | Chevvadu | 2 | |
| 3. | Goat | | |
| | Tellicherry | 58 | |
| | Jamunapari | 7 | |
| | Salem Black | 44 | |
| | Boer | 2 | |
| | Osmanabadi | 3 | |
| | Dorset x Nilgiri | 2 | |
| 4. | Pig | | 5.58 |
| | Large White Yorkshire | 38 | |
| 5. | Rabbit | | 1.16 |
| | Soviet Chinchilla | 102 | |
| | White Giant | 92 | |
| 6. | Horse | 1 | |
| 7. | Fodder | | 1.90 |
| | Total | | 22.29 |



Instructional Livestock Farm Complex, Tirunelveli

| Sl. No. | Name of the Unit | Stock as on 31.03.2017 | Revenue Generated (Rs. in lakhs) |
|---------|-----------------------|------------------------|----------------------------------|
| 1. | Cattle | | |
| | Crossbred Jersey | 29 | 7.7 |
| | Murrah buffalo | 3 | |
| 2. | Sheep | | |
| | Vembur | 50 | |
| | Kilakarsal | 64 | |
| | Ramnad White | 3 | |
| | Chevvadu | 5 | |
| | Mecheri | 3 | |
| 3. | Goat | | |
| | Jamunapari | 8 | |
| | Tellicherry | 2 | |
| 4. | Piggery | | - |
| | Large White Yorkshire | 23 | |
| 5. | Fodder | | 0.01 |
| | Total | | 22.54 |

Instructional Livestock Farm Complex, Orathanadu, Thanjavur

| Sl. No. | Name of the Unit | Stock as on 31.03.2017 | Revenue Generated (Rs. in lakhs) |
|---------|-----------------------|------------------------|----------------------------------|
| 1. | Cow | 89 | 26.59 |
| 2. | Buffalo | 22 | 6.89 |
| 3. | Sheep | | |
| | Pattanam | 50 | 4.28 |
| 4. | Goat | | |
| | Non-descript | 55 | |
| 5. | Pig | | |
| | Large White Yorkshire | 46 | 3.43 |
| 6. | Rabbit | 34 | |
| 7. | Poultry | | |
| | Namakkal Chicken – 1 | 141 | |
| | Nandanam Chicken 4 | 490 | |
| | Desi Chicken | 48 | |
| | Japanese Quail | 1313 | 8.42 |
| | Turkey | 36 | |
| | Duck | 12 | |
| | Emu | 2 | |
| | Ostrich | 2 | |
| 8. | Fodder | | 0.47 |
| | Total | | 50.08 |



Central Feed Technology Unit, Kattupakkam

During 2016-17, 1887.69 MT of livestock and poultry feed was supplied to various University research farms, district livestock farms and private research institutes; 320.63 MT of livestock and poultry feed was supplied to public (farmers). About 141.36 MT of TANUVAS General and SMART mineral mixture for cattle was supplied to various University research farms, district livestock farms, private research institutes and public/farmers. The revenue earned by this unit is Rs.606.71 Lakhs.





Outreach Centres

The services rendered by the Veterinary University Training and Research Centres (VUTRCs), Krishi Vigyan Kendras (KVKs) and Farmers Training Centres (FTCs) spread over the entire Tamil Nadu during this period are given below:

| Location of the Centres | On and Off campus Trainings | | Clinical activities | | | | Technical Advices given | Mass Contact Programmes |
|---|-----------------------------|-------------------|---------------------|--------------------|---------------------------|--------------------------------------|-------------------------|-------------------------|
| | No. of Trainings | Persons benefited | Specimens analysed | Outbreaks attended | Infertility cases treated | Deworming / Vaccinations carried out | | |
| Veterinary University Training and Research Centres (VUTRC) | | | | | | | | |
| Coimbatore | 64 | 2006 | 71 | - | - | 2839 | 17491 | 3 |
| Dharmapuri | 103 | 3322 | 740 | 2 | 407 | 715 | 3796 | 5 |
| Dindigul | 64 | 2097 | 179 | - | - | 312 | 3883 | 2 |
| Erode | 90 | 2463 | 762 | - | 154 | 8087 | 2724 | 12 |
| Karur | 67 | 2201 | 84 | 2 | 52 | 3774 | 2455 | - |
| Melmaruvathur | 58 | 1728 | 501 | - | 562 | 862 | 859 | 3 |
| Cuddalore | 189 | 2524 | 153 | - | - | 591 | 2350 | 3 |
| Rajapalayam | 102 | 2944 | 19 | - | 50 | 651 | 2423 | 1 |
| Salem | 103 | 3460 | 45 | 2 | 35 | 7956 | 1168 | - |
| Tiruchirapalli | 66 | 3606 | 48 | - | - | - | 2240 | 5 |
| Thanjavur | 78 | 2492 | 59 | - | - | 250 | 10066 | 7 |
| Tirupur | 80 | 2391 | 877 | 9 | - | 4849 | 1470 | 10 |
| Vellore | 52 | 1384 | 115 | - | 15 | 882 | 2868 | 6 |
| Nagercoil | 87 | 3039 | 336 | 5 | 2 | 12595 | 5173 | 38 |
| Villupuram | 98 | 1688 | 43 | 16 | 34 | 1885 | 1829 | 4 |
| Tiruvannamalai | 82 | 2609 | 107 | - | 200 | 2145 | 2126 | - |
| Krishnagiri | 48 | 1712 | 12 | 2 | 2 | 250 | 514 | 5 |
| Nagapattinam | 97 | 2851 | - | - | - | - | 916 | 1 |
| Perambalur | 74 | 3066 | - | - | - | - | 290 | 3 |
| Ramanathapuram | 45 | 641 | 36 | - | 2 | 4 | 811 | |
| RREC, Pudukottai | 53 | 1988 | 70 | - | 42 | 13517 | 480 | 2 |



Krishi Vigyan Kendras (KVK)

| | | | | | | | | |
|-------------|-----|------|----|---|---|------|-------|----|
| Kattupakkam | 92 | 2636 | 32 | - | - | 1680 | 17491 | 3 |
| Kundrakudi | 226 | 5338 | - | - | - | 1843 | 5603 | 6 |
| Namakkal | 197 | 6199 | - | - | - | 2040 | 3917 | 11 |

Farmers' Training Centres (FTC)

| | | | | | | | | |
|--------------|-------------|--------------|-------------|-----------|-------------|--------------|---------------|------------|
| Tiruvarur | 51 | 980 | - | - | - | - | 1446 | 1 |
| Kancheepuram | 87 | 2545 | - | - | 889 | 510 | 1726 | 13 |
| Theni | 90 | 2628 | 96 | - | - | - | 3254 | 8 |
| Total | 2547 | 73878 | 5354 | 46 | 2875 | 75322 | 103846 | 183 |





SERVICE UNITS

The activities of the service units such as library, computer centre, bioinformatics centre, hospitals and laboratories are essential for viable functioning of the University. Various activities of these service units in the improvement of this University during the reporting period is given below:

Library

The University has library facilities in all its constituent colleges with large collection of books and journals. In addition, they possess CD-ROM databases.

Services offered by the Libraries of TANUVAS

- ✧ Lending of books and documents to students and faculty members
- ✧ Journal reference service
- ✧ Access to online journals and e-books

- ✧ Information retrieval through CD-ROM Databases
- ✧ Reprography / Printing / CD writing
- ✧ Microfilming
- ✧ Resource sharing through Madras Libraries Network-MALIBNET and British Council Library
- ✧ Binding of books and documents
- ✧ SC/ST book bank facility
- ✧ Student Counseling and Placement cell

Facilities available at TANUVAS Libraries

- ✧ Online public access catalogue
- ✧ Digitization of theses
- ✧ Electronic surveillance system
- ✧ Archives unit

Stock position as on 31.3.2017 at various libraries of TANUVAS

| Particulars | MVC, Chennai | VC&RI, Namakkal | VC&RI, Orathanadu | VC&RI, Tirunelveli | CFDT, Koduvalli |
|--|-----------------|--------------------|----------------------|-----------------------|--------------------|
| Stock of books | 40,424 | 11,717 | 1851 | 2422 | 2966 |
| Periodicals and monthly journal | 73 | 19 | 30 | 18 | 19 |
| e-Books | 250 | 69 | - | - | - |
| Journals with online access | 90 | 32 | - | - | - |
| Access to Online Journals through CeRA | 2900+ | - | - | 2800+ | - |
| Student and Staff beneficiaries | 21,015 | 18,717 | 664 | 1891 | 180 |
| Non-member beneficiaries | 2,219 | 264 | - | - | - |
| Total back volumes | 25,527 | 3,402 | - | 45 | - |
| Video lessons | 176 | 48 | 98 | 55 | - |



Computer Centre

Activities of the Students Computer Centre, Internet Kiosk and Server station attached to the Department of Animal Husbandry Statistics and Computer Applications of Madras Veterinary College are furnished below:

- ✧ Hands on training on computer applications to both UG and PG students.



- ✧ Computer network management and provision of Internet and Intranet services; Facilitating communication through LAN and WAN within different colleges and University and across the colleges and University Headquarters.
- ✧ A new ASRB Online Examination Centre
- ✧ Scanning, Network Printing, Electronic multicopying and Digital Photography facilities offered by this department are utilized by various departments.
- ✧ Periodic updation of TANUVAS website, www.tanuv.ac.in, for the benefit of students and stakeholders.
- ✧ Net working connectivity (One GBPS)

The Student Computer Centre provides a comprehensive environment for computing, browsing, e-mailing and networking, so as to improve the learning activity among students and enhance teaching effectiveness and research capability among faculty members. The major objectives of TANUVAS computer network are to establish and maintain a campus-wide network, to provide the faculty, students, and staff easy access to computers. The Computer Centre has 38 systems for the students and trainees to use and an Internet Kiosk with 20 systems is available to enable browsing by students and trainees.

TANUVAS Website (www.tanuv.ac.in)

TANUVAS website was created with a view to incorporate all the activities of the university

under one portal. It has several windows like history of TANUVAS, structure and governance, constituent units, academic programmes, research resources and services. Under research category, ongoing schemes and salient research findings of the completed schemes are displayed. The website contents are updated periodically by a website updation committee headed by the Director of Research.

Bioinformatics Centre

The Biotechnology Information System (BTIS) of TANUVAS was started during 1990-91 at Madras Veterinary College, Chennai, under the aegis of Department of Biotechnology, Government of India, New Delhi. This Centre is equipped with the following facilities:

- ✧ CD ROM Data bases
- ✧ Broad band Internet connectivity from VSNL
- ✧ 10 computers for online and offline information retrieval, to facilitate training programmes and for the conduct of practical and project works of students of PG diploma in Bioinformatics
- ✧ A Wetlab facility with Gel Electrophoresis, Digital Electronic Balance, Thermal Cycler and UV-Transilluminator for PG research
- ✧ Agricultural Research Information System Cell for internet browsing and online information retrieval

During 2016-17, 83 scientists and research scholars of TANUVAS have utilized the online and offline facilities of this centre. A total of 12 students from outside colleges completed their projects. The revenue earned through the students research work was Rs. 55,000/-. A total of five training/workshops were organized and 93 PG scholars of MVC and 68 scientists and teaching faculty of other colleges participated. The revenue earned through these programmes was Rs. 1,64,000/-.



Clinical services

TANUVAS offers clinical services through Veterinary Teaching Hospital, Emergency Critical Care Unit, Centralized Clinical Laboratory at Madras Veterinary College, Peripheral Veterinary Hospital at Madhavaram, Veterinary Teaching Hospitals at Veterinary College and Research Institute, Namakkal; VC&RI, Orathanadu and VC&RI, Tirunelveli. A total of 2,51,374 cases were treated during 2016-17.

Veterinary Teaching Hospital

Clinical ward training is being imparted to the UG and PG students at Madras Veterinary College Teaching Hospital. Practising veterinarians were given clinical training at the hospital to update their knowledge in the latest techniques in the diagnosis and treatment of various ailments in small and large animals.

During the reporting period, 9 students from Virginia Maryland Regional College of Veterinary Medicine; 59 students from Bangladesh Veterinary University, Chittagong, Bangladesh; 10 students from Universiti Putra Malaysia, Malaysia and 4 Army vets were given



The Students of Chittagong Veterinary College, Bangladesh attending clinical training at MVC Teaching Hospital

hands on clinical training at MVC, Teaching Hospital.

To encourage and motivate UG students, a Clinical Club has been established and Clinical meeting for UG students were regularly conducted. Internees of Veterinary College and Research Institute, Namakkal were given clinical internship training at Madras Veterinary College Hospital and also at Veterinary University Peripheral Hospital, Madhavaram for a period of three months.

Hospital Services

The following are the species-wise clinical cases treated during the year 2016-17 :

| Description | MVC | | VUPH | Clinics VC&RI Namakkal | TVCC, VC&RI Tirunelveli | TVCC, VC&RI, Orathanadu | TOTAL |
|-----------------|---------------|-------------|--------------|------------------------------|-------------------------------|-------------------------------|---------------|
| | Clinics | RVSS | Madhavaram | | | | |
| Bovines | 10104 | 403 | 1345 | 5914 | 3801 | 1139 | 22706 |
| Canine | 88666 | 7087 | 10936 | 8453 | 6790 | 3004 | 124936 |
| Feline | 5243 | 845 | 293 | 379 | 24 | 7 | 6791 |
| Equine | 1048 | 76 | 56 | 161 | 7 | 242 | 1590 |
| Caprine / Ovine | 4094 | 586 | 899 | 2645 | 4524 | 5140 | 17888 |
| Avian | 5590 | 39 | 966 | 113 | 427 | 1277 | 8412 |
| Others | 697 | - | 159 | 158 | - | 71 | 1085 |
| Total | 115442 | 9036 | 14654 | 17823 | 15573 | 10880 | 183408 |



In-patient Facilities

- ✧ 224 large and 16 small animals were admitted and treated as in-patients for various ailments at teaching hospital, Madras Veterinary College, Chennai.
- ✧ 5833 large animals and two small animals were admitted and treated as in-patients at teaching hospital, Veterinary College and Research Institute, Namakkal
- ✧ 182 large animals were admitted and treated as in-patients at teaching hospital, Veterinary College and Research Institute, Orathanadu
- ✧ 248 large animals were admitted and treated as in-patients at teaching hospital, Veterinary College and Research Institute, Tirunelveli
- ✧ A separate quarantine unit to house animals suspected for rabies is functioning at all the institutions.



Details of prophylactic vaccination carried out

| Name of the vaccine | Clinics, MVC, Chennai | Clinics, VC&RI Namakkal | TVCC, VC&RI Orathanadu | TVCC, VC&RI Tirunelveli | VUPH Madhavaram | Total |
|--|-----------------------|-------------------------|------------------------|-------------------------|-----------------|--------------|
| Anti-Rabies vaccine for dogs | 8333 | 968 | 497 | 619 | 1931 | 12348 |
| Distemper, Hepatitis, Parvo & Leptospirosis vaccine for dogs | 12964 | 1861 | 318 | 1084 | 3318 | 19545 |
| Ranikhet disease vaccine for poultry | 53 | - | - | - | - | 53 |
| Total | 21350 | 2829 | 815 | 1703 | 5249 | 31946 |

Pharmacy

The Pharmacy attached to the teaching hospitals dispenses drugs to different units based on prescriptions for treatment of sick animals free of cost. A sum of Rs. 28.10 lakhs was utilized towards the purchase of drugs for teaching hospital at Madras Veterinary College, Chennai; Rs. 21.05 lakhs for Teaching Hospital at VC&RI, Namakkal; Rs. 6.49 lakhs for Teaching Hospital at VC&RI, Orathanadu; Rs. 8.12 lakhs for Teaching Hospital at VC&RI, Tirunelveli and Rs. 1.04 Lakhs for Veterinary University Peripheral Hospital, Madhavaram. Dr. Srinivasan Memorial Fund was also utilized to purchase specific medicines which are not available in the hospital pharmacy to treat complicated cases.



Referral Units

The following advanced facilities are available at TANUVAS Hospitals

Madras Veterinary College, Chennai

- * Ultra sound scanner
- * ECG & EEG
- * Pulse oximeter
- * Radiant warmer
- * Doppler Blood Pressure apparatus
- * Phaco for cataract surgery
- * Doppler
- * Holter monitoring system
- * Laparoscopy
- * Digital phonocardiograph
- * Endoscopic image documenting system
- * Dental scalar
- * Slit lamp Biomicroscope
- * Vital Sign Monitor
- * Haemodialyser
- * C-Arm Fluroscopy
- * Operating ophthalmic microscope
- * Arthroscopy

Veterinary College and Research Institute, Namakkal

- * Ultra sound scanner
- * Operating ophthalmic microscope
- * Large and small animal gas anaesthetic machine
- * ECG
- * Dental scalar
- * Ventilator
- * Endoscopy
- * Vital Sign Monitor
- * Echo colour doppler

Veterinary College and Research Institute, Orathanadu

- * Colour Doppler ultrasonogram
- * X-ray unit

Veterinary College and Research Institute, Tirunelveli

- * Doppler Ultrasonogram
- * Vital Sign Monitor
- * Electrocardiogram
- * Autoclave
- * OT Hydraulic Table
- * Infusion Pump

Cases attended at the referral clinics

The following are the clinical cases examined at the referral clinics:-

| Particulars | MVC Chennai | VC & RI Namakkal | VC & RI Orathanadu | VC & RI Tirunelveli | VUPH, Madhavaram | Total |
|------------------|--------------|------------------|--------------------|---------------------|------------------|--------------|
| Ultrasonography | 2887 | 1055 | 1709 | 197 | 43 | 5890 |
| Endoscopy | 25 | 97 | - | - | - | 122 |
| ECG | 560 | 274 | 68 | 22 | 5 | 929 |
| Radiology | 10453 | 1061 | 659 | 639 | 109 | 1291 |
| Vaginal Cytology | 779 | 193 | 22 | 169 | - | 1163 |
| Echo Doppler | 444 | 116 | - | 51 | - | 611 |
| Total | 15148 | 2796 | 2459 | 1078 | 157 | 21638 |

Theatre Services

- * 769 major and 387 minor soft tissue, 255 Orthopaedic, 167 Ophthalmic and 112 Obstetrical surgeries were done at Teaching Hospital, Madras Veterinary College, Chennai.
- * 18 major and 42 minor soft tissue surgeries were performed at Veterinary University Peripheral Hospital, Madhavaram



- ✳ 449 major and 372 minor soft tissue surgeries were performed at Teaching Hospital, Veterinary College and Research Institute, Namakkal
- ✳ 114 major, 182 minor soft tissue and 4 Orthopaedic surgeries were performed at Teaching Hospital, Veterinary College and Research Institute, Orathanadu
- ✳ 64 major, 85 minor and 5 orthopaedic surgeries were performed at Teaching Hospital, Veterinary College and Research Institute, Tirunelveli

Emergency and Critical care unit

During the period under report, the details of emergency cases treated at Resident Veterinary Service Section, MVC, Chennai (Round the clock service) and VC&RI, Namakkal are furnished hereunder:

| Species | No. of cases | |
|-----------------|--------------|-------------------|
| | (RVSS - MVC) | VC & RI, Namakkal |
| Canine | 7087 | 119 |
| Bovine | 352 | 1092 |
| Feline | 845 | 68 |
| Equine | 76 | 39 |
| Caprine & Ovine | 586 | 652 |
| Avian | - | 19 |
| Others | 72 | 21 |
| Total | 9018 | 2010 |



Critical Care Unit, MVC Teaching Hospital

Infectious Disease Unit (IDU)

The Infectious disease unit functioning at Madras Veterinary College, Chennai focuses on treatment of important infectious diseases of canine viz., Canine Parvo Viral enteritis (CPV) and Canine Distemper (CD). Since inception,



this unit has treated 1731 cases, which included 1405 Canine Parvo Virus 326 Canine Distemper CD cases respectively. Updating knowledge and skill development to treat contagious diseases are emphasized to the veterinary students and internship trainees from various colleges. Age wise occurrences of CPV and CD were recorded and analyzed for formulating the control strategy in which less than 3 months (498 and 48), 3 to 6 months (504 and 44), 6 to 9 months (168 and 32), 9 to 12 months (42 and 24), 1 to 3 years of age (135 and 104) and more than three years (58 and 74) number of cases were treated for CPV and CD respectively. Infectious Disease Unit helps in combating such contagious diseases for the welfare of pet and pet owners.

Avian and Exotic Pet Unit (AEPU)

The Avian and Exotic Pet Unit (AEPU) was inaugurated at Teaching Hospital, Madras Veterinary College, Chennai on 20th June 2016 as a premier ward for treating and providing expert opinion for pet birds and exotic animals. Clinical services like diagnosis, preventive measures against zoonotic diseases, managemental practices, housing and feeding schedules, basic and advanced treatments are provided in this unit. Gender identification of pet birds through



DNA feather sexing was also provided in the unit. The unit is focused on updating knowledge and practical skill developments for the clinical students of Madras Veterinary College, Veterinary College and Research Institute, Namakkal, Orathanadu and Tirunelveli and field veterinarians through internship and training

programme. A total of 4010 Avian and Exotic Pets were treated in the unit.

Mobile Veterinary and Ambulatory Services

Veterinary University Peripheral Hospital, Madhavaram, Veterinary College and Research Institute Hospital, Namakkal, Orathanadu and Tirunelveli renders Mobile Veterinary ambulatory Services to the farm and pet animals and also provide exposure on rural veterinary practice to the undergraduate students. During the reporting period, 6,067 livestock / pets were treated by the Mobile Veterinary Ambulatory services

Veterinary Medical Record Section

Computer registration of clinical cases was introduced at MVC Teaching Hospital, Chennai in January 1998. The case sheets and clinical slips were formatted to computerize the clinical data adopting international code.

Revenue Generated

| | Revenue generated (Rs. in Lakhs) | | | | | | |
|--------------|----------------------------------|-------------|--------------------------------|------------------------------|----------------------------|-----------------------------|---------------|
| | MVC, Chennai | | VUPH Madhavaram, Chennai | Clinics VC&RI Namakkal | TVCC, VC&RI, Orathanadu | TVCC, VC&RI, Tirunelveli | TOTAL |
| | Clinics | RVSS | | | | | |
| Hospital | 90.06 | 8.05 | 13.61 | 17.50 | 3.32 | 3.87 | 136.41 |
| Training | 9.06 | - | 1.80 | - | | - | 10.86 |
| Total | 99.12 | 8.05 | 15.41 | 17.50 | 3.32 | 3.87 | 147.27 |



LABORATORIES

This University has the following research laboratories to serve the livestock and poultry sectors.

Centralized Clinical Laboratory

The Centralized Clinical Laboratory with modern facilities caters to the need of the clinician to facilitate in diagnosis of various ailments. During the period under report, a total number of 30,642 clinical materials were examined at Madras Veterinary College, Chennai, 14,156 at Veterinary College and Research Institute, Namakkal, 552 at Veterinary University Peripheral Hospital, Madhavaram, 2,464 at Veterinary College and Research Institute, Orathanadu and 3,899 at Veterinary College and Research Institute, Tirunelveli. The materials examined includes blood samples for haematology, urine samples for urinalysis, serum samples for biochemistry, Coprology, Skin scrapings, Antibiotic Sensitivity Test and Cytology samples.

The blood smear examination revealed the occurrence of *Theileria annulata*, *Anaplasma marginale* and *Babesia bigemina* infections in bovine and *Ehrlichia canis* and *Hepatozoan canis* infections in canine. Faecal examination showed the occurrence of *Strongyle sp* and *Coccidia* in small ruminants, *Ancylostoma sp.* in canines and *Strongyles sp* in equines. Skin scrapings revealed fungus in bovines, equines small ruminants and canines (*Demodex canis* and *Sarcoptes scabiei*). *Malassezia pachydermatitis* infections of the skin were also recorded in dogs. Cytologically, tumours like liposarcoma of skin, mammary adenocarcinomas and lymphomas of lymph nodes and spleen tumour were detected.

Central Instrumentation Laboratory (CIL), MVC, Chennai

During the reporting period, a total of 509 persons including students, research scholars and staff members of this institution as well as from other institutions utilized the laboratory facilities. A sum of Rs. 1,398/- has been collected as fee towards screening of samples for electron microscopy and freeze drying.

Central University Laboratory (CUL), Madhavaram Milk Colony, Chennai

This Laboratory coordinates with line departments in monitoring animal health and disease surveillance. This laboratory produces and supplies diagnostic reagents and biologicals to the line departments on need basis. The laboratory is involved in investigation of animal diseases and monitoring of animal health in University Farms. It also provides Anthrax free health certificate to exporters and creates awareness and offers expert guidance to control livestock and poultry disease problems to the farmers. The lab conducts need based short term training on animal disease diagnosis. A total of 10,998 samples received from various parts of Tamil Nadu for various livestock and poultry diseases were screened during the period under report. During the reporting period, technology on TANUVAS-Goat pox vaccine was transferred to M/s. Brilliant Bio-Pharma Pvt. Ltd., Hyderabad and an amount of Rs.5.50 lakh towards generated transfer of this technology.

Zoonoses Research Laboratory, Madhavaram Milk Colony, Chennai

A total of 2570 human and 640 animal serum samples from suspected cases were screened by Microscopic Agglutination Test (MAT) for detection of leptospiral antibodies. Out of



2570 human samples tested, 554 (21.5%) were found positive. Out of the 640 animal samples tested, 246 (38.4%) samples were found positive. *L.autumnalis*, *L.australis*, *L.icterohaemorrhagiae* and *L.ballum* were the predominant serogroups found in both the samples. The revenue earned during 2016-17 was Rs.11.66 Lakhs.

Vaccine Research Centre – Bacterial Vaccine, Madhavaram Milk Colony, Chennai

- ✳ During the reporting period, 55,000 doses of autogenous *Mannheimia haemolytica* vaccine for Japanese Quail were prepared and supplied to the Japanese Quail breeder farms.
- ✳ One thousand doses of *Pasteurella* vaccine for Rabbits against Snuffles were prepared and supplied to PGRIAS, Kattupakkam
- ✳ This unit has generated a revenue of Rs. 44,563/- through sale of vaccine.

Vaccine Research Centre – Viral Vaccine, Madhavaram Milk Colony, Chennai

- ✳ The technology of Bluetongue multivalent inactivated vaccine developed at this centre under ICAR funded All India Network Programme on Bluetongue was transferred to Brilliant Biopharma Private Limited, Hyderabad for commercialization on 23.01.2017 and a sum of Rs.10,00,000/- was received as technology transfer fees.
- ✳ A 'training on Bluetongue virus propagation and vaccine production' was imparted to two scientists from Brilliant Biopharma Private Limited, Hyderabad from 06.03.2017 to 15.03.2017.
- ✳ Bluetongue vaccination (BTV) awareness camp for sheep was organized through VUTRC, Nagercoil in association with Reliance Foundation and Department of

Animal Husbandry, Govt. of Tamil Nadu at Sirumalangi village, Radhapuram Taluk on 10.02.2017. A total of 2800 sheep and goat were vaccinated against BTV. TANUVAS mineral mixture was also distributed to the participants during the camp.

- ✳ A training programme on "Cell Culture Techniques" was organized by this unit for post graduate dental students of SRM College from 27.02.2017 to 04.03.2017
- ✳ A total of 12000 animals were immunized against Bluetongue vaccine through supply of vaccine to various units of TANUVAS
- ✳ Two student projects were undertaken during the reporting period and the revenue earned was Rs.46,000/-

Laboratory Animal Medicine, Madhavaram Milk Colony, Chennai

- ✳ This is a breeding unit of laboratory animals like rats, mouse and guinea pigs. This unit supplies laboratory animals to research scholars on cost basis. During the period under report, rats (1231), mice (983) and Guinea pigs (121) were sold to researchers and a sum of Rs. 5,09,720/- was earned.
- ✳ A Certificate Course in Laboratory Animal Sciences (CCLAS) was organized as per FELASA (Functions A, B, C & D) standards for 30 participants representing Government organizations and private industry from 14.09.2016 to 24.09.2016. During this period, the course was audited by FELASA auditors and accreditation was given till 2020.

Pharmacovigilance Laboratory for Animal Feed and Food Safety, Madhavaram Milk Colony, Chennai

- ✳ This laboratory is involved in analysis of mycotoxins, pesticides and drug residues in animal feed and food.



- ✳ This laboratory obtained grant of NABL Accreditation for chemical testing in Animal feed and Agricultural products in accordance with ISO/IEC 17025:2005 for a period of two years. The laboratory is the first of its kind to get accredited for Mycotoxin analysis by High Performance Thin Layer Chromatography in the country.
- ✳ Training programme on “Estimation of Pesticide Residues” was conducted from 11.07.2017 to 16.07.2016
- ✳ Training programme on “NABL ISO/IEC 17025 Accreditation” was conducted on 28.12.2016 to 30.12.2016.
- ✳ During the period under report, 3648 samples were analysed for mycotoxins and pesticide residues. The results were communicated to the entrepreneurs / farmers so as to enable them to formulate their animal/poultry feed free from toxic residues. The revenue generated by the analysis of samples during this period was Rs. 17,20,936./-. The unit also renders diagnosis services in Animal Disease outbreak pertaining to toxicity (namely Zinc phosphide, Nitrate/Nitrite, Hydrocyanic acid etc).

Animal Feed Analytical and Quality Assurance Laboratory, Namakkal

- ✳ This laboratory obtained grant of NABL Accreditation for chemical testing in Animal feed and Agricultural products in accordance with ISO/IEC 17025:2005 for the period of two years.
- ✳ A total of 24004 samples were received and 57432 tests were carried out at this laboratory. Fifty-four different parameters

covering proximate, mineral, adulterants, contaminants and mycotoxins in feed, feed ingredients, and vitamin concentration in premixes were analysed. The results were immediately dispatched by email and SMS to the farmers.

- ✳ During the reporting period, 105 weather based bulletins (bi-weekly) were issued for the benefit of poultry and agricultural farmers in Namakkal, Salem, Dharmapuri and Krishnagiri districts of North West Agro-climatic zone of Tamil Nadu.
- ✳ The revenue generated during 2016-17 was Rs.97.81 Lakhs.

Poultry Disease Diagnosis and Surveillance Laboratory, Namakkal

Haemagglutination test was conducted for 72 samples. Newcastle disease (ND) virus antigen was detected in 60 samples and Infectious Bronchitis virus antigen was detected in 12 samples. A total of 32357 blood samples collected from 94 farms were tested by Haemagglutination Inhibition test. Out of 1057 water samples analyzed, 510 samples (48.2%) were found to be contaminated with coliforms. 778 feed and clinical samples were tested for microbial analysis, of which 55 (7.1 %), 56 (7.2%), 58 (7.5 %), 22 (2.8%) and 10 (1.3%) samples were found to be contaminated with *E.coli*, *Staphylococcus spp.*, *Clostridium spp.*, *Pasteurella spp* and ORT respectively. Out of 522 samples screened for Salmonella organisms, two samples were found positive for Salmonella spp. The revenue generated during the year 2016-17 was Rs.5.41 lakhs. A total of six training programmes has been organized for the poultry farmers and field veterinarians.



Avian Disease Laboratory, Thalaivasal

- ✿ In this laboratory, 18,715 serum samples were tested by Haemagglutination Inhibition test for Ranikhet disease antibody profiling.
- ✿ Out of 13 faecal samples of dairy cattle and poultry examined, three samples were found positive for ova of *Moniezia spp.* and one sample positive for oocysts of *Coccidia sp.* Suitable control measures were advised to the dairy farming community. Totally, 1525 water samples were analysed for the establishment of new poultry farms. The results revealed that the TDS level was below 500 ppm in 22 per cent of the samples, 500-1000 ppm in 58 per cent of the samples and above 1000 ppm in 20 per cent of samples and the farmers were advised accordingly. Out of 1525 samples, 786 (51.5%) showed positive for coliforms. Based on the results of microbial load in the water samples, the farmers were advised suitably.
- ✿ A total of 228 post mortem examination in poultry, 58 farm visits and 369 farmers' queries were attended. Least cost feed formulations were given to the 82 poultry farmers. The revenue generated during the year 2016-17 was Rs. 2,30,197/-.

Veterinary University Training and Diagnostic Centre, Madurai

- ✿ A total of 104 On and Off-campus training programmes were organized on dairy farming, goat farming, desi chicken farming, disease management, Integrated livestock farming, disposal techniques of dead carcasses and preparation of value added milk, meat and fish products for the benefit of 3340 farmers including 634 SC/ST beneficiaries.
- ✿ Two training programmes under State Poultry development programme and five trainings under Pudhuvazhvu project were conducted for the benefit of 380 farmers including 109 SC/STs.
- ✿ A total of nine training programmes on various animal husbandry activities were also conducted with the assistance from ATMA, NABARD and TNLDA for the benefit of 125 farmers.
- ✿ Thirty disease investigations were carried out and 969 samples analysed during the reporting period.
- ✿ Revenue earned during the reporting period was Rs.7.30 lakhs

FINANCE

During the year 2016-17, grants totalling to Rs. 26182.89 Lakhs were received from various sources as detailed below :

| | (Rs. in Lakhs) |
|---|-----------------|
| Government of Tamil Nadu | 21,967.57 |
| Agencies of Government of Tamil Nadu | 47.19 |
| Indian Council of Agricultural Research | 1699.73 |
| Departments of Government of India | 1160.39 |
| Private and Other Agencies | 33.46 |
| Revenue generated | 1274.55 |
| Total | 26182.89 |

Finance and Accounts Revenue

The various sources of finance for administering the University are detailed below:

i. Government of Tamil Nadu

Under section 34 of TANUVAS Act 1989, the Government of Tamil Nadu released the following non-lapsable grants to the University.

- grant not less than the net expenditure incurred in the year in respect of the activities of the institution of Veterinary and Animal Sciences and allied sciences and such other Government Departments relating to Veterinary and Animal Sciences and allied sciences are transferred to the University.
- grant not less than the estimated expenditure on pay and allowances of the staff, contingencies, supplies and services of the University and
- grant to meet such additional items of expenditure, recurring and non-recurring, as the Government may deem necessary for the proper functioning of the University.

The State Government has released the following grants during the year 2016-2017 :

| | (Rs. in Lakhs) |
|---|-----------------|
| Non-Plan - Veterinary | 12375.19 |
| Plan - Veterinary (including New schemes) | 9592.38 |
| Total | 21967.57 |

ii. Indian Council of Agricultural Research

The ICAR has continued to support the University by releasing the following grants during the year :

| | (Rs. in Lakhs) |
|-----------------------|----------------|
| 100% financed schemes | 759.93 |
| 75% financed schemes | 258.28 |
| Development grant | 681.52 |
| Total | 1699.73 |

iii. Government of India

The Government of India has sanctioned grants for implementing various sponsored research programmes during the year as detailed below :

| | (Rs. in Lakhs) |
|--------------|----------------|
| GOI | 845.44 |
| GOI - NADP | 314.95 |
| Total | 1160.39 |

iv. Agencies

| | (Rs. in Lakhs) |
|--|----------------|
| Agencies of Government of Tamil Nadu | 47.19 |
| Other Private Agencies and Training Grants | 33.46 |
| Total | 80.65 |

v. Revenue Generated

| | (Rs. in Lakhs) |
|---|-----------------|
| The University generated income by way of fee from services, Students fees, sale of farm produces and value added Products, fees for hospital services, under plan and Non-plan schemes | 1274.55 |
| Grand Total | 26182.89 |



Expenditure

The actual expenditure incurred during 2016-17 (Unaudited) under different grants are detailed below:

i. Government of Tamil Nadu Grants :

(Rs. in Lakhs)

| | |
|---|-----------------|
| Non-Plan - Veterinary (Including pension) | 13206.48 |
| Plan - Veterinary | 8073.06 |
| GOI - CSS - 50% State Shared Schemes | 28.21 |
| GOI - NADP - 40% State Shared Schemes | 104.45 |
| Total | 21412.20 |

ii. ICAR Schemes Grant

(Rs. in Lakhs)

| | |
|-----------------------------|----------------|
| 100% financed schemes | 897.34 |
| 75% financed schemes | 290.40 |
| 100% ICAR Development Grant | 726.11 |
| Total | 1913.85 |

iii. Government of India Grant

(Rs. in Lakhs)

| | |
|---------------------------------|----------------|
| 100% financed schemes | 1023.15 |
| NADP Schemes | 1.27 |
| GOI - CSS - 50% Shared Schemes | 28.21 |
| GOI - NADP - 60% Shared Schemes | 156.67 |
| Total | 1209.30 |

iv. Tamil Nadu Government and Private Agencies Grant

1031.48

Grand Total Expenditure

25566.83

The split up details of the actual expenditure is given below :

| Sl. No. | Details | (Rs. in Lakhs) |
|---------|--|-----------------|
| 1. | Pay and allowances (including pension) | 16318.31 |
| 2. | Recurring contingencies | 5181.73 |
| 3. | Library books and Journals | 154.26 |
| 4. | Non-recurring | 3912.53 |
| | Total | 25566.83 |

PUBLICATIONS

During the reporting period (2016-17), the staff of various constituent units of TANUVAS has published the following research / popular articles and books / manuals.

| | | |
|----|--------------------------|-----|
| 1. | No. of Research articles | 601 |
| 2. | No. of Popular articles | 653 |
| 3. | No. of Books / Manuals | 11 |

The research articles with a NAAS rating of more than 6 are furnished below:

- Akila S., K.Malini Selvan, Hariprasad Naidu, Shwethaa Raghunathan, Sathish Kota, R.C.Raja Sundaram, Samir Kumar Rana, G.Dhinakar Raj, V.A.Srinivasan and B.Mohana Subramanian, 2016. Direct typing of Canine parvovirus (CPV) from infected dog faeces by rapid mini sequencing technique. *J. virological methods* 238: 66-69
- Ananda Raj R., R.Sridhar, C.Balachandran, A.Palanisammi, S.Ramesh and K.Nagarajan, 2017. Pathogenicity profile of *Vibrio parahaemolyticus* in farmed Pacific White shrimp, *Penaeus vannamei*. *Fish Shellfish Immunol.*, 67:368
- Balakrishnan S., R.Venkataramanan A.Ramesh and Parimol Roy, 2016. Contagious ecthyma outbreak among goats at Nilgiri hills Indian Journal of Animal Research DOI:10.18805/ijar.10277
- Chengat Prakashbabu B., V.Thenmozhi, G.Limon, K.Kundu, S.Kumar, R.Garg, E.L.Clark, A.S.R.Srinivasa Rao, D.G.Raj, M.Raman, P.S.Banerjee, F.M.Tomley, J.Guitian and D.P.Blake, 2017. Eimeria species occurrence varies between geographic regions and poultry production systems and may influence parasite genetic diversity. *Veterinary Parasitology* 233: 62-72
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- Dhinakar Raj G., M.Raman, Fiona M Tomley and Damer P Blake, 2016. Cryptic *Eimeria* genotypes are common across the southern but not northern hemisphere. *Int. J. Parasitology* 46: 537 – 544
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