24th ANNUAL REPORT 2012-13





TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY

Madhavaram Milk Colony

Chennai - 600 051.

CREDIT LINE

EDITORIAL BOARD

Dr. R. PRABAKARAN Vice-Chancellor

Dr. K. KUMANAN Director of Research

Dr. R. RAJENDRAN Professor

Dr. C. THEOPHILUS ANANDKUMAR Assistant Professor

> Dr. C. NIRANJANA Assistant Professor

Secretarial Support Tmt. J. GOWRI Thiru S. RICHARD DANIEL Tmt. V. SARALA Tmt. S. PREMA Tmt. K. ESWARI BAI



С	ONTENTS	
	Preface	
	Acknowledgement	
	Executive Summary	
	y i i i i i i i i i i i i i i i i i i i	
1.	Introduction	3
	Historical perspective	
	Organisational set up	
	Constituent units of University	
2	Research	15
۷.	Research schemes in operation	10
	Research collaborations	
	Research co-ordination and Management	
	Special initiatives	
	Research highlights	
3.	Assessment / Transfer, Patent and Commercialization of Technologies	55
4.	Education	59
	Educational programmes	
	Scholarships	
	Endowments	
	Student amenities and activities	
5.	Honours / Awards	69
6.	Distinguished visitors	77
7.	Women empowerment	83
8.	Human resource development	89
9.	Seminars / Symposia / Workshops / Summer Schools /	
	Training programmes organized	103
10	. Extension education activities	111
11	. Research Stations and Service Units	119
	Research Farms	
	Training and Research Centres	
	Library and Clinical Services	
	Laboratory Services	
12	. Finance	133
13	. Publications	137
	Research articles	
	Popular articles	
	Books / Manuals	



PREFACE



Livestock sector plays a very important role in Indian economy and contributes substantially to the GDP. India holds one of the largest livestock population of the globe and the predominance of the mixed crop livestock system is one of the characteristics of Indian agrarian economy. Livestock sector can contribute considerably in alleviating the problems of poverty and unemployment. Apart from yielding priority products like milk, egg and meat, livestock sector paves way for sustainable livelihood of the rural folk, especially the small and marginal farmers and landless labourers. With rising demands for milk, chicken, pork, fish and egg this sector is poised for greater growth in the years to come. This sector also has a strong backward and forward linkage, which in turn boosts livestock based food processing, leather and wool industries that earn foreign exchange.

Tamil Nadu is showing an impressive growth in livestock production. The gross value of output from livestock in the state is ₹ 22,017.59 crores in the year 2010-11 which contributes 2.58 per cent of Gross State Domestic Product and 24.80 per cent of the agriculture and allied sector output. The state contributes 18.27 per cent of egg, 8.78 per cent of meat and 5.61 per cent of milk production and ranks second, fifth and eighth position in the country respectively.

Tamil Nadu Veterinary and Animal Sciences University which will be entering into it's silver jubilee year has pledged itself to educate the farming community by training them on scientific rearing of cattle, sheep, goat, rabbit, desi fowl, layer and broiler poultry, guinea fowl and turkey, clean milk production, disease management in livestock and fish, preparation of value added livestock and fishery products through their extension outlets and thereby to improve their socio-economic status. This 24th year of TANUVAS has witnessed a number of land mark events towards developing policies, models and skills. Notable among them are :

- * Admissions were started in the two newly established Veterinary College and Research Institutes at Orathanadu of Thanjavur District and at Tirunelveli during the academic year 2012-13.
- ★ Three Veterinary University Training and Research Centres at Tiruvannamalai, Krishnagiri and Villupuram districts were established during 2012-13 at an outlay of ₹ 2.4 corers
- * TANUVAS had been conferred with the prestigious "Sardar Patel Outstanding ICAR Institution Award 2011" for its meritorious performance in education, research and extension in the country in the field of Agricultural Sciences including Veterinary and Fisheries Sciences by Indian Council of Agricultural Research, New Delhi.
- * TANUVAS had provided training on "Milch cow rearing", "Goat rearing" and "Poultry rearing" to 17,005 beneficiaries of Tamil Nadu State Government scheme on "Hon'ble Chief Minister's Priceless distribution of milch cows/ sheep and goat / poultry to the poor families in rural areas"

- * The second and third of the seven "Regional Livestock and Fisheries Exhibitions" proposed to be conducted by TANUVAS in Tamil Nadu to educate livestock and fish farmers and public about various technologies and recent advances in livestock and fisheries sector were organized at Tirunelveli and Coimbatore districts respectively during the reporting period
- With the financial support from National Agricultural Development Programme, 16 projects to the tune of ₹ 2672.36 lakhs are being implemented at TANUVAS during 2013.

This University is committed to collaborative research activity within and outside the country. Such collaborations promotes inter-disciplinary approach, capacity building, technology transfer and wider dissemination of research findings and in the process, broaden the area of research. During the period under report, TANUVAS had continued collaborations and linkages with different national and international agencies like Indian Council of Agricultural Research; Department of Biotechnology; Department of Science and Technology; National Bureau of Animal Genetics Resources; National Bank for Agriculture and Rural Development; National Innovation Foundation; BBSRC, U.K. and other stake holders in the field of Animal, Food and Fishery sciences and generated funds to the tune of ₹ 3681.60 lakhs.

Before I conclude, I thank each and every staff of the University for their whole hearted support and contributions during its twenty-third year of successful existence which is documented in this Annual Report.

VICE-CHANCELLOR i/c and REGISTRAR

ACKNOWLEDGEMENT

Tamil Nadu Veterinary and Animal Sciences University in its attempt to fulfil its mandate of education, research and extension has increased its efforts in the recent past coping up with the growth in this sector, for which the whole hearted support of the authorities of the State and Central Governments are gratefully acknowledged. The guidance and the unstinted support from the Board of Management and other statutory committees were of immense help in identifying our goals, prioritize and put into action.

The University is thankful to the Government of Tamil Nadu and Government of India and their departments and agencies viz., Indian Council of Agricultural Research, New Delhi; Dept. of Biotechnology, New Delhi; Dept. of Science and Technology, New Delhi; Agricultural and Processed Food Products Export Development Authority, New Delhi; Department of Animal Husbandry, Dairying and Fisheries, New Delhi; Ministry of Food Processing Industries, New Delhi; National Bureau of Animal Genetics Resources, Karnal; National Innovation Foundation, Ahamedabad; National Bank for Agricultural and Rural Development, Mumbai; Tamil Nadu State Council for Science and Technology, Chennai; Tamil Nadu Livestock Development Agency, Chennai; Tamil Nadu State Land Use Board, Chennai; State Planning Commission, Chennai; National Agricultural Development Programme and various private institutions viz., Ayurvet Ltd., Baddi, Himachal Pradesh; Novus Animal Nutrition (India) Pvt. Ltd., Chennai; Edwards Life Sciences (India) Pvt. Ltd., Mumbai; EID Parry (India) Ltd., Chennai; The Alembic Pharmaceuticals Ltd., Mumbai; C.P. Plantations, Madurai; Orchid Research Laboratories Ltd., Chennai; Hester Biosciences, Gujarat; ABT Corporation, Bangalore; Pfizer Pharmaceutical Pvt. Ltd., Mumbai; Yasham Biosciences Pvt. Ltd., Mumbai; Advanced Bio-Agro Technologies, Pune; Mars International; GOMBRT, Ramanathapuram; CMLRE, Kochi and Praj Industries (P) Ltd., Pune and international agencies namely BBSRC, UK, UKIERI and USAID which have extended financial assistance to the University for undertaking research in specific areas.

It gives me immense pleasure to acknowledge the help and co-operation rendered by the officers, teachers, scientists, students, technicians, administrative and supporting staff of our University who have helped in the successful and efficient nursing of the University. Thanks are due to them for their dedication and team spirit. The University considers it a duty to thank the livestock and poultry farmers and other stakeholders in Tamil Nadu. The support received by this University from the people of the State and functionaries at various levels will help to sustain this university as a centre of excellence in animal and fisheries education, research and in outreach programmes.

K. KUMANAN

Director of Research Tamil Nadu Veterinary and Animal Sciences University Chennai – 600 051.



EXECUTIVE SUMMARY



EXECUTIVE SUMMARY

Animal Husbandry plays a vital role in Indian economy and livestock occupies an important place in the life of rural people. With the improved production potentials, our livestock and poultry farming have become economically viable and remunerative. Due to this, Animal Husbandry, which was all along a subsidiary occupation, has now become a main source of income for many rural, poor farmers. Keeping this in mind, the Government of Tamil Nadu is implementing the scheme on "Free distribution of milch cows / sheep and goat / poultry to the poor families in rural areas" to uplift the rural livelihood and alleviate poverty. To support this praiseworthy effort of Government of Tamil Nadu, TANUVAS is taking active part in providing technical guidance to farmers on scientific livestock farming.

Tamil Nadu Veterinary and Animal Sciences University is the leading University in the country in promoting Veterinary and Animal Sciences education and is recognized as an institution having strong faculty for academic and research collaborations in Veterinary and Animal Sciences and Fishery Sciences with 571 scientific and 1236 administrative supporting staff. During the reporting period, the University had established two Veterinary College and Research Institutes at Orathanadu, Thanjavur and Tirunleveli. Altogether, this University has seven constituent colleges viz. Madras Veterinary College, Chennai, Veterinary College and Research Institutes, Namakkal; Orathanadu and Tiruneveli; Fisheries College and Research Institute, Thoothukkudi; College of Food and Dairy Technology, Koduvalli, Chennai and College of Poultry Production and Management, Hosur.

Besides, this university has five Research Stations for production oriented research; 18 Veterinary University Training and Research Centres, three Farmers Training Centres, three Krishi Vigyan Kendras, one Veterinary University Regional Research Centre, Three Instructional Livestock farms and one Agricultural Technology Information Centre to carry out the outreach programmes, nine service providing laboratories namely Poultry Disease Diagnostic and Surveillance Laboratory, Avian Disease Laboratory, Animal Feed Analytical and Quality Assurance Laboratory, Central University Laboratory, Zoonosis Research Laboratory, Pharmacovigilance Laboratory for Animal Feed and Food, Viral Vaccine Laboratory, Bacterial Vaccine Laboratory and Shrimp Disease Diagnostic Laboratory to take care of the health needs of the livestock, poultry and fish.

Broiler production in environmentally controlled house and post harvest technology - Experiential learning; Empowerment of rural dairy farmers through augmentation of milk production by fodder cultivation and mineral mixture supplementation; Cytokine orchestration using nanoparticles or microRNApotential for directing immune responses; Molecular characterization of Bovine Leukocytes Antigen BoLA - DRB3 Gene and their association with mastitis in crossbred Dairy cattle of Tamil Nadu; PCR-RFLP based detection of Acaricide resistant ticks under field conditions; Identification of fertility associated proteins in dog semen and artificial insemination with frozen semen in bitches; Exploiting the potentials of key virulence protein LOA 22 in the development of a diagnostic kit for animal Leptospirosis; Development of immunological and molecular tools for diagnosis and management of Aspergillus flavus infection and aflatoxin contamination in foods and feeds; Herbal extracts as an alternative for the control of ticks infesting dairy cattle; Integrated development of small ruminants and rabbits - Biotech Centre for Fecundity genes; Assessment of Harvest and Post Harvest Losses of major crops and commodities in India; Development of Shelf Stable Chicken Meat Products with Natural Preservatives - A Hurdle Technology Approach; Development, stability and consumer acceptance of Omega 3 fatty acid enriched functional dairy foods; Model Fruit and Vegetable Processing Plant; Bovine infertility diagnostic and training centre with special reference to buffaloes; Monitoring, Surveillance and Control of Emerging and Reemerging Diseases of Poultry at Field Level; State level Food Processing Training Centre (FPTC); Nucleus Jersey Crossbred Bull-Mother Farm : Production of Superior crossbred bulls for sustainable milk production under rural conditions; Augmenting animal productivity and advanced veterinary care delivery through continuing education to field Veterinarians; Centre for Poultry Products Certification for freedom from microbes for Export; Mass breeding and production of ornamental fishes and major carp seeds; Marine Engine and Sea Safety Training Centre for the fisher folk of Tamil Nadu; Increasing fish production in Tamil Nadu through production and distribution of genetically improved Tilapia; Post-harvest centre in Fisheries (Ponneri-Tiruvallur Dt.); Seafood Knowledge Highway to improve health, combat malnutrition and enhance income of fishers; Chemical Residue Monitoring Laboratory For Fish In Tamil Nadu; Fish Feed Quality Testing Laboratory for the benefit of fish farmers of Tamil Nadu; Dairy Integration programme for sustainable livelihood of TNPL adopted village farmers in Karur Districts; Empowerment of tribal youth in conservation of Toda buffaloes - "for the Toda and by the Toda" approach; Use of beetal leaves as shelf-life extender of raw milk; Exploration of the hepatoprotective effect of alloe health drink in broiler chicken; Effect of PDE4 inhibitors on osteoarthritis of the canine hip and stifle joint; Evaluation of efficacy of poultry live vaccines in commercial chickens; A study on the prevalence of Mannheimia haemolytica in India; Large scale field testing of inactivated multivalent adjuvanted vaccine for bluetongue; Effect of pelleting and storage on the activities of various feed enzymes; The effect of TANUVAS Grand supplement in augmenting milk production and preventing metabolic disorder in cattle and testing its efficacy through ODL based participatory research in Life long learning for farmers (L3F) programme and Trilateral Agreement (MSU, Malawi, TANUVAS)- Assessing the impact of FMD control programmes in Tamil Nadu are some of the research programmes aimed at augmenting production through scientific livestock and fish farming.

1. EDUCATION

1.1 Academic programmes

To keep pace with the future challenges and relevance to changing needs and aspirations, our educational system is very dynamic with frequent evaluation and updation of course curricula and teaching methodologies. In the recent past, the University has taken various steps to improve the quality of teaching through various approaches. It is worthwhile to mention here that with the financial assistance from ICAR., New Delhi under National Agricultural Innovation Project, TANUVAS has developed e-courses for B.V.Sc. & A.H., and B.F.Sc. students for online access.

The University offers three undergraduate degree courses besides 28 masters and 22 doctorate degree programmes, apart from MSc in Bioinformatics, MPhil in Biotechnology and PG diplomas in Bioinformatics, Companion Animal Practice, Veterinary Laboratory diagnostic techniques, Wild Animal Disease Management, Fish Quality Management, Business Management in Animal and Fisheries Science and Diversified Poultry Production. The overall admission capacity of students in the university is 706. B.V.Sc. & AH., – 270; B.F.Sc. – 44; B.Tech. in Food Processing Technology - 20; B.Tech. in Poultry Production Technology - 20; M.V.Sc. – 121; M.F.Sc. – 33; M.Tech. – 5; Ph.D. (Veterinary) – 98; Ph.D. (Fisheries) – 15; M.Phil. in Biotechnology – 8; M.Sc. Bioinformatics – 6; PG Diploma in Bioinformatics – 6; PG Diploma in Companion Animal Practice – 4; PG Diploma in Veterinary Laboratory Diagnostic Technique – 6; PG Diploma in Wild Animal Disease Management – 6; PG Diploma in Fish Quality Management – 6; PG Diploma in Business Management in Animal and Fisheries Science – 8; PG Diploma in Diversified Poultry Production – 30.

1.2 Scholarships

This University is extending monetary assistance to the students to pursue their undergraduate and postgraduate programmes through various State and Central Government agencies. Such assistance in the form of 29 different scholarships has been availed by 1,082 students to the tune of ₹ 1, 54, 05,397/- during the reporting period.

1.3 Endowments

Various endowments are instituted by State Government, philanthropists, intellectuals, academicians and animal lovers to motivate the students and staff of the University to excel in their performance and contribute significantly to the academic and research activities of the University. With the addition of five endowments instituted during the reporting period, a total of 140 endowments are available in this University.

1.4 Student Amenities

To shape the career and in order to expand the wisdom and vision of students by acquiring knowledge in various vistas of Animal and Fishery Sciences, the following student-friendly facilities are provided.

1.4.1 Library

The libraries at Madras Veterinary College, Chennai; Veterinary College and Research Institute, Namakkal; Fisheries College and Research Institute, Thoothukudi and Institute of Food and Dairy Technology, Koduvalli have good collection of books and journals. The MVC library, one of the well equipped libraries in India, has been completely modernized, automated and digitized with online journals and access to international databases. In addition, CD-ROM databases have been procured and used for information retrieval. A video library is functioning with 196 video lessons for use by the students and staff.

1.4.2 Computer Centre

The Computer Centre and the Internet Kiosk attached to the Department of Animal Husbandry Statistics and Computer Applications of Madras Veterinary College provide a comprehensive computing, browsing and e-mailing facilities and networking infrastructure to improve learning among students, teaching efficiency and research capability among faculty members. The UG and PG students are given hands on training in computer applications.

1.4.3 Bioinformatics Centre

Realising the growing needs of information for large spectrum of scientists working in different areas of Biotechnology at R&D centres, Universities and Industrial corporations, this centre sponsored by Department of Biotechnology (BTIS) is functioning in this University. This centre not only provides offline and online information retrieval service to research scholars and scientists of TANUVAS but also to the needs of scientists/research scholars of other States.

1.4.4 University Students Counseling and Placement cell

To create and enhance career opportunities to Veterinary and Fisheries graduates, a separate "University Students Counselling and Placement Cell" has been established in the University. This cell maintains a computerised database of veterinary graduates and postgraduates. With the help of this database, the Cell provides a list of veterinary and fishery graduates/postgraduates to the recruiting agencies for employment opportunities. During the reporting period, 20 Veterinary Graduates and 9 Fishery Graduates got their employment in projects at TANUVAS and other private organisations through this cell.

1.5 Student Activities

This University fosters leadership quality, competitive spirit co-operation and unity among student community besides guiding them in their academic pursuits through National Cadet Corp(NCC), National Service Scheme(NSS), Wild Life Club etc. A total of 7, free animal health camps and three free health camps for human were conducted by the NSS units of TANUVAS.

1.6 Faculty Development

For continuing education of TANUVAS faculty, 66 Summer Institutes / Trainings / Seminars / Workshops were conducted. Further, 362 faculty members were deputed to various Summer Institute/Workshops, Symposium, Seminar etc. within and outside the country. Apart from this, The University has provided orientation programme for new faculty, management training for senior faculty and administrative training for non-teaching staff.

2. RESEARCH

During the reporting period, the university has bagged 47 new research projects funded by Indian Council of Agricultural Research, Department of Biotechnology, Department of Science and Technology, Department of Agricultural and Animal Husbandry, Ministry of Food Processing Industries, New Delhi and National Bank for Agricultural and Rural Development, Mumbai worth of ₹ 3,681.60 lakhs. With this, 155 sponsored research programmes are being implemented at present with a financial outlay of ₹ 11,924.16 lakhs.

In addition, 96 plan schemes with a financial outlay of ₹ 6447.73 lakhs, funded exclusively by Govt. of Tamil Nadu are being pursued during the period under report.

2.1 Collaboration and Linkages

- O Thirty seven research programmes to the tune of ₹ 2,558.42 lakhs funded by ICAR.
- O Established linkages with DBT (25); DST (11); Agricultural and Processed Food Products Export Development Authority (2); Department of Animal Husbandry, Dairying and Fisheries (2); Ministry of Food Processing Industries (5); Ministry of Agriculture, New Delhi (2); National Bureau of Animal Genetic Resources, Karnal (2); ICSSR, New Delhi (1); DRWA, New Delhi (1); National Fisheries Development Board, Hyderabad (1) and National Bank for Agricultural and Rural Development (3) with a total outlay of ₹ 5,739.72 lakhs
- O Earned 39 projects to a total outlay of ₹ 3,138.12 lakhs from Tamil Nadu State Council for Science and Technology, Tamil Nadu Livestock Development Agency, Tamil Nadu State Land Use Board, Department of Animal Husbandry, Dairying and Fisheries, State Planning Commission, Tamil Nadu Agricultural University and National Agricultural Development Programme.
- O Private agencies viz. Ayurvet Ltd., Baddi, Himachal Pradesh; Novus Animal Nutrition (India) Pvt. Ltd., Chennai; Edwards Life Sciences (India) Pvt. Ltd., Mumbai; EID Parry (India) Ltd., Chennai; The Alembic Pharmaceuticals Ltd., Mumbai; C.P. Plantations, Madurai; Orchid Research Laboratories Ltd., Chennai; Hester Biosciences, Gujarat; ABT Corporation, Bangalore; Pfizer Pharmaceutical

Pvt. Ltd., Mumbai ; Yasham Biosciences Pvt. Ltd., Mumbai; Advanced Bio-Agro Technologies, Pune; Mars International; GOMBRT, Ramanathapuram; CMLRE, Kochi and Praj Industries (P) Ltd., Pune have invested ₹ 157.61 lakhs in 19 research programmes

- Collaboration with international agencies *viz* BBSRC, UK and USAID, USA and earned five projects to the tune of ₹ 330.29 lakhs
- 2.2 Salient Research Achievements in Animal Sciences

2.2.1 ANIMAL HEALTH

O Evaluation of R-Mutant *E. coli* vaccine against coliform mastitis

In the present study *Escherichia coli* isolate no. 38 which was isolated from mastitis milk and maintained at Department of Veterinary Microbiology was used for vaccine preparation against coliform mastitis. Using this isolate formalin inactivated Al (OH)₃ and Montanide (SEPPIC[®]) adjuvant added vaccines were prepared separately. This vaccine was effective not only in controlling clinical coliform mastitis but also mastitis caused by other gram-negative bacteria.

2.2.2 ANIMAL PRODUCTION

C Estrus synchronization in goats (*Capra hircus*) using progesterone implant and prostaglandin $F2\alpha$

TRIU C (progesterone) compound can be used for effective synchronization of estrus in goats, since it induces estrus at a shorter duration, with better psychic expression of estrus and improved conception rate. Vaginal exfoliative cytology can be used as a reliable diagnostic tool for estrus detection under field condition and early pregnancy diagnosis can be established between 20 to 25 days of gestation

O Development of low fat probiotic ice cream using starch and fruits

The study revealed that based on the overall high acceptability scores, low calorific value, low cost of production, no adverse taste or mouth feel and the better survivability of *L. reuteri*, it is concluded that ice cream mix containing 2 per cent fat, 5 per cent starch (either tapioca starch or maltodextrin) incorporated with 4 per cent *L. reuteri* and 10 per cent fruit pulp (either mango or sapodilla) is the ideal choice for the production of low fat probiotic ice cream

2.3 Technologies developed

New Vaccines / Products and technologies / Diagnostic kits / Diagnostic methods developed at TANUVAS are listed below :

Products and technologies

Mobile poultry processing unit-cum-retail meat stall; Mango whey drink

Diagnostic Kits

ABT CHOICE for rapid treatment of mastitis; Dip Disc ELISA for diagnosis of Hydatidosis; Multiplex PCR kit for Vibrio cholerae; Multiplex PCR kit for Salmonella and *Vibrio cholerae*

Vaccines

Autogenous *Mannheimia haemolytica* vaccine for Japanese Quail; Johne's disease vaccine for sheep and goat

3 EXTENSION IN ANIMAL SCIENCES

3.1 Rural Information Technology initiative

This University has established nine Village Information Centres viz. three centres in collaboration with International Development Research Centre (IDRC), Canada, at Kuzhumani (Tiruchirapalli), Puthuthamaraipatti (Madurai), Chitteri (Vellore) and six centres in collaboration with UNESCO, in the households of SHG Women located at Aminjikarai and Pallikaranai of Chennai District, Kancheepuram and Rail Nagar of Kancheepuram District, Varakkalpattu and Kandarvakottai of Cuddalore District. All the nine centres are equipped with computer, printer, audio, video and electronic information tools for accessing information on animal husbandry and allied activities. These centres are located in the community buildings for public access and are being managed successfully by village Committees.

3.2 Distance Education

The Directorate of Distance Education is offering 8 PG diploma courses for the Veterinaries to update their skills on latest technologies in veterinary field. Apart from this, 18 skill development courses and 13 self-employment courses in various animal husbandry practices are being offered in this Directorate to booster livestock and poultry production thereby enhance the rural income through livestock activities.

3.3 Other outreach activities

The University has organised various 1604 training programmes, 219 Exhibitions cum Mass Contact Programmes, 17,216 disease investigation programmes and 72,134 consultancy programmes benefiting 6,99,010 farmers, and extending health care services by treating 1,66,145 animals including testing of specimens/ samples, vaccination and infertility.

4. SALIENT RESEARCH ACHIEVEMENTS IN FISHERY SCIENCES

Interesting findings have been brought to light by fisheries faculty. The frontline beneficiaries of the research and development efforts are marginal farmers and small entrepreneurs.

• Studies on the Bycatch reduction in Trawl fishing of Gulf of Mannar coast for Biodiversity conservation

The study revealed that out of the three types of square mesh panels *viz* 20mm, 30mm and 40mm, square mesh panel with 30mm was found ideal to fit in the cod ends of mini trawls

• Evolving trapping technique for marine Ornamental fishes with collapsible traps

Mainly 4 different designs of traditional traps were available of which type 2 trap with single entrance was used mainly. The study revealed that Improved Norwegian Collapsible Trap (INCT) was found to be more economic and handy to use.

5. AWARDS AND RECOGNITIONS

Scientists and students of this University have received wide recognition for their outstanding contribution in the field of veterinary and animal sciences. Jawaharlal Nehru Award, Jaitilal Endowment Award, Dr. B.V.Rao award, Kalaignar Karunanidhi medal, Ayurvet award, Dr. C. V. Vijayaraghavan Memorial medal, Young Scientist Award, DC Blood Gold medal, Dr.Vaithilingam Rathnasabhapathy Innovation Cash Award – 2012, Dr. N.C.Sharma Memorial Award 2012, ICAR Young Scientist fellowship, TANSA-2011, Shantha Memorial Prize, KPC Nair Best Teacher Award 2012, Dinamalar memorial award, Best Farm Scientist Award -2012, Best teacher award – 2012, Best Extension Worker award – 2012 and Best Clinician Award – 2012, are few of the notable awards received by our faculty.

6. PUBLICATIONS

During the period under report faculty members have published 388 (265 National + 123 International) research articles in different journals. 385 popular articles were published in different print media for the benefit of the farmers and public, besides 36 books / manuals.



INTRODUCTION



1. INTRODUCTION

HISTORICAL PERSPECTIVE

Tamil Nadu Veterinary and Animal Sciences University (TANUVAS), the first of it's kind for Veterinary Science in South East Asia was established in the year, 1989. 110 years old Madras Veterinary College, started in the year 1903, is the oldest constituent college of TANUVAS. Veterinary College and Research Institute, Namakkal was established in 1985. TANUVAS now has seven constituent colleges including the Fisheries College and Research Institute at Tuticorin and other peripheral units to provide Research and Development support to Veterinary, Fishery, Food and Basic Sciences programmes with a national outlook and regional focus. Over the years, TANUVAS has gained prominence as one among the top ranking teaching and research organizations in the country, with an international acclaim. The University has collaborative teaching, research and extension programmes with national and international institutes. The research and developmental logistics available for the various activities are the hallmark of this University and established with the following mandates,

- To impart education in different branches of veterinary and animal Sciences, Fishery, Food and Basic Sciences
- To further the advancement of learning and pursuing research in Veterinary and Animal Sciences and Fishery Sciences
- To undertake extension of research findings to the beneficiaries in cooperation with the line departments concerned

HIGHLIGHTS OF THE YEAR 2012-13

- TANUVAS has established two more Veterinary College and Research Institutes at Orathanadu, Thanjavur and Tirunelveli districts.
- Three more Veterinary University Training and Research Centres have been established at Villupuram, Krishnagiri and Thiruvannamalai during 2012 to cater the need based extension activities.
- Established College of Poultry Production and Management at Hosur on par with international standards
- A Memorandum of Understanding was signed between TANUVAS and Ghent University, Belgium on 21.05.2012 to have collaborative research in different fields of food technology and student and staff exchange programmes.
- The NSS unit of MVC received the Appreciation Award for organizing a mega Blood Donation Camp from His Worshipful Mayor of Chennai Corporation, Thiru Saidai Doraisamy at the "Haemo Sapiens-2011"

Mega Blood Donation Camp by NSS students of MVC, Chennai

function organized at Madras Medical College on 24.05.2012. Dr. N. Kumaravelu, NSS Programme Officer received the award on behalf of NSS unit of MVC.

* TANUVAS has been conferred with the prestigious "Sardar Patel Outstanding ICAR Institution Award-2011" recognizing its meritorious performance in education, research and extension in the country in the field of Veterinary, animal and fisheries sciences at the 84th Foundation day of the ICAR and ICAR Award Ceremony held at New Delhi on 16.07.2012. Former President, Dr.A.P.I.Abdul Kalam delivered the foundation day address. Dr. Sharad Pawar, Honb'le Union Minister of Agriculture and Food Processing Industries presented the Award to Dr. R. Prabakaran, Vice-Chancellor, TANUVAS, in the presence of Shri Harish Rawat, Hon'ble Union Minister of State for Agriculture, Food Processing Industries and Parliamentary Affairs and Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR.



The Fifteenth Convocation of TANUVAS was held at Anna Auditorium, MVC, on 03.08.2012. His

| 3 |



Excellency Dr. K. Rosaiah, the Governor of Tamil Nadu and the Chancellor of TANUVAS, presided and conferred degrees to 225 candidates



On 17.07.2012, a Memorandum of Understanding was signed between ICAR, TANUVAS and M/s. Sanvita Biotechnologicals Pvt. Ltd., Hyderabad for commercialization of Bluetongue Multivalent inactivated vaccine developed at TANUVAS by getting a lumpsum amount of ₹ 10 lakhs



The Second of the seven "Regional Livestock and Fisheries Exhibition" was organised at Tirunelveli from 08.09.2012 to 10.09.2012. More than 8000 farmers visited the exhibition



An International Seminar on "Future of livestock: A paradigm change to maximize the productivity for economic gains" and the 26th Annual Convention of the Indian Association of Veterinary Microbiologists, Immunologists and Specialists in Infectious Diseases was organised from 06.09.2012 to 08.09.2012.About 150 delegates from India, USA, UK, France, Spain and other countries participated.



- A Memorandum of Agreement was signed between TANUVAS and Department of Biotechnology, New Delhi on 27.10.2012 for the launching of unique DBT-TANUVAS Partnership programme on "Translational Research Platform for Veterinary Biologicals" at a cost of ₹ 22.94 crores.
- The Third of the seven "Regional Livestock and Fisheries Exhibition" was organised at Coimbatore from 28.12.2012 to 30.12.2012. More than 15000 farmers visited the exhibition.



The Livestock and Fisheries Week-2013 of TANUVAS was celebrated at Post Graduate Research Institute

for Animal Sciences, Kattupakkam on 19.01.2013. Thiru T.K.M. Chinnayya, Hon'ble Minister for Animal Husbandry, Government of Tamil Nadu presided over the celebrations and released 21 technologies developed by the University. Certificate of Appreciation was awarded to the scientists involved in the development of technologies.

TANUVAS, Chennai, Nichi-in-Centre for Regenerative Medicine, Chennai and Virginia Tech, USA jointly organised an international conference on "Frontiers of Stem Cell and Biotechnology in Human and Veterinary Medicine" at MVC berween 11.01.2013 and 12.01.2013. A total of 131 students and research scientists and faculty members from various fields



like human medicine, dentistry, veterinary medicine, biotechnology and engineering participated.

 An International workshop on "Veterinary Pharmacovigilance for Global Food Security-VPVGFS

ORGANISATIONAL SET- UP

The organisational structure of TANUVAS follows the pattern of State Agriculture Universities. The policy making functions of TANUVAS are managed through different bodies constituted for the purpose of education, research and extension activities as given below:

- Board of Management
- Planning Board
- Academic Council
- Finance Committee
- Research Council
- Extension Education Council
- Board of Studies

The **Board of Management** is the highest policy making body. The **Planning Board** of the University shall advise on the planning and development of the University and keep under review the standard of education and research in the University. The **Academic Council** will be the academic authority of the University and will have the control and general regulation of teaching and examination in the University and responsible for the maintenance of the standards prescribed. The **Finance Committee** governs the finance and accounts of the University. The **Research Council** will be the



2013" was organised by the Pharmacovigilance Laboratory for Animal Feed and Food Safety, TANUVAS at MVC, Chennai between 21.02.2013 and 22.02.2013. His Excellency, the former President of India, Dr. A.P.J. Abdul Kalam inaugurated the International workshop and released the workshop compendium and interacted with the students of MVC, Chennai.

- ♦ Under NADP, sixteen projects were sanctioned for TANUVAS during 2012-13 with a total cost of ₹2672.36 lakhs
- The ICAR, New Delhi has sanctioned the following new schemes namely "Centre in Critical care medicine & inpatient clinical care" and "Broiler production in environmentally controlled house and post harvest technology" to the tune of ₹ 145.00 lakhs under Experiential learning programme to this University.

policy making body of the University research. The **Extension Education Council** will formulate the policies and broad outlines of extension education activities to be carried out by the University in cooperation with the concerned line and government departments. The **Board of Studies** of the respective faculties will frame curricula for undergraduate and postgraduate programmes; recommend to the Academic Council for the establishment of new departments, abolition / subdivision / or otherwise reconstitution of the existing departments.

The research, education and extension activities of the University are managed by the Vice-Chancellor with the assistance of Registrar, Finance Officer, Controller of Examinations, Estate Officer, Deans of Colleges, Directors of Research, Animal Health, Animal Production, Extension Education, Distance Education and Clinics. Various sub- committees like Hospital Management Committee, Livestock Production Committee, Animal Disease Review Committee, Building Committee, Grievances Committee, Sports Committee, Research Project Monitoring and Evaluation Cell and Product Development and Commercialization Cell are also functional.

OFFICERS OF THE UNIVERSITY

Chancellor	His Excellency Dr. K. Rosaiah Governor of Tamil Nadu
Pro-Chancellor	Thiru T.K.M. Chinnayya Hon'ble Minister for Animal Husbandry, Government of Tamil Nadu
Vice-Chancellor	Dr. R. Prabakaran
Registrar	Dr. C. Balachandran
Controller of Examinations	Dr. C. Chandrahasan
Dean, Madras Veterinary College	Dr. B. Murali Manohar (up to 30.09.2012 AN) Dr. S.A. Asokan (from 30.09.2012 AN)
Dean, Faculty of Basic Sciences	Dr. S.A. Asokan (Incharge upto 22.11.2012 FN) Dr. K. Saravanabava (from 22.11.2012 AN)
Dean Veterinary College and Research Institute, Namakkal	Dr. C. Chandrahasan (in-charge upto 10.04.2012 FN) Dr. K.A. Doraisamy (from 10.04.2012AN)
Dean	Dr.P.S. Rahmathullah (upto 16.11.2012 AN)
Veterinary College and Research Institute, Tirunelveli	Dr. R. Ravi (incharge from 16.11.2012 to 22.11.2012 AN)
	Dr. S. Prathapan (from 22.11.2012 AN)
Dean Veterinary College and Research Institute, Orathanadu, Thanjavur	Dr. C. Veerapandian (from 10.04.2012 FN)
Dean, Faculty of Food Sciences	Dr. D. Thyagarajan (upto 22.11.2012 AN) Dr. T. Sivakumar (from 22.11.2012 AN)
Dean Fisheries College and Research Institute, Thoothukudi	Dr. V.K. Venkataramani
Director of Research	Dr. K. Kumanan
Director of Research and Extension (Fisheries)	Dr. M. Venkatasamy (incharge)
Director of Clinics	Dr. S. Prathaban (upto 22.11.2012 FN)
	Dr. S.R. Srinivasan (from 22.11.2012 AN)
Director Centre for Animal Production Studies	Dr. M. Babu
Director Centre for Animal Health Studies	Dr. V. Purushothaman
Director of Extension Education	Dr. D. Kathiresan (upto 16.11.2012FN) Dr. S.R. Srinivasan (incharge from16.11.2012 to 22.11.2012FN) Dr. C. Chandrahasan (from 22.11.2012AN)
Director of Distance Education	Dr. S.R. Srinivasan (upto 22.11.2012 FN)
Director, Centre for Poultry Production and Management	Dr. M. Murugan (from 22.11.2012 AN)
Finance Officer	Thiru R. Veerakumar (upto 07.02.2013 FN)
	Tmt. S. Kalavathy (from 07.02.2013 AN)
Estate Officer	Er. K. Ramamoorthy (In-charge)

BOARD OF MANAGEMENT

Class-I Ex-officio Members		
Chairman (Vice-Chancellor)	Dr. R. Prabakaran	
Member Secretary (Registrar)	Dr. C. Balachandran	
Members	Secretary to Government in-charge of Animal Husbandry, Dairying and Fisheries	
	Secretary to Government in-charge of Finance	
	Secretary to Government in-charge of Law	
	Commissioner of Animal Husbandry and Veterinary Services	
	Commissioner of Fisheries	
(Class-II Other Members)		
One Scientist	Dr. K.T. Sampath	
One Livestock farmer	Thiru R. Gunasekaran	
One representative of the industries connected with Animal Husbandry or Fisheries	Dr. V. Ramasami	
One women social worker	Tmt. Jaya Arunachalam	
One Educationist	Prof. M.P. Yadav	
One nominee of ICAR	Dr. Madan Mohan	
One nominee of TN Veterinary Council	Dr. D. Ramamurthy	
One member elected by the members of TN Legislative Assembly	Th. M.K. Ashok, MLA	
Two members representing agriculture and conversant with agriculture matters	Dr. D.V.R. Prakasha Rao, Ph.D.,	



Chairman (Vice-	Dr. R. Prabakaran	Class – II Other
Chancellor)		Nominated
Member Secretary (Registrar)	Dr. C. Balachandran	by the Vice- Chancellor on rotational amongst the
Class-I Ex-officio	Members	Heads of Departments
Members	Secretary to Government in-charge of Animal Husbandry, Dairying and Fisheries	(Ten)
	Commissioner of Animal Husbandry and Veterinary Services	
	Commissioner of Fisheries	
Deans of each	Dr. S. A. Asokan	
college	Dr. T. Sivakumar	
	Dr. K. A. Doraisamy	
	Dr. C. Veerapandian	
	Dr. S. Prathaban	
	Dr. G. Sugumar	
Director of Research	Dr. K. Kumanan	
Director of Clinics	Dr. S. R. Srinivasan	
Director of Extension Education	Dr. C. Chandrahasan	
Director of Distance Education	Dr. D. Thyagarajan	
Director, Centre for Animal Health Studies	Dr. V. Purushothaman	
Director, Centre for Animal	Dr. M. Babu	Persons
Production Studies		having special knowledge
Director, College of Poultry Production and Management	Dr. M. Murugan	of practical experience in different aspects of Veterinary and Animal Sciences
		(Three)

Class – II Other Members		
Nominated by the Vice- Chancellor	1.	Dr. P.S. Thirunavukkarasu Professor and Head, Department of Clinics, MVC., Chennai
on rotational	2.	Dr. R. Sridhar
Heads of Departments		Professor and Head, Dept. of Vety. Pathology, VC & RI., Namakkal
(Ten)	3.	Dr. N. Ramamurthy
		Professor and Head, Dept. of Poultry Science, MVC., Chennai
	4.	Dr. V. Ramesh Saravanakumar
		Professor and Head, Dept of Livestock Production and Management, VC&RI., Namakkal
	5.	Dr. J. Johnson Rajeswar
		Professor and Head, Dept. of Veterinary Microbiology, VC&RI., Namakkal
	6.	Dr. B. Mohan
		Professor and Head, Poultry Disease Diagnosis and Surveillance Laboratory, Namakkal
	7.	Dr. N.K. Sudeep Kumar
		Professor and Head, University Publication Division, MMC, Chennai
	8.	Dr. D. Ramasamy
		Professor, College of Food and Dairy Technology, Koduvali, Chennai
	9.	Dr. G. Jeyasekaran
		Professor, Dept. of Fish Processing Technology, FC & RI., Thoothukudi
	10.	Dr. A. Srinivasan
		Professor and Head, Dept. of Fisheries Environment, FC & RI., Thoothukudi
Persons	1. D	r. T.S. Chandrasekhara Rao
having special knowledge of practical	Dean, Faculty of Veterinary Science Sri Venkateswara Veterinary University, Tirupathi - 517 502 2. Dr. Shivshankar M. Usturge	
experience in different		
aspects of Veterinary and Animal Sciences	De Ka Fi Na	ean, College of Veterinary Science, arnataka Veterinary, Animal and sheries Sciences University, Nandi agar, Bidar, Karnataka
(Three)	3. D	r. K. Sunilkumar Mohamed
	Н	ead, Molluscan Fisheries Division,

CMFRI., Cochin – 682 108

ACADEMIC COUNCIL

PLANNING BOARD

Chairman (Vice- Chancellor)	Dr. R. Prabakaran	
Secretary (Registrar)	Dr. C. Balachandran	
Members	Commissioner of Animal Husbandry and Veterinary Services Commissioner of Fisheries	
Persons of high Academic standing nominated by the Board (not more than eight)	 Dr. S. C. Gupta, Assistant Director General, Indian Council of Agricultural Research, Krishi Bhavan, New Delhi - 110 001. Dr. A. K. K.Unni, Professor and Head, Pre-Clinical Research Division, Amrita Institute of Medical Sciences & Research, AIMS Post, Cochin Kerala - 682 041 Dr. P. S. Birthal, Principal Scientist, National Centre for Agricultural Economics and Policy Research (NCAP), P.O.Box.No.11305, D.P.S.Marg, Pusa, Librarian Avenue, New Delhi - 110 012 Dr. A. K. Chakravarthy, Principal Scientist Artificial Breeding Research Centre, National Dairy Research Institute, Karnal - 132 001, Haryana Thiru. S. Ranganathan, Poultry Farmer, 5/241/1, N.K.R. Nagar, Mohanur Road, Namakkal - 637 001 	

FINANCE COMMITTEE

Chairman (Vice-Chancellor)	Dr. R. Prabakaran
Member - Secretary	Finance Officer, TANUVAS.,
Members	Secretary to Government in- charge of Animal Husbandry, Dairying and Fisheries
(Ex-officio Members)	Secretary to Government in- charge of Finance
Board Member (Non-official)	Dr. K.T. Sampath Director, National Institute of Animal Nutrition and Physiology, Adugodi, Bangalore-560 030

RESEARCH COUNCIL

Chairman (Vice-Chancellor)	Dr. R. Prabakaran
Member Secretary (Director of Research)	Dr. K. Kumanan
Members	Registrar Commissioner of Animal Husbandry and Veterinary Services Commissioner of Fisheries Deans & Directors of TANUVAS Heads of Research Stations Project Co-ordinators
Members (Nominated by Pro- Chancellor) Two Specialist of eminence	Dr. T. M. Gowri Shankar Director (Technical and Marketing) Natural Feeds (P) Ltd., 19, Karupasamy Street, K.K. Pudur, Coimbatore-641 038
	Dr. D. Narahari Professor (Retd.) 31/15, East First Main Road, 3rd Floor Shenoy Nagar, Chennai-600 030
Three progressive farmers in Animal Husbandry / Fisheries	Thiru SKM Shivakumar Managing Director SKM Egg Production India Ltd., Cholangapalayam, Erode – 638 154
	Thiru R. Lakshmanan Managing Director Shanthi Poultry Farm (P) Ltd., 6/15, Main Road, Pappampatty, Coimbatore – 641 016
	Thiru A. Sivakumar 31, Subramaniam Salai, R.S. Puram, Coimbatore-641 002
Members (Nominated by Vice- Chancellor) Four Professors	Dr. A.P. Nambi Prof. and Head, Dept. of Clinical Medicine, Ethics and Jurisprudence, MVC., Chennai-600 007 Dr. B. Elango Assoc. Professor, Dept. Dairy
	Science, VC & RI., Namakkal Dr. G. Jeayasekaran Professor, Dept. of Fish Processing Technology, FC & RI., Thoothukudi





EXTENSION EDUCATION COUNCIL

Chairman	Dr. P. Probakaran	
(Vice-Chancellor)		Chairman
Member Secretary (Director of Extension Education)	Dr. D. Kathiresan	(Dean, Fact Members
Members	Registrar Commissioner of Animal Husbandry and Veterinary Services Commissioner of Fisheries Deans & Directors of TANUVAS Three Regional Joint Directors of Animal Husbandry / Fisheries Professors of Extension Education	Elected Mer One Associa Professor Three Assis
Members (Nominated by Pro- Chancellor) Three Progressive farmers in Animal Husbandry / Fisheries)	Tmt. V. Latha Suresh Chennai 600 055 Thiru. S. Ganesh Kamalakannan Thiruvarur District 612 603 Thiru. B. Suryakumar Nagapattinam District	Professors Nominated External ex Two expert
Members (Nominated by Vice-Chancellor) Two eminent persons	Dr. S. Prabhukumar Zonal Project Director Zone VIII, ICAR, H.A. Farm Post, Hebbal Bangalore – 560 024 Dr. K.A. Ponnusamy Director of Extension Education TNAU, Coimbatore - 641 003	subjects
Two Professors from each faculty	Veterinary Dr. T. Sivakumar, Professor and Head, Dept. of Livestock Production and Management, MVC, Chennai-7 Dr. R. Narendra Babu Professor & Head, Dept. of Meat Science Technology, VC&RI, Namakkal Fisheries Dr. D. Sukumar, Professor, Dept. of Fish Processing Technology, FC&RI, Thoothukudi	BOARD Chairman (Dean, Facu Basic Scien Members
	Professor and Head, Dept. of Fisheries Extension, FC&RI, Thoothukudi	Elected Mer Two Associ Professors

BOARD OF STUDIES (VETERINARY FACULTY)

Chairman (Dean, Faculty)	Dr. C. Chandrahasan
Members	Other Deans within the facultyDeans of other facultiesAll Directors of the UniversityThe Senior Heads ofDepartments of the TeachingInstitutes of the concernedfaculty
Elected Members One Associate Professor	Dr. P.Devendran
Three Assistant Professors	Dr. A. Arivuchelvan Dr. C. Kathirvelan Dr. R. Saravanan
Nominated External experts Two experts in the concerned subjects	 Dr. P.C. Saseendran, Professor and Head, Department of Livestock Production and Management, College of Veterinary and Animal Sciences, Mannuthy, Thrissur Dr. L. Ranganath, Professor and Head, Department of Veterinary Surgery and Radiology, Veterinary College KVAFSU, Hebbal Bangalore
BOARD OF ST	UDIES (FACULTY OF BASIC SCIENCES)
Chairman (Dean, Faculty of Basic Sciences)	Dr. S.A. Asokan
Members	Other Deans within the faculty Deans of other faculties All Directors of the University and Professor and Head of the Departments of Faculty of Basic sciences
Elected Members Two Associate	Dr. A. Raja

Dr. S. Manoharan

Dr. V.S. Vadivoo,
Dr. S. Rathnaprabha,
Dr. A. Serma Saravana Pandian,
Dr. C. Vennila
Dr. S. Karutha Pandian, Ph.D.,
Professor and Head,
Dept. of Biotechnology,
Alagappa University,
Karuikudi.
Dr. Lalith Achoth, Ph.D.,
Professor and Head,
Dept. of Dairy Economics
Dairy Science College,
Hebbal, Bangalore

BOARD OF STUDIES (FACULTY OF FOOD SCIENCES)

Chairman (Dean, Faculty of Basic Sciences)	Dr. T. SIVAKUMAR
Members	Other Deans within the faculty
	Deans of other faculties
	All Directors of the University
	and Senior Heads of the Departments of the Faculty of Food sciences
Elected Members	Dr. S. Sureshkumar
Two Associate Professors	Dr. T.R. Pugazhenthi
Four Assistant	Er. V. Perasiriyan
Professors	Dr. S. Ezhilvelan
	Dr. P. Selvan
	Dr. N. Karthikeyan
Nominated External	Dr. Balbir Singh Beniwal
experts Two experts in the	MDO-cum-Dairy Manager
concerned subjects	Department of Animal Products Technology
	College of Animal Sciences
	Chaudhary Charan Singh Haryana Agricultural University
	Hisar-125 004
	Dr. V. Lakshmanan Principal Scientist (Retd.) No.2/2, Alamara Thottam Navavoor Pirivu Bharatiyar University Coimbatore - 641 046

BOARD OF STUDIES (FISHERIES FACULTY)

Chairman (Dean, Faculty)	Dr. V. K.Venkataramani
Members	Deans of other faculties
	Directors of the University
	Senior Heads of the Department
Elected Members	Dr. K. Rathnakumar
Two Associate Professors	Dr. S. A. Shanmugam
Four Assistant	Dr. R. K. Ramkumar
Professors	Dr. P. Chidambaram
	Dr. P. Padmavathy
	Thiru N. Jeyakumar
Nominated External	Dr. B. Madhusoodhana Karup
experts Two experts in the	Professor (Fisheries) and Director,
concerned subjects	School of Industrial Fisheries
nominated by the Vice-Chancellor	Cochin University of Science and
	Technology, Kochi, Kerala
	Dr. P. Ravichandran
	Head, Crustacean Culture Division,
	Central Institute of Brackishwater Aquaculture, 75, Santhome High Road
	Raja Annamalaipuram, Chennai

ORGANIZATION OF MEETINGS

Sl. No.	Authorities	Date
		10.04.2012
1.	BOARD OF MANAGEMENT	02.08.2012
		22.11.2012
2.	PLANNING BOARD	25.03.2013
3.	BOARD OF STUDIES (VETERINARY FACULTY)	22.03.2013
4.	BOARD OF STUDIES (FACULTY OF BASIC SCIENCES)	22.03.2013
5.	BOARD OF STUDIES (FACULTY OF FOOD SCIENCES)	14.12.2012
6.	BOARD OF STUDIES (FACULTY OF FISHERIES SCIENCES)	-
7.	RESEARCH COUNCIL	12.03.2013
8.	FINANCE COMMITTEE	11.07.2012
0	ACADEMIC COUNCIL	05.04.2013
9.		24.08.2013
10.	EXTENSION EDUCATION COUNCIL	15.03.2013



CONSTITUENT UNITS OF THE UNIVERSITY

COLLEGES AND INSTITUTES

Madras Veterinary College (MVC), Chennai Veterinary College and Research Institute (VC & RI), Namakkal Veterinary College and Research Institute (VC & RI), Thanjavur Veterinary College and Research Institute (VC & RI), Tirunelveli Fisheries College and Research Institute(FC & RI), Thoothukudi College of Food and Dairy Technology, Koduvalli College of Poultry Production and Management, Hosur

CENTRES OF ADVANCED STUDIES (CAS)

Clinical Medicine, Ethics and Jurisprudence, MVC, Chennai Poultry Science, VC & RI, Namakkal

CENTRE OF EXCELLENCE

Centre of Excellence in Animal Biotechnology and Immunology, MVC, Chennai

RESEARCH STATIONS

Poultry Research Station, Madhavaram Milk Colony, Chennai Regional Research Centre, Pudukkotai Post Graduate Research Institute in Animal Sciences, Kattupakkam Mecheri Sheep Research Station, Pottaneri Sheep Breeding Research Station, Sandynallah Instructional Livestock Farm, Tirunelveli University Research Farm, Madhavaram Milk Colony, Chennai Institute of Animal Nutrition, Kattupakkam

VETERINARY UNIVERSITY TRAINING AND RESEARCH CENTRES (VUTRCs)

Coimbatore	Dharmapuri	Dindigul	Erode	Karur
Madurai	Melmaruvathur	Parakkai	Cuddalore	Rajapalayam
Salem	Thanjavur	Tiruppur	Tiruchi	Vellore
Villupuram	Krishnagiri	Thiruvannamalai		

FISHERIES TRAINING AND RESEARCH CENTRE (FTRCs) Parakkai

Thanjavur

AVIAN DISEASE LABORATORY. Thalaivasal

RESEARCH AND SERVICE LABORATORIES

Poultry Disease Diagnostic and Surveillance Laboratory, Namakkal Animal Feed Analytical and Quality Assurance Laboratory, Namakkal Pharmacovigilance Laboratory for Animal Feed and Food Safety, Chennai Central University Laboratory, Madhavaram Milk Colony, Chennai Zooneses Research Laboratory, Madhavaram Milk Colony, Chennai Shrimp Disease Diagnostic Laboratory, Madhavaram Milk Colony, Chennai Bacterial Vaccine Research Centre, Madhavaram Milk Colony, Chennai Viral Vaccine Research Centre, Madhavaram Milk Colony, Chennai Centralised Instrumentation Laboratory, MVC., Chennai Centralised Clinical Laboratory, MVC., Chennai

FARMERS TRAINING CENTRES (FTCs)

Kancheepuram	Theni	Tiruvarur		
KRISHI VIGYAN KENDRAS (KVKs)				
Kattupakkam	Kundrakudi	Namakkal		



RESEARCH



2. RESEARCH

During 2012-13, with the financial assistance from various funding agencies, a total of 155 research projects to a total outlay of ₹ 11,924.16 lakhs were in operation in Veterinary and Animal Sciences, Basic Sciences, Food Sciences and Fishery Sciences faculties. The abstract of the same is furnished below:

RESEARCH PROJECTS IN OPERATION

Sl. No.	Funding Agencies	No. of Projects	Budget (₹in lakhs)
	Veterinary		
1.	Indian Council of Agricultural Research, New Delhi (30 projects 100% and 5 projects 75% funding)	35	2369.31
2.	GOI Departments, New Delhi Dept. of Biotechnology (15) Dept. of Science and Technology (10)	25	3362.95
3.	Agricultural and Processed Food Products Export Development Authority, New Delhi	2	991.73
4.	Department of Animal Husbandry, Dairying and Fisheries, GOI, New Delhi	2	310.00
5.	Ministry of Food Processing Industries, New Delhi	5	413.36
6.	Ministry of Agriculture, New Delhi	2	98.32
7.	National Bureau of Animal Genetic Resources, Karnal	2	20.85
8.	National Bank for Agricultural and Rural Development, Mumbai	3	18.11
9.	Tamil Nadu Government Agencies	10	158.90
10.	Government of Tamil Nadu under Part II	8	241.02
11.	National Agricultural Development Programme	8	1573.21
12.	Other Agencies Ayurvet Ltd., Baddi, Himachal Pradesh Novus Animal Nutrition (India) Pvt. Ltd., Chennai Edwards Life Sciences (India) Pvt. Ltd., Mumbai EID Parry (India) Ltd., Chennai The Alembic Pharmaceuticals Ltd., Mumbai C.P. Plantations, Madurai Orchid Research Laboratories Ltd., Chennai Hester Biosciences, Gujarat ABT Corporation, Bangalore Pfizer Pharmaceutical Pvt. Ltd., Mumbai Yasham Biosciences Pvt. Ltd., Mumbai Advanced Bio-Agro Technologies, Pune Mars International	13	68.56
13.	International Agencies BBSRC, UK USAID	4 1	309.33 20.96
	Sub-Total	120	9956.61

Fisheries			
14.	Indian Council of Agricultural Research, New Delhi	2	189.11
15.	GOI Departments, New Delhi Dept. of Biotechnology (10) Dept. of Science and Technology (1)	11	335.58
16.	ICSSR, New Delhi	1	2.74
17.	DRWA, New Delhi	1	7.50
18.	Planning Commission, GOI, New Delhi	1	8.00
19.	National Fisheries Development Board, Hyderabad	1	178.58
20.	National Agriculture Development Programme	8	1099.15
21.	Tamil Nadu State Council for Science and Technology	1	0.50
22.	Govt. of Tamil Nadu under Part II	3	57.34
23.	Private Agencies GOMBRT, Ramanathapuram (4) CMLRE, Kochi (1) Praj Industries (P) Ltd., Pune (1)	6	89.05
	Sub- Total	35	1967.55
	Grand Total	155	11924.16

Of the above, the following 47 new projects were sanctioned by different external agencies to the tune of ₹ 3,681.60 lakhs during 2012-13.

Sl. No.	Title of the scheme	Funding Agency	Budget (₹in lakhs)
	Veterinary and Fishery Sciences		
1	Experiential learning centre in Critical care medicine and inpatient clinical care	ICAR (100%)	95.00
2	Broiler production in environmentally controlled house and post harvest technology - Experiential learning		50.00
3	Empowerment of rural dairy farmers through augmentation of milk production by fodder cultivation and mineral mixture supplementation	DBT, New Delhi	14.80
4	Cytokine orchestration using nanoparticles or microRNA-potential for directing immune responses		22.20
5	Molecular characterization of Bovine Leukocytes Antigen BoLA – DRB3 Gene and their association with mastitis in crossbred Dairy cattle of Tamil Nadu		29.91
6	PCR-RFLP based detection of Acaricide resistant ticks under field conditions		28.36
7	Identification of fertility associated proteins in dog semen and artificial insemination with frozen semen in bitches		41.14
8	Exploiting the potentials of key virulence protein LOA 22 in the development of a diagnostic kit for animal Leptospirosis		37.22
9	Development of immunological and molecular tools for diagnosis and management of Aspergillus flavus infection and aflatoxin contamination in foods and feeds	DST, New Delhi	24.60
10	Herbal extracts as an alternative for the control of ticks infesting dairy cattle		11.00
11	Integrated development of small ruminants and rabbits – Biotech Centre for Fecundity genes	DAHD & F, New Delhi	224.00

SI. No.	Title of the scheme	Funding Agency	Budget (₹ in lakhs)
12	Assessment of Harvest and Post Harvest Losses of major crops and commodities in India	Ministry of Food	3.55
13	Development of Shelf Stable Chicken Meat Products with Natural Preservatives – A Hurdle Technology Approach	Processing Industries, New Dalbi	31.90
14	Development, stability and consumer acceptance of Omega 3 fatty acid enriched functional dairy foods	New Denn	52.91
15	Establishment of Model Fruit and Vegetable Processing Plant		75.00
16	Community Radio Station	ATMA-JD	48.88
17	ATMA - Demonstration - Farm School	(Agriculture)	2.28
18	ATMA - Technology transfer through demonstrations and farm field schools.		28.90
19	Establishment of Bovine infertility diagnostic and training centre with special reference to buffaloes	NADP	200.00
20	Monitoring, Surveillance and Control of Emerging and Reemerging Diseases of Poultry at Field Level		159.64
21	Establishment of Frozen Semen Bank at Veterinary College and Research Institute, Namakkal		229.00
22	Establishment of "State level Food Processing Training Centre (FPTC)" at College of Food and Dairy Technology, Koduvalli, Chennai		194.72
23	Establishing Nucleus Jersey Crossbred Bull-Mother Farm : Production of Superior crossbred bulls for sustainable milk production under rural conditions		230.00
24	Augmenting animal productivity and advanced veterinary care delivery through continuing education to field Veterinarians		176.30
25	Strengthening of University peripheral centres and developing "training modules for training beneficiaries of Honourable Chief Minister's priceless distribution of Milch animal and sheep and Goat Projects"		238.90
26	Establishment of a "Centre for Poultry Products Certification for freedom from microbes for Export"		144.65
27	Mass breeding and production of ornamental fishes and major carp seeds		111.80
28	Establishment of Marine Engine and Sea Safety Training Centre for the fisher folk of Tamil Nadu		221.00
29	Increasing fish production in Tamil Nadu through production and distribution of genetically improved Tilapia		148.00
30	Establishment of Post-harvest centre in Fisheries (Ponneri-Tiruvallur Dt.)		178.58
31	Establishment of "Seafood Knowledge Highway" to improve health, combat malnutrition and enhance income of fishers		199.57
32	Developing Aquaculture Entrepreneurship in TN by improving breeding strategies and innovative farming protocols for high value ornamental fishes		111.00
33	Establishment of Chemical Residue Monitoring Laboratory for Fish In Tamil Nadu		140.00
34	Establishment of Fish Feed Quality Testing Laboratory for the benefit of Fish Farmers of Tamil Nadu		101.00
35	Dairy Integration programme for sustainable livelihood of TNPL adopted village farmers in Karur Districts	TNPL	2.06
36	Empowerment of tribal youth in conservation of Toda buffaloes - "for the Toda and by the Toda" approach	PDADMAS (ICAR)	3.00
37	Use of beetal leaves as shelf-life extender of raw milk	TNSCST, Chennai	1.98

Title of the scheme

Exploration of the hepatoprotective effect of alloe health drink in

Effect of PDE4 inhibitors on osteoarthritis of the canine hip and

SI.

No.

38

39

40

41

42

43

44

45

46

broiler chicken

stifle joint

Evaluation of efficacy of poultry live vaccines in commercial chickens	M/s. Hester Biosciences, Gujarat
Study on the efficacy of DESTROX to ameliorate feed toxins in broilers	ABT Corporation, Bangalore
A study on the prevalence of Mannheimia haemolytica in India	Pfizer Pharmaceutical Pvt. Ltd., Mumbai
Large scale field testing of inactivated multivalent adjuvanted vaccine for bluetongue	Yasham Bio-sciences pvt ltd, Mumbai
Effect of pelleting and storage on the activities of various feed enzymes	Advanced Bio-Agro Technologies, Pune
Estimation of Fructosamine and Glycosylated haemoglobin concentration in healthy Indian breeds and diabetic dogs in Chennai	MARS International
"The effect of TANUVAS Grand supplement in augmenting milk production and preventing metabolic disorder in cattle" and testing its efficacy through ODL based participatory research in Life long	Commonwealth of Learning, Canada

	its efficacy through ODL based participatory research in Life long learning for farmers (L3F) programme		
47	Assessing the impact of FMD control programmes in Tamil Nadu	USAID/USDA Trilateral grant	20.96
	TOTAL		3681.60

Apart from 155 Research projects, 96 plan projects with a financial outlay of ₹ 6447.73 lakhs funded by Government of Tamilnadu are also in operation. During this year, the State Government sanctioned 2 projects under Part II at a total cost of ₹44.67 lakhs.

SI. No.	Name of the scheme	Sanctioned under	Amount (₹ in lakhs)
1.	Identification of avian infectious bronchitis virus variants in field conditions and development of a potent inactivated vaccine	Part II Projects Govt. of Tamil Nadu	22.00
2.	Establishment of Recirculatory Aquaculture System (RAS) at MREC, Tharuvaikulam,		22.67
	TOTAL		44.67

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 Veterinary and Animal Sciences, Food Sciences and Fishery 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 Directorates of Research for Veterinary and Animal Sciences and Fisheries look 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.

Funding

Agency

M/s. C.P. Plantations,

M/s. Orchid Research

Laboratories Ltd.,

Madurai

Chennai

Budget

(₹in lakhs)

4.22

6.21

2.00

0.43

16.01

7.96

3.30

0.50

7.16

Research Project Approval Committee(RPAC)

The concerned Director of Research (Animal Sciences or Fisheries Sciences) is the Chairman of the RPAC; the concerned Deans or Directors and one scientist nominated by the Chairman are the members of the RPAC. The RPAC periodically scrutinizes all the research proposals received and forwards the same to the funding agencies after the approval of the Vice-Chancellor.

During the reporting period, 20 RPAC meetings were conducted in Veterinary faculty, in which 121 projects were approved and sent to various funding agencies for getting financial assistance. In Fisheries faculty, 10 RPAC meetings were conducted to approve 64 projects which were sent to various funding agencies for financial assistance.

Research Council

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

- Formulation of research programmes and projects by the various university units in the field of Animal and Veterinary Sciences and Fishery Sciences with a view to promote effective cooperation
- Infrastructure facilities required for implementing research projects
- Linking teaching, research, extension education and participation of research workers in teaching and extension education
- Orienting research to meet farmers need
- Analyze the reports of on-going/ completed research projects by the scientists concerned
- Any other matter pertaining to Animal Husbandry/ Veterinary Sciences / Fishery Research which may be referred by State / Board of Management / Vice-Chancellor or any other authorities of the University/Agencies

The Research Council meets to identify priorities, approve the programmes of the activity and to review the on-going research in the University. During the reporting period, the 22nd Research Council meeting was held on 12th March 2013 at Madras Veterinary College, Chennai. During the meeting, action taken on the recommendations of previous Research Council meeting, new projects sanctioned, report on completed external funded projects, review of plan projects and proposal for further continuance of plan projects were discussed.

Special Initiatives

TANUVAS Research Corpus Fund

To motivate young faculty members in active research, TANUVAS had created TANUVAS Research Corpus Fund (TRCF) during 2012. TANUVAS Task Force Committee (TTFC) had been constituted to scrutinize the proposals submitted by the faculties under TRCF. Under this programme, research proposals will be called for from the young faculties (below 40 years) and first timers on demand driven research during April every year. The same will be scrutinized by TTFC and suitable proposals will be selected for funding under TRCF. During 2012-13, 30 projects have been sanctioned under TRCF to the total tune of ₹ 72.86 lakhs.

Benefit sharing

During the year 2012-13, TANUVAS has started to implement the benefit sharing mechanism to give due recognition for its scientists involved in developing transferable products / technologies. The grants received through technology transfer / commercialization will be shared as follows :

Incentives to the investigators	30%
TANUVAS Research Corpus Fund	35%
Infrastructure Development of the Concerned Department	25%
Staff Welfare	10%

This mechanism will surely motivate the faculty members of TANUVAS to actively involve in technology oriented research programmes.

Publication Drive Month

Publication of research papers is one of the important performance indicators for any University. Though a lot of research activities are being undertaken and huge volume of data had been generated over a period of time in our University, it is not reflected in the number of publications of our University. Hence, to increase the number of publications of TANUVAS, during 2012-13, TANUVAS had observed "October" month as "TANUVAS Publication Drive Month", and sent a circular to the faculty members requesting them to translate the available research data into as many as quality manuscripts as possible and sent for publication in peer reviewed journals with a NAAS rating of more than 4.0. During 2012 - 13, 432 research articles had been sent for publications.
RESEARCH HIGHLIGHTS

RESEARCH HIGHLIGHTS

ANIMAL BIOTECHNOLOGY

Biomarker approach for differentiating natural infection and vaccination of chicken

- Novel proprietary gene as biomarker •
- Early immune responses to DNA vaccine (probably due to incorporation of flagellin epitope)
- Innocuous proteins as biomarker •
- Biomarker-Nano- NDV
- Transcutaneous route of delivery of nanoparticle coupled biomarker
- Immunological branding of eggs





CaP Nanoparticles

NDV vaccine conjugated CaP Nanoparticles

Validation of a kit for the detection of oestrus in **buffaloes**

- 60.87 per cent of true positive oestrus samples and 71.43 per cent of true negative non-oestrus samples were classified correctly by the kit.
- It appears that the kit (developed based on pheromone detection) may be related to follicle diameter and progesterone concentration rather than the different stages of oestrous cycle.

Expression of Endoglucanase gene from cellulolytic bacteria of termite gut

- Cloned and expressed Endoglucanase gene from cellulolytic bacteria Salmonella enterica isolated from fungus growing termite Odontotermes formosanus
- The expressed protein was analyzed using SDS -• PAGE and Western blotting.
- The cellulolytic activity of the recombinant enzyme was assessed qualitatively by congo red assay and quantitatively by Di-nitro salicylic acid assay. The specific activity of the enzyme was found to be 54 units /ml
- The recombinant protein expressed in prokaryotic • expression vector pET 100 had cellulolytic activity

siRNA-mediated inhibition of replication of Infectious Bursal Disease virus in vitro

- Two siRNAs siVP1-597 and siVP1-632 were designed and chemically synthesized. The present study showed that siVP1-597 potently inhibited IBDV replication in vitro.
- Field strain MB11 IBDV was adapted and titrated at 7th passage in CEF cell culture for transfection of siRNA studies. The inhibitory effect of siVP1-597 was the highest (92%), so that siVP1-597 site is the most effective RNAi target site when compared with that of siVP1-632.

Silencing RNA mediated inhibition of Interferon alpha in cultured cells and its effect on virus growth

- The effect of siRNA mediated suppression of interferon- α on Newcastle disease virus (NDV) replication in chicken embryo fibroblast (CEF) cells was studied.
- siRNA 1 significantly reduced the production of • ChIFN- α mRNA in CEF cells at 24 and 48 h posttransfection by 3.85 and 3.65 folds respectively.
- In the siRNA transfected ChIFN- α suppressed CEF cells, NDV NP gene transcripts increased by a maximum of 5.51 folds at 48 h post-infection, virus titres by log10TCID50 of 0.75 and log2 HA titres by 1.0.
- The increase in viral titre by 0.75 log10 siRNA transfected ChIFN- α suppressed chicken embryo fibroblast cells can result in increased doses of NDV vaccines prepared from the same volume of virus harvest that can translate into increased economic benefit for the vaccine manufacturers.



Immunogenic potentials of recombinant antigens of Newcastle disease virus

- The recombinant fusion and Haemagglutinin proteins were cloned and expressed in prokaryotic and eukaryotic insect cell lines. The expressed protein was analyzed using SDS - PAGE and Western blotting.
- Immunological study of recombinant proteins expressed in insect cell lines elicited more humoral and cell mediated immune response and found to have oncolytic property.
- Apoptotic and oncolytic studies revealed that recombinant fusion protein was more potent than the recombinant HN protein.

ANIMAL HEALTH Microanatomy of pancreas in Madras Red Sheep

- Microanatomical studies on the pancreas of Madras red sheep was conducted in different post-natal age groups. The pancreas in all the age groups of Madras red sheep was a compound tubuloacinar gland which consisted of both exocrine and endocrine portions.
- The activity of various enzymes in the exocrine part of pancreas was found to increase as the age of the animal advanced. Carbonic anhydrase activity was mostly associated with the duct system of the pancreas.
- By special staining methods, alpha, beta and the delta cells of the islets were identified. Immunohistochemically reactive beta cells were also demonstrated and the intensity of immunoreaction was observed to be more in the neonatal age group.

User centre under Biotechnology Information system

- Insilico docking analysis of aloe-vera over transpeptidase protein this study revealed the best dock score and binding site interaction with the transpeptidase protein and it can be selected for the drug development in future.
- Insilico docking analysis of effectiveness of antiviral drugs used against flavi virus NS3 protease of dengue fever showed that Ribavirin can be selected for the drug development in future after studying the toxicity.
- Insilico interaction study on antioxidant plant principles like glucokinase for type II diabetes revealed that the compounds like resveratrol, quercetin, EGCG against the binding sites of Glucokinase target showed that EGCG had the best dock score and can be used as a drug in future to control type II diabetes mellitus.

- DNA polymorphism and nucleotide sequence analysis of GDF9 gene from Madras Red Sheep revealed that genetic factor responsible for twinning or multiple lambing rates is not related to FecGH mutation.
- Molecular screening of STx virulent gene of *Escherichia coli* isolated from Bovine mastitis revealed a high level of antimicrobial resistance to many antibiotics and an elevated number of multiresistant strains among the *E. coli* strains in mastitis.
- Investigation of bone morphogenetic protein receptor (bmpr-1b) gene polymorphism in Ramnad white sheep showed that this mutation is not present in Ramnad white.
- Isolation, purification and molecular characterization of acidocin produced by *Lactobacillus acidophilus* from goat milk and its antibacterial assay proved the possibility of using this *Lactobacillus acidophilus* as a bio-preservative or a probiotic. The bacteriocin purified through Gel Exclusion Chromatography was about 34 KDa.
- The antioxidants present in dietary components like Amla, green tea, coconut, curry leaves, watermelon, lady's finger, almond, and banana variety karpooravalli were tested for its potency to interact with Apo-E4 (Mutant form) lipoprotein which is one of the important deciding factor in Alzmeirs disease using docking analysis and found to be highly effective.

Detection of *Salmonella* from poultry and its products by Real time PCR

- SYBR green based real time PCR method was used for specific detection of *Salmonella* spp. The inv A gene specific to the genus *Salmonella* was targeted using the published primers
- The specificity of the primers was studied using both *Salmonella* and Non-*Salmonella* organisms. Real time PCR was found to be highly sensitive to detect *salmonella* compared to culture methods.



Real Time RT-PCR Assay for the detection of Peste Des Petits Ruminants Virus

- Two-step SYBR Green I based real time RT-PCR assays targeting the M and N gene for the specific detection and quantification of PPRV were developed.
- Two plasmid DNAs carrying fragments of 348 and 488 bp of M and N gene respectively containing the real time RT-PCR primers binding sites were used to construct standard curves and test reproducibility and analytical sensitivity of the assays.
- Assay was highly sensitive, specific, reproducible and useful for the detection and quantification of PPRV nucleic acids.





Evaluation of R-Mutant *E. coli* **vaccine against coliform mastitis**

- In the present study *Escherichia coli* isolate no. 38 which was isolated from mastitis milk and maintained at Department of Veterinary Microbiology was used for vaccine preparation against coliform mastitis. Using this isolate formalin inactivated Al (OH)3 and Montanide (SEPPIC®) adjuvant added vaccines were prepared separately.
- This vaccine was effective not only in controlling clinical coliform mastitis but also mastitis caused by other gram-negative bacteria.



Formalin inactivated, AI (OH)3 and Montanide adjuvant vaccine for coliform

Assessment of cellular and mucosal immune responses in chicks to Newcastle Disease Oral Pellet Vaccine (D58 Strain) using qRT- PCR

• Oral pellet vaccine and live thermostable Newcastle disease vaccine developed using D58 strain of NDV were used to assess the cellular and mucosal immune responses. The vaccines were found to produce satisfactory cell mediated and mucosal immune responses. The utility of qRT-PCR in the estimation of immune responses was found to be reliable.





Detection of *Staphylococcus aureus* **using strand displacement amplification and gold nano probe**

 Isothermal amplified product was detected using DNA probe conjugated with colloidal gold which detected 6 cells/ml

Evaluation of Efficacy of Poultry live vaccines (ND&IBD) in commercial chickens

- Live LAS vaccine stored at 2 to 8°C, when administered intranasally or intraocularly on 7 days of age, induced better protective antibody titre against ND, till 42 days of age.
- Gumboro I+ vaccine stored at 2 to 8°C when administered through oral or intraocular route on 12 days of age induced better protective antibody titre against IBD and in 1/100 dose did not induce sufficient protective antibody titre against IBD.

Molecular characterization and analysis of capsid protein (VP2) of Canine Parvo Virus

- PCR and Haemagglutination (HA) tests were compared for the diagnosis of canine parvo virus (CPV) and PCR was found to be more sensitive than HA test.
- Sequence analysis of VP2 gene PCR product of CPV isolates showed 96% homology with one isolate

from China. One field isolate of CPV was sequenced and compared with the exotic isolate which showed 96% homology

Chicken infectious Anaemia: Molecular diagnosis and serosurveillance

- Antibodies against CIAV was assessed by ELISA and Latex Agglutination Test (LAT) from poultry farms in Namakkal and Tirupur Districts and 84.4% was found positive for ELISA and 86.9% was found positive by LAT.
- VP1 gene specific PCR was found to be efficient in detection of CIAV in field sample. Sequence analysis of VP1 gene PCR product (370 bp) of CIAV isolates showed 99% homology with two Indian isolate and one isolate from China.

Molecular characterization of oncogene of serotype 1 of Marek's disease

- Blood samples were collected from suspected birds showing MD symptoms and lymphocytes were isolated. Isolated lymphocytes were passaged in duck embryo fibroblast for thrice and then passaged in chicken embryo fibroblast (CEF) for twice.
- Existence of serotype 1 MDV in Namakkal area was confirmed by PCR specific for 132 bp repeats and oncogenic Meg gene

Clinical trials of Eprinomectin Pour on solution against ectoparasites and endoparasites in cattle for the first time in India

- Single dose of 500µg/kg showed 100% efficacy against moderate infection of Strongyles and two doses were needed against heavy infection of Strongyles (epg> 1000).
- Eprinomectin also showed 100% efficacy against ticks (*Boophilus microplus*) and lice (*Linognathus vituli* and *Haematopinus quadripertusus*) in intensively reared cattle.
- Eprinomectin pour on preparation is a new endectocide which can be used against both endo and ectoparasites of cattle @ 500 µg/kg body weight

Evaluation of the anti tick effect of *Acorus calamus* (Vasambu) and production of a deliverable product

- Eight percent *Acorus calamus* rhizome methanolic extract was found most effective on all stages of brown dog tick Rhipicephalus.
- Eight percent concentration of extract was used for the preparation of deliverable product - shampoo for external application. In-vivo trials with the shampoo resulted in highly significant mortality (70-90%) of different stages of the dog tick. It also affected

the oviposition and resulted in 0% hatchability. Use of *Acorus calamus* as shampoo proved to be effective in control of dog tick. The shampoo can be commercialized.

Control of Coccidiosis: *Eimeria brunetti* **a neglected but important pathogen of chicken**

- Indian Scientists were trained on DNA isolation techniques from oocysts, RAPD, Multiplex and qPCR assays and UK scientists conducted workshop for the benefit of the staff of MVC.
- EST library of *Eimeria brunetti* had been created and 1200 clones were sequenced for the first time in India. Of which 284 ESTs were submitted to GenBank.
- Real time PCR was standardized using Taqman probe and Sybergreen with Eimeria genome. National Cocci Alert Network (www.coccialertnetwork.org) website launched.

Antigenic profile and immunodiagnosis of Toxocara larva migrans

- Immunodiagnostic tests such as Counter immuno electrophoresis (CIEP), Latex agglutination test (LAT), Dot Enzyme linked immunosorbent assay (Dot ELISA) and Colloidal gold immunofiltration assay (CGIFA) were standardized for the qualitative detection of Toxocara larva migrans (TLM).
- Fifty nine human sera samples collected from patients presented with uveitis at Sankara Nethralaya, Nungambakkam were screened using these tests for the presence of anti Toxocara antibodies. Out of 59 sera samples 54.24, 33.90, 35.59 per cent were positive for anti Toxocara antibodies by colloidal gold immunofiltration assay, LAT and dot ELISA respectively. All samples were found to be negative by CIEP. No significant difference could be detected based on age and gender regarding the seropositivity of anti Toxocara antibodies.
- Colloidal gold immunofiltration assay was used for diagnosis of TLM in humanbeings for the first time

Assessment and *in vitro* reversal of Anthelmintic resistance in *Haemonchus contortus*

 Allele specific PCR (AS-PCR) indicated the presence of resistant allele (rr) confirming *in vitro* assessment of resistance to benzimidazoles in EHA. MDRP modulating agents like verapamil was successfully tested *in vitro* to achieve partial reversal in benzimidazole and ivermectin resistance. Highly significant (p< 0.01) reversal of resistance occurred when TBZ resistant *H. contortus* eggs were treated with verapamil and resulted in the increased inhibition of egg hatch. Significant reduction in the larval migration (p< 0.05) was observed after treatment with verapamil indicating increased toxicity to IVM.

• There was decrease in the levels of glutathione in the resistant larvae after treatment with verapamil at 2, 3 and 4 hours respectively indicating a possible role of glutathione in resistance and decrease in the levels caused by verapamil had led to partial reversal of resistance.

Detection of Public Health Impact of Toxocara ova in Chennai

• Soil samples were collected from forty public places and five kennels in Chennai. 30 gm of soil samples from each places were examined by centrifugal flotation technique using saturated sodium nitrate solution. A total of 80 samples from public places and 25 samples from kennels were screened for the presence of Toxocara eggs.

Analysis of acaricidal resistance in Cattle Tick *Boophilus microplus*

- The percentage of resistance in ticks collected from both Madras Veterinary College Clinics and Puduchery was 100%. The percentage of resistance in ticks collected from Madhavaram, Kattupakkam and Perambur slaughter house were 80%, 60% and 40% respectively.
- The ticks collected from in and around Puduchery and Chennai were resistant to synthetic pyrethroids (flumethrin).

Validation of grassroot practice for promoting poultry health: Protective effect of Indigenous mixed coccidial Infection in broiler chickens

- The herbal drugs AHP-AO-2011 and AHP-AA-2011 had better anticoccidial efficacy in terms of reducing the Gross Lesion Score (GLS) than the standard feed additive anticoccidial drug Salinomycin.
- The herbal drug AHP-AA-2011 had similar anticoccidial efficacy in terms of reducing the faecal oocysts output value (oocyst per gram OPG) as that of the standard feed additive anticoccidial drug Salinomycin.
- The herbal drugs *viz.*, AHP-AO-2011 and AHP-AA-2011 can be utilized for control of chicken coccidiosis

Plant extracts as alternatives for control of gastrointestinal nematodes in sheep

• Anthelmintic efficacy of aqueous and ethanolic extracts of *Aloe vera* petals, *Cucurbita pepo* seeds,

Embelia ribes fruits, *Indigofera tinctoria* leaves and *Sesbania grandiflora* leaves were evaluated against gastrointestinal nematodes of sheep.

• Egg hatch assay, larval development assay and larval migration inhibition assay were conducted to assess the *in vitro* anthelmintic efficacy of the above mentioned plants. The results of the *in vitro* tests revealed that aqueous extracts of *C. pepo*, *S. grandiflora*, *A. vera* and ethanolic extract of *C. pepo* and *I. tinctoria* had ovicidal and larvicidal properties.

Individual and combined effect of aflatoxin and T-2 toxin and their interaction with *Pasteurella multocida* in turkey poults

• In the *Pasteurella multocida* – mycotoxin interaction studies, significant decrease in ELISA titre was observed in mycotoxin treated groups to *Pasteurella multocida* in turkey poults. The study revealed that lower levels of AF (100 ppb) and T-2 (1 ppm) could affect the performance and health of turkey poults. The toxin predisposed even the vaccinated birds to pasteurellosis and caused 100 per cent mortality on challenge

Pathological evaluation of anti-tumour effect of curcumin against experimentally induced mammary tumour in rats

• The study revealed that curcumin could prevent the development of mammary tumours (25%) to the extent of 69 and 13 per cent when compared to the DMBA (94%) and tamoxifen (38%) groups. Further, the latency period was extended by 28 days more than that of DMBA and tamoxifen groups. Curcumin treatment not only prevented the occurrence of mammary tumours but also the number of tumours in the affected animals and per cent carcinomas.

Pathology of canine splenic disorders

- A total of 132 (15 clinical samples, 87 necropsy and 30 retrospective necropsy), cases were taken up for the study on the pathology of splenic disorders in dogs. 34 (25.75%) showed major splenic pathology and among these 19 (14.39%) were tumours, 9 torsions (6.81%; 4 isolated splenic torsions + 5 torsions with GDV) and 6 splenitis (4.54%).
- Out of 19 tumour cases, 17 were primary tumours and two were secondary tumours. Immunophenotyping (CD79a) showed all cases of lymphomas were of B-cell origin. Proliferation of neoplastic cells in metastatic malignant melanoma (Ki-67) was very high.

Toxicopathology of anti tumour drug, doxorubicin and its alleviation in rats

• The results of the present study revealed that the toxic effects of the anti tumour drug, doxorubicin was alleviated by *Allium sativum* and *Tinospora cordifolia* in Wistar rats.

Induction of hepatocarcinogenesis and protective effect of Solanum nigrum in rats

• Ninety six male Wistar albino rats were randomly allotted to four groups of 24 rats each. DEN (0.01%) was given in drinking water ad libitum and S.nigrum (150 mg/kg BW) was administered per os either alone or in combination for 120 days. Administration of DEN resulted in poor body weight gain from 2nd week onwards in DEN and DEN+S. nigrum groups. Immunohistochemistry with EpCam showed intense cytoplasmic and nuclear staining in the preneoplastic stages. In the well progressed HCC nodules, EpCam revealed intense nuclear staining with weak or loss of cytoplasmic staining. Glypican-3 showed cytoplasmic staining in preneoplastic stages, while canalicular/ cytoplasmic/ both staining were seen in HCC nodules.

Zoonotic Prevalence of Campylobacter by Molecular Methods

- Among children, 13 percent were positive for *Campylobacter* and overall prevalence of *Campylobacter* by culture was 11.6% with significant portion coming from poultry (20.5%)
- *Camplobacter* has been isolated from 13% of stools from diarrheic children in Chennai of which 8% were under 5 years of age.
- The flaA PCR was the sensitive method for the detection of *C. jejuni*. The ceuE PCR was the sensitive method for detection of *C. coli*. Biochemical testing based on hippurate hydrolysis does not clearly differentiate *C. coli* form *C. jejuni*. PCR has an accuracy of 93.1% for *C. jejuni* and 89.65% for *C. coli* in comparison to biochemical test.

Oxytetracycline residues in bovine milk and chicken meat – Relevance to Public Health

- Oxytetracycline residues were found in 45% of milk samples from 154 dairy animals and 26% of milk from 174 household samples
- *Staphylococcus aureus, Klebiella* and *Pseudomonas aeuroginosa* from human clinical samples were resistant to Oxytetracycline
- Out of 100 chicken meat samples tested, only one was positive for Oxytetracycline residue

Evaluating diagnostic tests to assess the epidemiological status of bovine tuberculosis

 Overall bTB prevalence in organized farms by using the three diagnostic tests: SICCT test, IFN-γ assay and ELISA in the current investigation with interpretation of positive if an animal is positive by any of these tests was 15.9%.

• Overall, 1024 cattle and buffaloes were screened of which 137 animals or their carcasses were positive by at least one of the tests used in current investigation. The prevalence of bTB by considering an animal as positive if it is found to be positive by at least one diagnostic test was 13.4 %. The study confirmed the endemicity of bovine TB in the state.

Evaluation of Epidemiological parameters influenzing the prevalence of bovine herpes virus – 1 (BHV-1) infection in cattle in both organized and unorganized farms

- A total of 474 parallel samples were collected from a total of 53 and 54 cattle maintained in organized and un-organized farms respectively in Chennai.
- Out of 107 serum samples tested by I-ELISA, 52.83 and 48.14 per cent samples showed antibody prevalence in both organized and un-organized farms respectively.
- In the organized and unorganized farms the prevalence of BHV -1 was more in dairy cows. Mostly Tharparkar and HF crosses were having antibodies to BHV infection
- Regular screening of IBRT in bovine population is suggested using ELISA methods before introduction of cows in to the herd.

Development and evaluation of Eimeria tenella sporozoite vaccine in broiler chickens

 The FCA adjuvanted candidate vaccine was superior in terms of weight gain, FCR, lesion decrease ratio, oocyst decrease ratio in comparison with the commercial anticoccidial drug



Excysted sporozoites of E. tenella sporulated oocysts

 Immunization with FCA adjuvanted candidate vaccine by subcutaneous route was found to be safe as it caused no untoward reactions. Further, the developed candidate vaccine resulted in no transmission and build up of oocysts in the litter and found superior to live attenuated commercial vaccine.

Epidemiology and metaphylaxis of subclinical coccidiosis in small ruminants

 Prevalence of subclinical coccidiosis in sheep and goat was 41.45% and 47.69% respectively. Endoparasitism, mud flooring and overcrowding were the risk factors associated with sub clinical coccidiosis in small ruminants. Metaphylactic treatment against subclinical coccidiosis in lambs and kids caused significant reduction in oocyst output



Sporulated oocyst of Eimeria arloingi

Evaluation of immunopotentiating effect of medicinal plant products in commercial layer flock vaccinated against Newcastle disease

- Withania somnifera and Tinospora cordifolia, Allium sativum and Azadirachta indica supplementation before 20 weeks of age in layers had better immunopotentiating effect against Newcastle disease vaccination
- Withania somnifera can be used as a immunostimulant against Newcastle disease vaccination

Health Assessment in Captive Psittacines

- This study was carried out with captive Psittacine birds maintained at Major Zoos like National Zoological Park, New Delhi, Sri Chamarajendra Zoological Garden, Mysore and Arignar Anna Zoological Park, Vandalur and also in Pet shops and Private places located in and around Chennai.Health status of the captive Psittacine birds was determined by screening for endoparasites, ectoparasites and bacterial infections, namely Genus *Salmonella* and E.coli.
- Endoparasites like *Strongyloides* sp., *Capillaria* sp., *Ascaridia* sp. and mites like *Syringophilus* sp.

and *Dermoglyphus* sp. were reported in them. One sample (5.88 per cent) from Arignar Anna Zoological Park and 1 sample (6.25 per cent) from Pet shops and Private places were positive for mixed infection of *E.coli* and Genus *Salmonella*.

- Evidences of internal helminthic fauna like *Ascaridia* sp., *Capillaria* sp., *Strongyloides* sp., *Strongyles* and *Eimeria* sp. were brought to limelight in addition to the mixed parasitic infections in Psittacine group of birds.
- Evidences of *Dermoglyphus* sp., *Syringophilus* sp. and mixed infestations in the feather samples of psittacine birds were recorded in this study. Ladder was found to be the mostly preferred enrichmentgadget by Psittacine group of birds.

Prevalence of pathogens in *in-situ* and *ex-situ* migratory and resident birds

- The study was carried out with free ranging water birds visiting Vedanthangal Bird Sanctuary and Karikili Bird Sanctuary, in-addition to the captive water bird areas like aviary enclosures of Arignar Anna Zoological Park, Vandalur and Guindy Children's Corner, Chennai for a period of ten months.
- Endoparasitic evidences like Ascaridia sp., Capillaria sp., Strongyloides sp., and Echinostoma sp. have been recorded. Among 40 fallen feather samples from Arignar Anna Zoological Park, Vandalur, ticks (Argas persicus) were found in 7 samples and lice (Lipeurus caponis) in 3 samples. Similarly, out of 20 fallen feather samples from Guindy Children's Corner, Chennai, ticks and lice were noticed in 10 samples and 2 samples, respectively.
- Fecal samples were screened for Pasteurella multocida by polymerase chain reaction; one out of 25 fecal samples from Vedanthangal Bird Sanctuary, 15 fecal samples from Karikili Bird Sanctuary, 30 fecal samples from Arignar Anna Zoological Park, Vandalur and 3/20 fecal samples from Guindy Children's Corner, Chennai were found positive for Pasteurella multocida.
- The endoparasitic fauna like Ascaridia sp., Capillaria sp., Strongyloides sp., and Echinostoma sp. were found in the fecal samples obtained from the water birds. Argas persicus was the species of ticks identified and Lipeurus caponis was the species of lice identified in feather samples obtained from the water birds.

Preponderance of parasites in elephants and it's control in captive elephants (*Elephas maximus*)

- Dung samples of elephants obtained from 'elephantman-conflict' areas and from various temples of Tamil Nadu state were screened for evidence of endoparasites and egg per gram (EPG) was documented. Efficacy of fenbendazole and herbal preparation (*Aloe vera* extract) against helminthic parasites in captive elephants were also studied and documented. Evidences of *Strongyloides* sp., and Strongyles has been recorded.
- Six numbers of captive elephants belonging to the temples of Tamil Nadu state with EPG of Strongyles as 266.67 ± 33.33, Strongyloides sp. as 166.67 ± 33.33 and mixed parasitic prevalences comprising of Strongyles and Strongyloides sp. as 100.00 ± 51.63 were administered with anthelmintic drug fenbendazole, and treatment effects were documented in terms of EPG, subsequently. Similarly, six numbers of captive elephants belonging to the temples of Tamil Nadu state with EPG of Strongyles as 266.67 ± 33.33, Strongyloides sp. as 250.00 ± 22.36 and mixed parasitic prevalences comprising of Strongyles and Strongyloides sp. as 166.67 ± 61.46 were administered with extract prepared from fresh leaves of naturally grown Aloe vera and treatment effects were documented in terms of EPG, subsequently.
- Aloe vera was found to be useful against various helminths like Strongyles, Strongyloides sp. and mixed parasitic prevalences comprising of Strongyles and Strongyloides sp. in captive elephants. Both fenbendazole and Aloe vera were found to be useful against helminthiasis in captive elephants studied.

Ethno Veterinary Herbal Research Centre for Poultry, Namakkal

Immune status, egg quality characteristics of an organic layer farm located near Karur, which uses Panchakavya and Azadiracta indica for layers continuously from day one to culling without using antibiotic / chemical drugs, were assessed at 40th week. The immunity level as indicated by HI titre against NDV showed all the samples except one (60 samples-0.66 per cent of the population) were found to contain less than 16 of log2 titre against ND which indicated the population was highly susceptible for ND outbreak. But, the farm did not experience any ND outbreaks, even when they were not vaccinated either with live vaccine or killed vaccine against ND after 18th week. The assessment of egg quality showed the eggs were normal in their characteristics.

- Fresh extract of garlic were screened for antibacterial activity (in duplicate) *in vitro* against common poultry pathogens i.e. *E.coli, Salmonella* sp. and *Staphyloccus* by antibiotic sensitivity test. *Salmonella* sp. was sensitive to gentamicin and ciprofloxacin; Garlic extract also showed similar zone of inhibition at 25 % dilution and more zone of inhibition at 50 %.
- Qualitative analysis of phytochemical constituents for 28 herbs was carried out at the Centre. There existed no difference in phyto chemical constituents between inji and its dried form, sukku. Similarly, there was no difference in phyto chemical constituents between small onion and big (bellary variety) onion.



Antibacterial activity of garlic against E.coli

Residue Profile of Enrofloxacin and its Primary Metabolite Ciprofloxacin in Broiler Chicken

An experimental trial was conducted to determine the residueomics of enrofloxacin and its primary metabolite ciprofloxacin in broiler chicken under controlled experimental conditions, at recommended therapeutic dose of enrofloxacin @ 10mg Kg-1 in drinking water for five consecutive days (from 43rd to 47th day of age), till 9th day post treatment.

- The HPTLC method developed in the present study is sensitive, simple, rapid, convenient, inexpensive (cost effective), ideally tailored to the reality of our country, without the necessity of imported cartridges.
- Owing to the presence of enrofloxacin and its metabolite Ciprofloxacin residues in the droppings even after cessation of the administration of enrofloxacin, it warrants environmental concern. The present study suggests that the immune-suppressive activity of enrofloxacin may alter the immune response to vaccines if it is co-administered during vaccination of broiler chicken.

- This study speculates that free radical formation might play a role in quinolone arthropathy which is manifested in juvenile cartilages, as evidenced by sighnificant decrease in antioxidant enzymes *viz.*:GST,GSH and CAT in liver, muscle and serum of enrofloxacin treated birds.
- Various cooking techniques cannot annihilate the total amount of enrofloxacin residues but it can only decrease their amounts in edible tissues. Most of the residues in boiling process migrate from tissue to cooking fluid during the cooking process. Thus, exposure to residues may be reduced by discarding fluids which exude from the edible tissues during cooking.
- It was found that cooking time and temperature can play critical roles in antibiotic residue reduction. The field study stresses the need for adhering the withdrawal period as prescribed by various regulatory bodies (EU and Japan) and necessitate stringent regulation for the use of antimicrobial drugs in the poultry industry as well as the inspection of chicken for antimicrobial residues prior to marketing in India.
- It is also recommended that HPTLC can be an ideal method in conducting residueomics studies owing to its versatility and ruggedness. In cognizance with present residueomics study, it warrants to institute National / State level residue monitoring programmes as on vogue in European Union, to promote Food Safety and ultimately Global Food Security.

ANIMAL PRODUCTION

Strengthening of Frozen Semen Bank

- Evaluation of frozen semen samples from the semen stations of Tamil Nadu for their quality and training veterinarians on the latest technology in frozen semen production
- Creation of facilities for advanced training in frozen semen production and productivity enhancement through efficient implementation of artificial insemination and improvement in quality control in frozen semen production and evaluation

Characterisation of bovine insulin-like growth factor-1 (IGF-1) gene and its association with draught power

• Analysis of IGF-1 gene was done in a total of six breeds of cattle in south India, *viz.*, Bargur, Hallikar, Kangayam, Ongole, Pulikulum and Umblachery. Six SNPs in four exons and polymorphism in the number

of tandem repeats of microsatellite in the promoter region of IGF-1 gene were found to be characteristics of Bos indicus cattle. The SNP 1 of IGF-1 gene was found to associate with stride length; SNP 4 with creatine kinase and promoter microsatellite with serum lactic acid level.

- The deletion of 'G' at position 4940 and replacement of 'C' with 'A' at position 56413 found in all the six breeds of Bos indicus cattle suggest that these variations had resulted due to divergence of both Bos indicus and Bos taurus cattle.
- The microsatellite allele (149 bp) found in the promoter region of IGF-1 gene is the breed-specific allele for Bargur only and not for Kangayam. High heterozygosity values at this locus in both the breeds indicate the ability of these two breeds to adapt to the harsh climatic conditions of the breeding tract, thus making this promoter microsatellite a potential marker for future studies on draughtability in cattle.
- The IGF-1 locus could be a potential candidate marker for the draughtability in Bos indicus cattle.

Improvement of feed resources and nutrient utilization in raising animal production

 Calcium phosphate nano particles were synthesized in laboratory through indigenously developed apparatus and on analysis, Calcium phosphate nano particles, contained 30.18 % calcium and 15.48 % phosphorus as against 23.19 % calcium and 16.66 % phosphorus in di- calcium phosphate. In vitro cyto- toxicity assay on vero cell line at the concentration of 106 cells/ml indicates that nano phosphorus does not cause any ill effects

Enhancing utilization of nutrients in feed/fodder through TANUVAS GRAND supplement -A Pilot project

- TANUVAS GRAND supplement was tested for its efficacy in 2297 cows and 44 buffaloes in Andanallur Block of Trichy District. 78.4 % animals responded to increase in milk yield ranging from 500 ml to 1500 ml with an average of 736 ml per cow per day leading to daily profit of ₹ 13.50/cow. Maximum response to increase in milk yield was observed in cereal based diet (43 %)
- TANUVAS GRAND supplement increased the milk yield through the improvement on the quality of microbial population for better degradability of feedstuff. TANUVAS GRAND supplement improved the appetite of 936 animals and recovered 98 cows from acidosis due to unbalanced cereal feeding

Estimation of methane emission under different feeding systems and development of mitigation strategies

- Methane production potential (MPP) per 100 mg of truly digested substrate of different feed and fodders were carried out.
- Average methane production potential of cereal grains at t1/2 was 1.45 ml/ 100 mg truly digested substrate and at 24 hrs was 2.58 ml/100 mg truly digested substrate.
- Mean methane production potential of protein supplements at t1/2 was 1.29 ml/ 100 mg truly digested substrate and at 24 hrs was 1.86 ml/100 mg truly digested substrate. Average methane production potential of succulent roughages at t1/2 was 1.18 ml/ 100 mg truly digested substrate and at 24 hrs 1.91 ml/ 100 mg truly digested substrate.
- Average methane production potential of tree leaves at t½ and 24 hrs was 0.93 and 1.55 ml/100 mg truly digested substrate respectively. Average methane production potential of crop residues was 2.30 ml/ 100 mg truly digested substrate. The lowest methane production of 1.53 ml/ 100 mg truly digested substrate was recorded in complete feed – V (60:40)

Evolving supplemental strategy to augment nutritive value of cotton gin waste

- Significantly (p<0.05) highest increase in milk yield (900 ml / day / cow) was observed when cotton gin waste (4 kg) was supplemented with cellulase (1775 U/g), xylanase (4130 U/g) and critical nutrients (copper sulphate 2.5g and cobalt sulphate 0.1g per litre) and was comparable with cotton gin waste inoculated with Trichoderma viridae (500g), with (increase in milk yield of 850 ml / day / cow) or without (increase in milk yield of 840 ml / day /cow) critical nutrient supplementation.
- The recommended package includes initial seed culture of *Trichoderma viride* prepared in 500 g cotton gin waste, at 70 % moisture and incubated for 20 days which was then used as inoculum for 25 Kg cotton gin waste, maintained at 70 % moisture and incubated for 20 days. Thus inoculated 25 Kg of cotton gin waste can be fed at the rate of 500 g / day along with 3.5 Kg of untreated cotton gin waste per day in order to increase daily milk yield of 850 ml.
- Feeding *Trichoderma viridae* inoculated cotton gin waste to dairy cattle is a least cost nutritional intervention which enhances productivity.

Effect of calcium phosphate nano particles supplementation on the mineral profile in broiler chicken

 Calcium phosphate (CP) nano particles was synthesised by wet chemistry through indigenously fabricated laboratory model. Inclusion of 50% CP nano particles in the diet had the best feed efficiency (1.39) that was significantly (p<0.05) different from control (1.64), but was statistically comparable to the rest of the treatments containing ascending order of graded level of CP nano particles.

• Supplementation of 50% CP nano particles is advocated instead of 100% of dicalcium phosphate to reduce the cost of supplementation. Bone physical morphometry and mineralization (bone ash) in broilers indicated that the availability of CP nano particles was 200% when compared to dicalcium phosphate

Exploring farm gate level enzyme production to cotton seed and tapioca flour

- The enzymes required for hydrolyzing one gram whole cotton seed were determined to be 46, 28, 1.5, 2.0 and 9500 U/g for cellulase, xylanase, glucanase, pectinase and amylase and are referred to as "selected levels of enzymes for whole cotton seed".
- The enzymes required for hydrolyzing one gram tapioca flour were determined to be 21, 18, 0.6, 16 and 12000 U/g for cellulase, xylanase, glucanase, pectinase and amylase and are referred to as "selected levels of enzymes for tapioca flour".
- The "cutomised enzyme extract for cotton seed" required for hydrolyzing one gram of whole cotton seed was 0.39 ml from *Trichoderma viridae* inoculated on unground paddy husk without media supplementation or 0.17 ml extract from *Trichoderma viridae* inoculated on unground paddy husk with media supplementation.
- The "cutomised enzyme extract for tapioca flour" required for hydrolyzing one gram of tapioca flour was 0.5 ml from *Trichoderma viridae* inoculated on unground paddy husk without media supplementation or 0.21 ml from *Trichoderma viridae* inoculated on unground paddy husk with media supplementation
- Mimicking farm gate level enzyme production at laboratory and scaling up production using tray bioreactor revealed that closed system of incubating *Trichoderma viridae* on un ground paddy husk without media supplementation on solid state fermentation and extracting in RO water without refrigerated extraction and pH modification is recommended.
- Mimicking farm gate level enzyme production at university farm using Tray bio reactor indicate acidification of farm water (pH 7.5) with lemon juice extracted from two lemon for each liter of water to reduce pH 5.0 was found to be very useful tool to significantly (p<0.05) increase enzyme production.

- Customised enzyme extract was found increase the digestibility of most of the nutrients in whole cotton seed / tapioca flour reflecting the results of *in vitro* trial and succesfully validated through digestibility trial.
- The customised enzyme extract can be done using RO water (pH 6.2) without acidification and 0.62 ml per gram of whole cotton seed or 0.70 ml per gram of tapioca flour should be sprayed over the feed prior to feeding.

Eco Friendly Recycling of Cotton Waste as Animal Feed

- The study revealed that 10% inclusion of cotton gin waste in the ration was profitable
- Cotton gin waste is a good source of roughage and can be compared with leguminous hay and can be fed to the dairy cattle at a level of 10% in the diet.

Increasing the Profit of Dairy Farmers of Tamil Nadu by Optimizing Feeding Strategy

- A survey on 50 farmers feeding their cows with both rice gruel and rice bran revealed that 30 per cent farmers fed their animals with 5 litres of rice gruel and 37 per cent of the farmers fed 1 2 kg rice bran/day/animal.
- Rice gruel was found to contain 2.05 per cent DM, 1.9 per cent OM and 2.3 g starch/ litre of the fresh rice gruel. The per cent crude protein of rice bran was 11.2. The per cent protein fraction A, fraction B1, fraction B2, fraction B3 and fraction C of rice bran were 1.15, 0.72, 6.24, 2.4, and 0.69 respectively.
- In vitro per cent microbial biomass production by rice bran protein fractions A, B1, B2, B3 and C were 14.2, 1.9, 23.0, 0.77 and 2.8 respectively.
- A feeding strategy comprising of 5.7 g of urea, 5 litres of rice gruel, 2 kg of rice bran along with the 5 kg of the paddy straw and 10 kg of green grass was evolved for cattle which showed an increase in milk yield of around 350 ml/cow/day. The result of the study showed that the cost of investment was as low as the 3.25 paise which was sufficient to produce the benefit of around ₹ 5.75.

Validation of CTCZYME in poultry

- Supplementation of Ctzyme @1.0 kg / ton of broiler diet was effective both in normal and reduced energy density diet. Response to Ctczyme was better in broiler finisher diet.
- The beneficial effect of enzymatic degradation of beta-mannan by addition of beta-mannanase to diets containing SBM has been documented in broilers.

Assessment of nutritional status of dairy cows using biological indicators under field conditions.

• A study was under taken to find out the nutritional status of Jx and HFx dairy cows of Dharmapuri district

and comparing the nutrient levels recommended by NRC (2001). The percent of deficit was noticed in DMI, TDN, CP and calcium intake and excess was found in phosphorus intake. Among the nutrient intake deficit of crude protein was significantly high and deficient per cent was felt during early lactation on both breeds comparing with the different physiological stages. Serum biological indicators for assessment of energy includes glucose, cholesterol and NEFA in Jx varied from 42.73 to 46.78 mg/ dl, 142 to 177 mg/dl and 0.56 to 0.61 mmol/l respectively at different physiological stages.

The serum biological indicators for assessment of protein status include total protein, albumin, globulin, BUN and MUN in Jx varied from 8.80 to 9.61 g/dl and 3.15 to 3.48 g/dl and 5.64 to 6.13 g/ dl and 15.47 to 16.37 mg/dl and 8.9 to 8.81 mg/dl, respectively and was comparable during different physiological stages. Feeding of mineral mixture increased the fertility percentage in regularly cycling repeaters. Feeding of supplementary feed to compensate the nutrient intake as per NRC 2001 though not reflected in increasing the serum biological indicators, increased the milk yield and quality of milk thereby increasing the net profit per day.

Estrus synchronization in goats (Capra hircus) using progesterone implant and prostaglandin F2 α

TRIU C (progesterone) compound can be used for effective synchronization of estrus in goats, since it induces estrus at a shorter duration, with better psychic expression of estrus and improved conception rate. Vaginal exfoliative cytology can be used as a reliable diagnostic tool for estrus detection under field condition and early pregnancy diagnosis can be established between 20 to 25 days of gestation

NPCBB implementation of open nucleus breeding system through multiple ovulation and embryo transfer – initiation of embryo transfer programme at District Livestock farm, Hosur

- Multiple ovulation, embryo collection and transfer was done at field level.
- Recovery rate of 6 embryos/ animal was achieved. Embryo transfer was done at field level in Red Sindhi and Jersey crossbred animals. Pregnancy was achieved with both fresh and frozen embryo transfer.

Efficacy of immunomodulators, Lugol's iodine and prostaglandin F2 α in the treatment of postpartum endometritis in cows

• Endometritis definitely increased the number of services per conception. A total of 72 crossbred cows divided equally in to six groups as group I (LI)

- II (LPS), III (LYZ), IV (OG), V (PGF2 α) and VI (control groups) were used. The mean (± SE) pH value of the cervical mucus and uterine fluid before treatment ranged from 8.47 ± 0.02 to 8.62 ± 0.02 and 7.87 ± 0.04 to 8.30 ± 0.02 and after the treatment it ranged from 7.01 ± 0.02 to 8.17 ± 0.04 and 7.61 ± 0.01 to 7.97 ± 0.01 in all the treated and control groups, respectively. The bacterial colony counts recorded before treatment in cows affected with endometritis significantly P<0.01) reduced after treatment in all the treated groups.
- Treatment cost in LI, LPS, LYZ, OG and PG groups was
 ₹ 2.70, 13.00, 2.60, 255.00 and 490.00 respectively.
 Pregnancy rate of 33.33, 83.33, 75.00, 66.67, 50.00
 and 8.33 per cent was recorded in group LI, LPS,
 LYZ, OG, PG and control, respectively. The cost of
 each conception was ₹ 2.70, 13.00, 2.60, 255.00
 and 490.00 in LI, LPS, LYZ, OG and PG groups.
 Hence, it is concluded that, all immunomodulators
 viz E.coli lipopolysaccharides, lysozymes, oyster
 glycogen and PGF¬2α can be used in the treatment
 of endometritis under field conditions to achieve
 maximum conception rate.

Evaluation of Xanthine Oxidase as a Biochemical Marker for Dilated Cardiomyopathy (DCM) in Canines

- Dogs with DCM had lower level of serum sodium and calcium which may be due to the drainage of sodium and calcium from the blood into cardiac tissue for depolarization and excitation of cardiac muscle respectively. Ischemia in canine patients suffering with DCM as evident by lower Hb concentration, RBC and platelet counts. DLC picture of the dogs suffering with DCM showed neutrophilia, indicating acute infection.
- Assessment of Xanthine Oxidase activity can serve as an early biochemical marker for diagnosis of Dilated Cardiomyopathy (DCM) in canines. 300% increase in the specific activity of this enzyme in DCM cases when compared to healthy subjects. This is the first of its kind of report in Veterinary medicine.

Exploration of anti-diabetic effect of vanadium complex on streptozotocin induced diabetic rats

 Vanadium complex at both the doses at 5 and 10 mg per kg body weight significantly reduced the glucose level in a dose dependant manner by mimicking the action of insulin. Vanadium complex improved lipid metabolism by significantly reducing the serum triacylglycerol, total cholesterol and increasing the HDL - C levels. Significant reduction in ALT, AST, urea, creatinine levels and histopathological studies revealed that vanadium complex is non-toxic and has protective effect on liver and kidney tissue. Both doses of vanadium significantly increased serum protein, liver glycogen levels and restored the loss in body weight in diabetic animals. No incidence of diarrhea was observed during the entire experimental period indicating that intestine was not affected by the vanadium complex. The activities of SOD, glutathione peroxidase, the level of reduced glutathione were significantly increased. Catalase activity and lipid peroxidation were significantly decreased in both the doses of vanadium treated diabetic rats which indicate antioxidant activity.

Evaluation of antidiabetic potential of insulin delivery using PLGA Nano Copolymer in Streptozotocin induced diabetic rats

- PLGA nanopolymer tagged insulin at both the ratios viz., 80:20 and 90:10 reduced the blood glucose level significantly and there was a sustained release with prolonged activity of insulin when compared to the insulin administration alone through subcutaneous route.
- PLGA nanopolymer tagged insulin improved lipid metabolism by significantly reducing the serum triacylglycerol, total cholesterol and increasing the HDL - C levels in treated groups. Significant reduction in ALT, urea, creatinine levels and histopathological studies revealed that nanopolymer tagged insulin is non-toxic and has slowed down the rate of degeneration.
- Both ratios of PLGA nanopolymer tagged insulin increased the serum protein level. There is a significant increase in liver glycogen level in nanopolymer treated group compared to that of insulin treated group indicating the residual activity of insulin.
- The activities of superoxide dismutase, glutathione peroxidase and reduced glutathione were significantly increased in liver and kidney tissues. The catalase activity and lipid peroxidation were significantly decreased in both the ratios of PLGA nanopolymer tagged insulin treated diabetic rats in liver and kidney tissues which is attributed to the control of hyperglycemia and triacylglycerol level.

Development of nutraceutical whey based probiotic food

 Bifidobacterial species were isolated and indentified by phenotypic and molecular tools. Prebiotics like whey protein concentrate at 4%, inulin at 0.4% and honey at 3% were used for formulation of a nutraceutical product. Malted Eleusine coracana at 9% was adjudged as optimum level for exhibiting prebiotic activity. Biological trials were carried out and it was concluded that the Bifidobacterial longum showed positive health gains on the treatment group when controlled with control groups.

Value added dairy food manufacturing unit to maximize the returns from dairy farming

- Organized 15 training programmmes and a total of 720 persons have been trained on preparation of value added dairy products like Khoa, Peda, Paneer, Paneer bajji, paneer chilli, Whey drink, Ice cream, masala butter milk, Gulabjamun mix and Gulabjamun.
- Elucidated about the package of practices to be followed in producing clean milk with enhanced keeping quality and established market linkages with nearby bakeries and hotels for the milk products- khoa and carrot flavoured milk prepared by the women SHGs who underwent training
- Promoted modern dairy husbandry practices among rural women folk for higher productivity.



Delivering lecture on value addition of milk

Demonstration of peda preparation



Demonstration of Gulabjamun mix

Demonstration of paneer preparation

Development of low fat probiotic ice cream using starch and fruits

- Different treatments of probiotic (*Lactobacillus reuteri*) ice cream having 1, 2 and 3 per cent fat were prepared by incorporating either tapioca starch or maltodextrin at 3, 4 and 5 per cent levels
- Based on the overall high acceptability scores, low calorific value, low cost of production, no adverse taste or mouth feel and the better survivability of L.reuteri, it is concluded that ice cream mix containing 2 per cent fat, 5 per cent starch (either tapioca starch or maltodextrin) incorporated with 4 per cent L.reuteri and 10 per cent fruit pulp (either mango or sapodilla) is the ideal choice for the production of low fat probiotic ice cream

Effect of chromium supplementation on growth performance and carcass traits of crossbred (large white yorkshire x landrace) pigs under swill feeding

• Dressing percentage $(72.11 \pm 0.60, 71.06 \pm 0.72 \text{ and} 69.96 \pm 0.42)$ showed significant (P<0.05) difference between the experimental groups. Chromium supplemented group had lesser liver and kidney weight than the control group and had larger loin eye area and lesser back fat thickness compared to control group. Chromium supplemented groups had higher meat percentage (54.68 ± 1.00 and 51.54 ± 0.17) than control group (45.72 ± 1.13).

Effect of herbal feed supplementation on the performance of grazing lambs

• A trial was conducted to assess the effect of herbal feed supplementation on the performance of grazing Mecheri lambs. It was found that the groups T3 (herbal growth promoter masala bolus fortnightly once at the rate of 1 g/kg body weight administered orally) and T4 (herbal dewormer monthly once at the rate of 1 ml/kg body weight) gained significantly higher (P<0.01) body weight and average daily gain. The body measurements such as body length, chest girth and height at withers were significantly higher in T3 compared to the other groups. The body weight gain, feed intake, nutrient digestibility, nutritive value and nutrient intake were significantly higher in T3. The fortnightly value of EPG revealed that there was a sharp and steady decline in T4.

Effect of different methods of garlic (*Allium Sativum*) supplementation on the growth performance of crossbred calves

• A trial was conducted to assess the effect of different methods of garlic supplementation on the performance of crossbred calves. It was found that the calves in T1 (supplemented with garlic powder at the dose rate of 250 mg/Kg BW in water) and T2 (supplemented with 250mg/Kg BW in concentrate feed) group gained significantly higher (P<0.05) overall body weight and average daily gain compared to calves in T3 group. T1 and T2 had significantly lower cholesterol (P<0.01) and triglycerides (P<0.05) than the control group (T3).

Post weaning growth performance of crossbred (large white Yorkshire x duroc) pigs under different feeding regimens

• A study was conducted to asses the influence of different levels of dietary protein on the growth performances in large white Yorkshire X duroc pigs under intensive system of managemanent at PGRIAS Kattupakkam for a period of 150 days. The feed efficiency showed significant difference between sixth to tenth fortnights.



- The dressing percentage of group II was highest (67.32±0.37), followed by group III (64.67± 0.36) and group I (61.32±0.41).Loin eye area also showed the similar trend.
- The cost of production on feed basis for pigs fed with 17 per cent crude protein (Group II) was 6.64 and 10.97 per cent less than compared to 19 and 15 per cent fed groups respectively.

Effect of fenugreek seed supplementation on milk yield and its composition of crossbred dairy cattle

- Cows were fed with standard milch cattle ration supplemented with soaked fenugreek seed (100 g per day per animal) showed better performance
- In terms of increased milk yield (8.37 per cent), fat corrected milk yield (11.22 per cent), fat yield (15.79 per cent) and SNF yield (8.45 per cent) which in turn improved the net return over feed cost (15.89 per cent) per cow per day.
- Hence, fenugreek seed supplementation can be recommended as a cost effective management measures for improving milk production in dairy cattle.

Utilization of dead poultry birds for biodiesel production

- Dry rendering is a bio safe method of utilization of dead poultry birds where the end products are carcass meal and Rendered Chicken Oil (RCO), Conversion of RCO into biodiesel may open new vistas for generating wealth from waste for poultry farmers.
- The rendered chicken oil with high FFA could be converted to good quality biodiesel by two step process *viz.*, acid catalysed esterification of FFA followed by alkali catalysed transesterification of glycerides.
- Chicken oil methyl ester blended with diesel fuel could be used as alternative fuel in conventional diesel engines without any major modifications and it improved mechanical efficiency, brake thermal efficiency and decreases smoke.

Post Harvest Technology

- Agro Processing and Demonstration of Technologies Centre
 - A mobile poultry slaughter and processing unit has been designed and is ready for commercialisation. The mobile poultry slaughter and processing unit was designed to address the hygiene status of slaughter and dressing of

poultry and to serve as an ideal street meat food vending stall in cities where commercial space is highly prohibitive in cost and availability. With some add-on facilities, it can also double up as the unit to prepare and market ready-toeat chicken products in places where people congregate such as shopping malls and market places.



Development of pet food from slaughter house by products, agricultural by- products, and market waste of plant origin.

- Pet food was prepared utilising offals of chicken and pigs including ear lobe, tongue, oesophagus, trachea, diaphragm, lungs, liver, kidney, heart, spleen, stomach, intestine; vegetable waste and fruit waste. A model feed formulation was developed to provide a metabolisable energy of 3030 kcal, crude protein of 22.25%, and crude fibre of 1.28%. The produced feed was cold extruded into various shapes as such and also cooked and subsequently cold extruded into various shapes.
- The pet food developed using various offals of pig and poultry, market waste such as vegetables, fruits will help in controlling the environment pollution and wealth has been generated from waste.

Detection of *Escherichia coli* **0157:H7**, *Salmonella* **spp. and** *Staphylococcus aureus* **from mutton using multiplex polymerase chain reaction**

• A total of 90 mutton samples were collected from different retail outlets located in 15 different corporation zones of Chennai city and were screened by m-PCR for the presence of *Escherichia coli* 0157:H7, *Salmonella* spp. and *Staphylococcus aureus*. Out of 90 samples, all the samples were

found to be negative for *Escherichia coli* 0157:H7, 9 samples were found to be positive for *Salmonella* spp. whereas 15 samples were found to be positive for *Staphylococcus aureus*.

• The PCR positive samples were further confirmed by culture methods and a good positive correlation between these two methods was observed. Hence, the m-PCR technique developed in this study can be used as a rapid screening test for detection of *Escherichia coli* 0157:H7, *Salmonella* spp. and *Staphylococcus aureus* from mutton within 24 hours.

Detection of Beef and Pork Using Polymerase Chain Reaction

• Direct sequencing of purified PCR products of 12s rRNA gene of beef and pork samples were carried out and the sequences obtained were analyzed using BLAST at NCBI to observe the level of homology (identity) of the amplified PCR products. These sequences were found to be matching well with the published sequences available in the NCBI.It was found that beef and pork specific PCR developed in the present study was highly sensitive to identify meat adulteration up to the extent of 5% level. The results obtained in this study demonstrate the suitability of PCR analysis to identify the species in commercial meat products which are submitted to intense heat treatments.

Development of Novel Value Added Emu Meat Products

Cutlet and tikka from beef, chicken and emu revealed increase in pH, TBA and tyrosine value from '0' to 7th day at refrigerated (4±1°C) temperature. Based on the overall acceptability, cutlet was acceptable upto 5th day and tikka was acceptable throughout the refrigerated (4±1°C) storage period. Beef, chicken and emu cutlet can be stored well upto 5th day at refrigerated (4±1°C) temperature storage. The deterioration of cutlet on 7th day was not due to microbial spoilage but due to development of rancidity. The beef, chicken and emu tikka can be stored safely upto 7th day at refrigerated (4±1°C) temperature without change in its proximate and sensory characteristics. The cost of production for beef, chicken and emu cutlet were ₹ 4.10, 5.33 and 7.15 respectively and for preparing tikka weighing 100g from beef, chicken and emu was ₹ 46.40, 62.40 and 94.40 respectively. Moreover, it was observed that high margin of profit to the tune of 100-120% from cutlet could be obtained by value addition.

Identification of Avian species meat by Polymerase Chain Reaction

• This study was undertaken to optimise a PCR technique using species specific primers to authenticate meats of chicken, duck, emu and

quail in short time. Primers were selected based on conserved region of mitochondrial D loop of chicken and duck, cytochrome b gene for emu and 12S rRNA for quail meat. Horizontal submarine gel electrophoresis was performed to visualise species specific bands of 442 bp, 292 bp, 229 bp and 129 bp for chicken, duck, emu and quail meat in 2 per cent agarose gel. Cooking, addition of ingredients or pressure processing did not interfere with the efficacy of PCR. Specificity of primers was confirmed by checking cross reaction with other avian species while sensitivity was determined by serially diluting the DNAs till amplification was observed.

Results of PCR for fresh and cooked meat samples were confirmed by automated sequencing procedure using BigDye Chemistry. The amplified mitochondrial gene sequences were compared to observe the level of homology with that of reference sequences in the NCBI. Results revealed that fresh and cooked samples of chicken showed 99 per cent identity with accession number NC_007236.1; fresh and cooked samples of duck showed 100 per cent identity with accession number NC_009684.1; fresh and cooked samples of emu showed 90 and 100 per cent identity with accession number NC_002784.1 and JQ_329335.1 respectively; fresh and cooked samples of quail showed 93 and 100 per cent identity with accession number NC_003408.1 respectively.

Assessment of quality and shelf-life of retort pouch processed indigenous meat products of chicken

- Results of the study revealed that in indigenous meat products *viz*. chettinad chicken, chicken curry and pepper chicken from desi and broiler meat the values of biochemical parameters like, pH and TBA number decreased and the tyrosine value increased significantly which is a normal biological change but all the products were microbially safe and within the limits for total viable counts *E. coli, Salmonella* spp., *Clostridium* spp., *Staphylococci* spp., anaerobic count and yeast and mould during the entire storage period.
- The sensory quality remained acceptable during the storage period of 90 days at room temperature without changes in its nutritive and sensory quality for both desi and broiler meat. Indigenous meat products can be prepared using both desi and broiler meat by retort processing. Desi meat was rated higher for overall acceptability by the taste panelists and then meat chunks were intact in desi meat whereas in broiler meat fibres were separated on increase in storage period. From the present study it is found that heritage meat products of South Indian dishes can be retort processed and can be transported to different parts of country and the world easily without any refrigeration.

Detection of emerging food pathogens in chicken meat using multiplex Polymerase Chain Reaction

• A total of 90 chicken meat samples were collected from different retail outlets located in 15 corporation zones of Chennai city and were screened by m- PCR for the presence of *Campylobacter jejuni* and *Listeria monocytogenes*. All the samples screened were not positive for either *Campylobacter jejuni* and *Listeria monocytogenes*. The m-PCR technique developed in this study can be used as a rapid screening test for detection of *Campylobacter jejuni* and *Listeria monocytogenes* from chicken meat within 24 hours.

Effect of plant binders on the quality of novel Enrobed Chicken Meat Products

• This study revealed that the enrobed chicken meat product prepared using corn flour was found to be superior followed by the enrobed chicken meat product prepared using tapioca flour among the three products. Though the cost of production of enrobed chicken product prepared with corn flour is higher than the other two proportions, the difference in cost of production is only marginal. Hence, the enrobed chicken meat product with corn flour can be recommended for commercialization.

Evaluation of quality and storage stability of shredded meat product at ambient temperature

• The overall acceptability decreased with increased storage period and lower for AP than MAP. The shredded chicken meat product was shelf-stable with a storage life up to 90 days at ambient temperatures. The cost of production was lower for spent hen meat when compared to broiler meat. Development of a shelf- stable chicken meat product which can be stored at ambient temperature up to 90 days. Technology developed where the storage of final ready-to-eat product doesn't need refrigeration

Study on the role of GDF-9 in follicular dynamics and its implication on *in vitro* maturation of buffalo oocytes

- The supplementation of GDF 9 @ dose of 200ng/ ml provided optimum condition for better IVM of buffalo oocytes
- GDF 9 and BMP 15 expressed exclusively in the oocytes and their profile varies with the development and maturation of the oocyte.

Effect of sodium nitroprusside on *in vitro* **sperm characteristics of buffalo semen**

• Sodium nitroprusside at micromolar and nanomolar concentration decreased the sperm motility, sperm viability, but increased sperm abnormality. Both the concentrations affected the functional membrane integrity of the sperm as well as mitochondrial membrane potential. Lipid peroxidative damage was also higher in both the concentration.

• There was a dose dependant effect of SNP on invitro sperm characterstics of buffalo semen. In nanomolar concentration, sperm mitochondrial membrane potential was higher than micromolar concentration. Less lipid peroxidative damage was observed in nanomolar concentration than micromolar concentration.

Nano iron Supplementation in swine

Iron nanoparticles were synthesized by chemical method and characterized for size. The nanoiron particles were orally administered to piglets from 3-28 days. The size of the synthesized iron nanoparticles were in the range of 25-45nm. Body weight gain in piglets was improved by iron nanoparticle supplementation. Iron nanoparticle supplementation improved the plasma iron, ferritin and total iron binding capacity of piglets from 3-28 days. The synthesized nanoiron particles can be used to overcome piglet anemia.

Collection and Evaluation of Emu Semen

- A study was carried out to collect semen from emu and to assess their qualitative and quantitative traits. Further two semen extenders namely Lake's and Modified Beltsville poultry Semen Extender (MBPSE) tried on emu semen for short term storage.
- The best quality semen may be obtained using non teaser method during peak breeding season with the help of artificial cloaca designed in this study. Further emu semen can be successfully extended using Lake's and Modified Beltsville Poultry Semen Extender (MBPSE) for 6 hours storage period at 15-20°C. The significant rise in levels of inorganic ions namely sodium and potassium during peak breeding season serve as baseline values to evolve successful breeding programme.

Influence of age, sex and rearing systems on expression of toll-like receptors in native ducks of Tamil Nadu

- Real-time quantitative RT-PCR analysis revealed a significant (P<0.05) effect of age, sex and rearing systems on TLR7 expression in lymphoid organs (spleen and bursa), lungs and internal milieu (duodenum, jejunum, ileum and caecum) in native ducks of Tamil Nadu. Males had significant increase in TLR7 expression in lungs, jejunum and ileum than females. Rearing systems had significant effect on TLR7 expression in lungs, bursa, duodenum and caecum of native ducks. For lungs and bursa, expression is higher in ducks reared under extensive system than intensively reared ducks whereas ducks in intensive system showed higher expression in duodenum and caecum than extensively reared birds.
- Highest expression of TLR7 was recorded in lungs and spleen. These findings indicate that TLRs are important for innate immunity of the duck digestive

tract, lymphoid organs and lungs. This suggests that TLR7 mediated immune system exists in ducks and probably plays a role in the recognition of avian influenza virus of both highly pathogenic and low pathogenic type thereby enhancing disease resistance in ducks. Higher TLR7 expression might contribute to antiviral defense. These observations also pave a way for identifying the differences in susceptibility of chicken and ducks to influenza which is a major threat to humans.

Residue profile of chlortetracycline and tylosin in layer chicken

- A study was taken to identify the prevalence of chlortetracycline and tylosin in commercial layer farms in Namakkal. Out of sixty farms, forty eight were used antibiotics in layer chicken. Eighteen, sixteen and twelve farms were identified for using Chlortetracycline (CTC), tylosin (TS) and combination or with other drugs. Concentration of CTC and TS residue in feed and egg was highly significant (P<0.01) between different days (0, 3rd, 5th, 7th,9th and 14th day) in all farms and these antibiotic residues in dropping were highly significant (P<0.01) and significant (P<0.05) between different days in all farms respectively.
- All the farms had CTC and TS residue in egg on 9th and 14th day also i.e two and seven days after withdrawal of medication. On the 7th day average CTC and tylosin residue in egg was 206.04±0.65 and 361.54±10.72 µg/kg and this had gone beyond the recommended MRL level of European union (EU). This proves that farm owners had not followed proper withdrawal period for each antibiotic. The study proved four days withdrawal period was enough to provide safe consumption of poultry product by humans.

Nutritional and biological strategies to minimize air pollution from guinea fowl production

- A biological experiment using guinea fowl for sixteen weeks duration was carried out to evaluate nutritional methods to reduce nitrogen excretion in guinea fowl and to study biological methods to reduce environmental pollution from poultry litter. The birds were randomly subjected to eight dietary treatments in a completely randomized design namely high protein (Mandal, 2004) in feed with fish meal (T1) and without fish meal with enzyme (T3) and without fish meal, enzyme (T4) and all the above treatments with *Methylomonas methanica* bacteria in litter (T5, T6, T7, T8).
- From the study it is concluded that low protein diet with fish meal and supplementation of protease enzyme (T3-LPFM+E) had resulted in reduced nitrogen excretion in litter thereby possibly reduced emission of ammonia and nitrous oxide with

marginal lower performance than high protein diet treatments. Addition of methanotropic bacteria in litter had significant (P<0.01) effect on reducing methane emission from poultry litter.

Impact of sprouted green gram, selenium and vitamin E on semen quality and fertility in egg type chicken breeder

- Forty two adult White Leghorn cocks and seventy White Leghorn hens which were divided into seven treatment groups containing six cocks and ten hens for each treatment. The treatment feeds were fed to males and the females were fed with normal layer breeder diet.
- The results revealed that inclusion of sprouted green gram 50 g/kg, selenium 0.5 mg/kg, vitamin E 500 mg/kg and their combinations in feed improved the sperm concentration and live sperms and reduced the abnormality of sperms in White Leghorn cocks.

Utilization of ghee residue in broiler ration

- Two hundred and ten commercial, sexed, day-old, Vencobb broiler chicks were randomly grouped into seven treatments with three replicates for each treatment and containing ten chicks per replicate. The treatment groups were fed with diets containing ghee residue at different inclusion levels, i.e. 0 per cent (T1 - control),5 per cent (T2), 10 per cent (T3), 15 per cent (T4), 20 per cent (T5), 25 per cent (T6) and 30 per cent (T7).
- It is concluded that ghee residue can be included in broiler diet up to 10 per cent for producing significantly higher body weight gain with better feed conversion ratio. However, ghee residue can be included up to 25 per cent for better return over feed cost.

Value addition of broiler meat by dietary supplementation with selenium, zinc and vitamin E

- An experiment was conducted in commercial broilers for a period of six weeks to study the dietary supplementation of selenium, zinc and vitamin E with respect to production performance, carcass characteristics, blood parameters, value addition, storage stability and relative economics.
- Based on this study, it is concluded that supplementation of selenium, zinc and vitamin E in broiler diets did not affect the production performance and carcass characteristics. However, it improved the selenium, zinc and vitamin E content of muscle, thereby improved the storage stability of meat which also resulted in the production of value added meat in a cost effective way.

Growth performance of meat-type Japanese quail by feeding lysolecithin

 Two biological experiments were conducted in meat-type Japanese quail to reduce the feed cost by improving the feed utilization by inclusion of lysolecithin and to study its effects on production performance.

- The carcass characteristics at five weeks of age revealed significantly higher (P<0.01) New York dressed yield and eviscerated carcass yield in lysolecithin fed groups when compared to control.
- Ready-to-cook yield was significantly higher (P<0.05) in 0.03 per cent and 0.04 per cent lysolecithin fed groups when compared with other groups. Abdominal fat percentage was significantly higher (P<0.01) in 0.02 per cent lysolecithin fed groups when compared with other groups.
- Overall return over feed cost was significantly higher (P<0.01) in 0-3 weeks lysolecithin fed group when compared to other groups at five weeks of age.
- It is concluded that 0.02 per cent lysolecithin could be included in meat-type Japanese quail diet from 0-3 weeks of age for producing significantly better body weight, feed consumption, feed utilization and better overall return over feed cost.

Value addition of chicken eggs with iodine

- An experiment was conducted in commercial White Leghorn layers for a period of twelve weeks to study the scope for the production of iodine enriched chicken eggs through dietary supplementation of iodine.
- The experimental results revealed that an inexpensive supplementation of 8mg of iodine per kg of feed had increased the iodine content from 72.12 to 134.21µg per 100g of edible portion of egg without affecting the production performance and egg quality in commercial White Leghorn layers. Based on this study, it is concluded that iodine enriched egg can be produced through dietary iodine supplementation and the iodine enriched egg could be used as an alternative source to meet out the iodine requirement of various target groups of population, especially the children and pregnant women.

Technological innovation in preparation of probiotic herbal ice cream

- Inclusion of 20 per cent aloevera in icecream was found optimum.
- Probiotic icecream prepared with 4 per cent level of inclusion of *Lactobacillus acidophilus* was found optimum.
- The icecream prepared with curcumin as natural colour had better survivability of *Lactobacillus acidophilus*.

Incidence of Aflatoxin Contamination and assessment of Physico-Chemical parameters in Breakfast Cereals

• Among the total Aflatoxins, Aflatoxin B1 was dominant followed by Aflatoxin B2, G1 and G2. The tested samples showed 31.1% contamination with Aflatoxin above their respective MPL values.

Development of Integrated Fishery Waste Management Model for Retail Fish Market.

• A waste disposal model was developed for retail fish market which consists of a grinder and 10 cans or cement tanks where in ground fish waste will be added and made into silage in 10 days. The same set can be reused once it is emptied for next batch and this model will eliminate the smell and related environmental problems. The prepared silage can be used for the production of fish feed and can be used as an alternative to fish meal.

Popularizing model fodder seed bank at farmers field to augment fodder seed production

- Two models of fodder cultivation model I under irrigated condition with Cumbu Napier hybrid grass – Co 4 and Desmanthus virgatus and model II under rainfed condition with Guinea grass and Stylosanthus sp were established in TANUVAS farms (Post Graduate Research Institute in Animal Sciences, Kattupakkam; Mecheri Sheep Research Station, Salem and Instructional Livestock Farm complex, Tirunelveli) with the objective of replicating the concept at farmer's field.
- Totally sixty farmers were selected in this scheme from 10 districts of Tamil Nadu (Kanchipuram, Tiruvallur, Vellore, Villupuram, Salem, Erode, Dharmapuri, Madurai, Virudunagar and Tiruvelveli) covering 30 acres of land for fodder cultivation.
- Each model was established in 15 acres at farmer's field which will act as village level fodder seed bank for further propagation of fodder slips / seeds to nearby needy farmers.



Beneficiary at Tiruvallur district

Beneficiary at Beneficiary at Madurai district Selam district

Hill and tribal zone, strengthening of Sheep Breeding Research Station, Sandynallah

- The nutrient content of maize at various stages of growth was estimated to assess its suitability for silage making. The optimum day of harvest was found to be 114 days of growth. At 144 days maize fodder contained 10.88% crude protein, 34.26% crude fibre and 42.95% nitrogen free extract on dry matter basis.
- Under tribal sub-plan, quarterly health camps were conducted in tribal villages for effective control of parasites.

- Silage made from fodder maize harvested at 114 days was found to be more palatable to sheep.
- Maku lotus, a leguminous water loving fodder, previously tested in farm was introduced in swamps and wet lands around the tribal hamlets. It was found to be a good source of fodder for buffalo calves in Toda tribal hamlets.

Conservation of Threatened Breeds of Livestock

- The population of Nilagiri sheep with the farmers was estimated to be 984 as on 31.3.2013, which consisted of 190 rams, 532 ewes and 119 ram lambs and 143 ewe lambs.
- To create an awareness on the importance of this breed and the need for its conservation, 60 sheep breeders were trained. Publicity campaigns were organized for farmers, district officials and school and college students.
- Method demonstration on scientific feeding was conducted and a total quantity of 21985 kg of concentrate feed along with mineral mixture and salt lick were provided to the sheep farmers to overcome the fodder shortage during winter and summer months.



Training on sheep rearing at Bellathy Kombai tribal village on 4.3.2013

- Health cover facilities like deworming (1757 Nos) and Enterotoxaemia vaccination (523 Nos) were done for the field sheep.
- The nucleus herd of Nilagiri sheep maintained at SBRS, Sandynallah was strengthened by purchasing new stock. Inputs like provision of concentrate feed and services like deworming and vaccination has resulted in improvement in health conditions, productivity and reduction in mortality in the farmers' flock

Empowerment of tribal youth in conservation of Toda buffaloes - an "for the Toda and by the Toda" approach

• Thirty tribal youths were given training on deworming, nutritional supplementation during

winter months and medical emergencies, first aid treatment, drenching, application of external parasiticide and ethno-veterinary practices in Toda buffaloes. The trained Toda youths were provided with first aid kit for emergency treatment. Concentrate feed was supplied to the calves at the rate of 20 kg per calf to be fed for 30-40 days based on their age during the winter.

 Mineral mixture was provided to the farmers to supplement their buffaloes and calves. Awareness was created on concentrate feed supplementation during winter and summer seasons. Toda youths have become self reliant on deworming of calves and disease control in Toda buffaloes



Distribution of first aid kit to l toda youth

to Distribution of feed and mineral mixture to Toda farmers

Evaluation of the efficacy of povidone iodine and a solution with I-Propanol,2-Propanol and Chlorhexidine Gluconate for surgical site preparation in dogs

 The scrub solution containing 1-Propanol, 2-Propanol and Chlorhexidine gluconate was found superior in reducing the number of organisms from the surgical site than Povidone iodine. The surgical scrubbing time of 3 minutes was not sufficient in reducing the number of organisms

Sonographic evaluation of kidney in healthy dogs and in dogs with acute and chronic kidney disease

- In small sized dogs there were no significant alterations in renal measurements in the both acute and chronic kidney disease whereas significant changes were appreciated in large sized dogs. Therefore, it is concluded that reliability of renal measurements is more subjective.
- In acute kidney disease renal appearance and architecture remained preserved except for texture changes whereas in chronic kidney disease, changes in contour, texture and architecture were very well appreciated. Therefore, it is concluded that ultrasound is reliable aid in differentiating acute and chronic kidney disease when combined with other diagnostic modalities.

 It is concluded that ultrasound is reliable aid in differentiating acute and chronic kidney disease when combined with other diagnostic modalities.

Study on the comparative efficacy of diagnostic tests in the early diagnosis of canine liver diseases

- The incidence of canine liver diseases was 0.15 per cent of total number of medical cases attended and 0.43 per cent of the gastrointestinal case loads of the Madras Veterinary College Teaching Hospital. The most common liver disease was that of parenchymal disorders with 73 percent incidence (73/100), followed by biliary disorders 18 per cent (18/100)and neoplastic disorder 9 per cent (9/100). Nondescript dogs dominated the incidence in all the groups of liver diseases followed by Spitz in both neoplastic disorders and parenchymal disorders.In case of biliary disorders German shepherd followed the non-descript dogs in the incidence levels. Dogs aged above four years were most commonly affected and males dominated the incidence in all groups of liver diseases.
- Common clinical signs observed in biliary disorders were vomiting followed by anorexia / decreased appetite and weight loss, jaundice and abdominal pain. The commonly observed clinical signs in neoplastic disorders were weakness and anaemia (Tachycardia/Tachypnoea) followed by anorexia / reduced appetite, palpably distended liver (Hepatomegaly), poor hair coat, vomiting, weight loss and ascites. The commonly observed clinical signs in parenchymal disorders were anorexia / reduced appetite followed by weight loss, vomiting, palpably distended liver (hepatomegaly), ascites, diarrhoea and abdominal pain.
- Clinico-pathological changes such as erythrogram revealed a significant anaemia in all the three groups. Leucocytosis with neutrophilia was observed in all the three groups.

Clinical and Laboratory Parameters as Prognostic Indicators in equine Colic

- Colic was observed in 21.42% of the 140 horses brought to Madras Veterinary College Teaching Hospital. Impaction colic was observed in 86.67% of the colic cases. Colic was recorded in 5-10 years old through bred horses and males are commonly affected than female horses. The clinical signs varied from intermittent pain in mild cases, continuous pain in moderate cases and profound depression, excess sweating, frequent lying down and getting up in severe colic cases.
- Elevation of Capillary refilling time and discoloration of visible mucosa, elevated heart rate and respiratory rates and reduced blood pressure were noticed with severity of colic. 50% of the severe colic cases showed increased intestinal sounds and distended small and large bowl loops by rectal palpation. The mortality rate of 80% was recorded in severe

colic cases. Elevated PCV, WBC counts, BUN, Serum creatinine, glucose, LDH, PT, APTT levels and anionic gap and decreased platelet counts, total protein and albumin levels were found prognostic value for colic cases.

Clinical characterisation, assessment of clinical significance and therapeutic outcome of Supraventricular Tachyarrhythmias in dogs

- Incidence of SVTs in dogs was 1.82 per cent in the study period and 4.66 per cent in the retrospective study period. There was a higher incidence of SVTs in Labrador retriever and dogs aged 6 to 8 years.
- The clinical findings noticed in dogs with SVTs included inappetance, exercise intolerance, ascites, syncope, tachycardia, pulse deficit and weakness. No significant changes in haematological values were observed. Serum biochemistry showed significant azotemia in dogs with AVJT, due to concurrent comorbidities such as CKD and Leptospirosis. There were radiographic evidences of cardiomegaly (92.8%) and pulmonary edema (78.57%) in dogs with AF. VHS was significantly elevated and confirmed the presence of structural heart disease.
- Routine electrocardiography revealed the presence of SVTs based on 'P' wave morphology in lead II. While the Lead II study is inconclusive for categorization of SVTs, the 12 lead ECG analyses revealed welldefined pattern of SVTs. The precordial chest leads documented well defined 'P' wave morphological changes and proved it's superiority over routine ECG. Holter ECGs in the present study documented the sustained nature of SVTs in all the groups of dogs. Exercise ECGs showed no deteriorations or progressions in respective rhythms of different SVT groups except for elevations in the heart rate. Echocardiographic evaluation confirmed the presence of structural heart disease such as DCM and MVD in 80% of the Dogs with SVTs.
- Treatment was aimed to improve the quality of life and oral therapy with Enalapril (@ 0.5mg/kg BW), Frusemide (@ 2mg/kg BW) and Diltiazem (@ 2mg/ kg BW) was instituted. The treatment does not result in conversion to sinus rhythm and as a result of which 92.85 per cent of the dogs succumbed and only one dog survived after pharmacological conversion to AT. The mean survival time was 30.7 days for AF, 105.5 days for Atrial flutter, 8.5 days for AT and 17.5 dogs for AVJT.

Clinical, Doppler Echocardiographic and other diagnostic evaluation of dilated cardiomyopathy in Labrador retrievers

 Prevalence of dilated cardiomyopathy in Labrador Retrievers found to be 6 per cent in the present study. Animals of 6-9 years age group were mostly affected with male predominance. Major clinical signs were abdominal distension, exercise intolerance, cough and weight loss. On physical examination, ascites, dyspnea, gallop rhythm, systolic murmur, elevated body temperature and weak femoral pulse were observed in majority of dogs.

On radiography, cardiomegaly and pulmonary edema were the major findings observed. Average vertebral heart score in dilated cardiomyopathy affected dogs was 12.75. In echocardiography, increased left ventricular end diastolic dimension and systolic dimension, reduced fraction shortening, increased E-point sepal separation, increased LA/AO ratio, decreased ejection fraction, increased end diastolic volume and end systolic volume were noticed. On pulsed wave Doppler echocardiography reduced PA, AO, LVOT, RVOT velocities were recorded. Mild to moderate regurgitation was observed in Mitral and Tricuspid valve by color flow doppler echocardiography. Gross dilatation of all the chambers and thinning of ventricular walls was noticed on necropsy. Attenuated wavy fiber type and Fatty infiltration-degenerative type was noticed in histopathology.

Internal obturator muscle transposition and autogenous fascia lata graft for perineal herniorrhaphy in dogs

- Group 1 consisted pernineal herniorraphy with internal obturator muscle transposition flap and group 2 consisted perineal hernioplasty using autogenous fascia lata graft harvested from fascia lata lateral thigh.
- Perineal hernia using Internal obturator muscle flap was found to be a better technique with reduced pain, inflammation and minimal complications. A better technique for dogs with perineal hernia and a very weak pelvic diaphragm was evaluated and found to be successful in application for day to day practice



Incision made on IOM along dorsocaudal border of the ischial tuberosity

Transposed IOM provides the ventro lateral muscular sling

Hip assessment for dysplasia during pre and post skeletal maturity in Germansheperd and Labarador Retriever dogs

 Dogs presented with signs of hip dysplasia were grouped in two groups of 6 each (Labrador and GSD) and subjected to hip assessment before and after skeletal maturity. Both group I and group II showed improvement in pain score during skeletal maturity period whereas lameness score improved only in group I.

• Quantitative Hip Assessment was found to be useful technique in hip dysplasia diagnosis.



Radiograph showing the measurement of Dorsolateral subluxation index from weight bearing view

Radiograph showing the measurement of central edge angle and acetabular slope angle from dorsal acetabular rim view



Radiograph showing the measurement of Norbreg angle from standard ventro dorsal view

Radiograph showing the measurement of distraction index from distraction

Effect of Fibrin Gelatin and Fibrin Gelatin Impregnated with silver/gold nano particles on wound healing in dogs

 Application of silver nanoparticles increased the production of granulation tissue by attracting fibroblasts to wound site and facilitating early wound healing process. Silver nano particles also promoted wound healing by antibacterial effect.

To evolve cost effective general anaesthetic protocol for various surgeries in cattle



General anaesthesia - cow

- The animals were divided into four groups. The anaesthetic protocol was formulated with Xylazine hydrochloride, diazepam, midazolam, acepromazine maleate, guaifenesin and ketamine hydrochloride and the anaesthesia was maintained with isoflurane.
- Diazepam as a preanaesthetic agent along with guaifenesin to ketamine hydrochloride induction and isoflurane maintenance was found superior to perform thoracotomy in cattle with traumatic pericarditis.

Surgical management of traumatic pericarditis in cattle

- Thirty four cattle were selected for surgical management and were divided into four groups *viz.*, I, II, III and IV comprised of eight, nine, eight and nine animals, respectively.
- In group I animals, ultrasound guided pericardiocentesis was performed under local anaesthesia. In group II, III and IV animals, pericardiotomy, pericardiostomy and pericardiectomy respectively was performed under general anaesthesia. The anaesthetic protocol employed in all the groups was found satisfactory.
- Out of 34 animals subjected to surgical interventions with various techniques 12 animals recovered uneventfully from the ailment. The surgical interventions suggested in the present study based on radiography and ultrasonography was found suitable in the surgical management of traumatic pericarditis.

General anaesthesia with intermittent positive pressure ventilation for thoracotomy in cattle with traumatic pericarditis

The study was conducted in 26 cattle with traumatic pericarditis admitted to VCRI Hospital. The animals were divided into four groups. The anaesthetic protocol was formulated with xylazine hydrochloride, diazepam, midazolam, acepromazine maleate, guaifenesin and ketamine hydrochloride and the anaesthesia was maintained with isoflurane. The rectal temperature in animals in group IV significantly lowers to other groups during maintenance and returned to baseline after recovery. A significant reduction heart rate was observed in group I and IV animals during maintenance and returned to baseline after recovery. Significant reduction in respiratory rate was observed after induction all animals and returned to baseline after recovery. Mechanical ventilation was employed throughout the surgical procedure. In Group IV animals there was significant reduction in mean arterial pressure during maintenance. ST segment elongation and prolongation in all the animals with traumatic pericarditis. and after recovery.

 Diazepam as a preanaesthetic agent along with guaifenesin to ketamine hydrochloride induction and isoflurane maintenance was found superior to perform thoracotomy in cattle with traumatic pericarditis.

Evaluation of buprenorphine and Butorphanol as preanaesthetic in midazolam – ketamine – isoflurane anaesthesia for ovariohysterectomy in cats

- Eighteen cats were randomly divided in to group I, group II and group III of six each. In all the groups, the, anaesthesia was induced with i.m administration of midazolam @ 0.3 mg/kg, ketamine @ mg/kg body weight and maintained with isoflurane. Butorphanol @ 0.4 mg/kg and buprenorphine @ 0.01 mg/kg were administered as premedicant in group I and group II respectively. In group III, no premedicant was administered. Ovariohysterectomy was performed in all the animals as per the standard technique.
- The quality of anaesthesia was found to be excellent in butorphanol than buprenorphine. From the present study; it is observed that buprenorphine abolished postoperative pain up to 24 h in cats but produced excellent anaesthesia in all the cats with absence of pain upto 4 h and mild pain up to 24 h. Hence, butorphanol can be used safely as preanaesthetic in midazolam- ketamine-isoflurane anaesthesia for ovariohysterectomy in cats.

Clinical, radiographic and echocardiographic evaluation of effect of pericardiocentesis under local analgesia for traumatic pericarditis in cattle

- Electrocardiography was performed in 27 animals employing base- apex lead system. In all the animals thoracoabdominal organs were examined using ultrasound scanner in standing position to categorize various forms of traumatic pericarditis. Preoperatively, in six animals confirmed for serous form of traumatic pericarditis fluid therapy and antibiotic were administered. A line block was effected with five milliliters of two percent lignocaine hydrochloride dorsal to the point of insertion of trocar catheter from cranial to caudal direction.
- Ultrasonography using 3.5 MHz transducer was found effective in characterizing the pathological changes associated with traumatic pericarditis and to differentiate various forms of pericarditis. Pericardiocentesis was found ideal in cases of serous form of pericarditis using trocar catheter size 28 FG. Pericardiocentesis in the present study based on radiography and ultrasonography was found suitable to improve the clinical conditions of the animals and to prolong the life of the patient.

Electrocardiographic studies during isoflurane anaesthesia in cattle

- Electrocardiography employing base apex lead was performed in 12 cattle. Base apex lead employing Lead II system was studied during isoflurane anaesthesia.
- No arrhythmia and abnormal cardiovascular event was recorded in electrocardiography. Base apex Lead electrocardiography was found suitable to diagnose cardiac arrhythmia at an early stage during isoflurane anaesthesia in cattle. Electrocardiographic study employing base apex lead in cattle under general anaesthesia with isoflurane was standardized.

Effect of Murraya koenigii leaf powder on cholesterol fed rats.

• Murraya koenigii leaf powder can be used as antioxidant and antihyperlipidemic agent at 2 % inclusion level in diet.

Developing Price Policy Model for Milk in Tamil Nadu

- Cost of production of milk in different species of bovine was estimated and the results revealed that milk yield per animal per day and the cost of production of milk per animal per day was highest in crossbred cows followed by buffaloes and indigenous cow. The results also revealed that feed cost occupied a major component in the total variable cost followed by labour cost.
- Returns from the dairy farming were found to be maximum in cross bred cow, followed by buffaloes and indigenous cow. Returns from the sale of manure and gunny bags contributed less significantly.
- Resource use efficiency in milk production was analyzed and the salient findings were Labour was found to be over utilized in all the agro climatic zones of Tamil Nadu with the MVP-MFC ration of less than unity. In contrast Veterinary charges were found to be underutilized.

Economic dimensions of Contract Japanese Quail Production in Tamil Nadu

- The study was conducted in Western districts of Tamil Nadu. A sample of 30 non-contract and 30 contract Japanese quail farmers were selected from sample blocks of three districts of Tamil Nadu.
- On factors influencing the profitability of farming, factors such as livability and farm size were found to be positively influencing the profitability while the factor cost per bird was found to be negatively influencing the profitability
- The determinant factors of participation in contract Japanese quail farming were assessed by logit model and the results revealed that farm size and

profitability were found to be positive determinant factors and the factor investment was found to be a negative for participation in farming

Economic evaluation of environmental pollution on dairy sector in western, southern and cauvery delta zones of Tamil Nadu

- A total of 300 sample farmers were selected through multistage random sampling technique comprising 150 farmers from polluted areas and 150 farmers from control areas of the selected districts.
- Overall average landholding in polluted and control areas was 3.17 acres and 4.32 acres. Overall total livestock units among the polluted areas were 343.70 with an average of 2.29 livestock units and 471.40 livestock units with an average of 3.05 units in control areas. Overall average household income in polluted areas was a 2.81 lakhs and a 3.42 lakhs in control areas.
- In polluted areas, the overall loss per household encompassing treatment cost, yield loss during illness, value lost due to culling and mortality, loss experienced due to reproductive impairment was estimated to be a 3,971 and loss in control areas was a 2,245 per household.
- In polluted areas, level of sodium and chromium have reached nearly the maximum normal values in Coimbatore district, sodium, chloride and lead were higher than the normal values in Karur district and level of sodium, chloride and chromium were exceeding the normal values in Dindigul district.

Designing and testing of a user friendly microcomputer based expert system on goat husbandry practices

- Majority of the farmers gained high knowledge in goat farming practices. Majority of the respondents had high level of symbolic adoption of the scientific goat farming practices. The goat farmers had highly favourable perception towards the developed TANUVAS-GoatES.
- Education status, skill in using computers has a positive significant relationship, whereas age had a negative correlation with knowledge gain. TANUVAS-GoatES can be effectively used by the farmers in gaining knowledge and decision making in goat husbandry. Young entrepreneurs, educated farmers with knowledge in computers can be targeted to propagate the use of the expert system in goat farming.

Estrous synchronization of dairy Cattle: An impact analysis

 Farmers perceived that the oestrus synchronization technology were cost saving, immediate results and easy to adopt. The veterinarians perceived that the technology showed immediate results and did not interfere in the well being of the animals. The major impact perceived were decreased reproductive diseases, repeat breeding, anoestrum, increased breeding efficiency by direct consequences and increased purchase of household goods, increased repayment of debts and increased financial security as indirect consequences. The farmers and the veterinarians had favourable perception of the technology which might lead to the adoption of the technology in the future

Identification and Assessment of Ethno Veterinary Practices in Ruminants through Participatory Technology Development

- Farmers felt that their innovations were mainly exposed through Participatory Technology Development. All the farmers agreed that Ethno Veterinary Medicines were cost effective, locally available, easy to prepare and administer.
- Respondents had a medium to highly favourable attitude towards Participatory Technology Development and Ethno Veterinary Medicines. Participatory Technology Development is an effective method to bring out the indigenous practices prevalent among the farmers for effective technology dissemination

Information Dynamics in Transfer of Dairy Farming Technologies

- Among the institutional sources, veterinarians; in mass media sources, television; non-institutional sources, family members, progressive farmers, friends and neighbours were perceived as the most useful information source and they were frequently contacted and utilised by the dairy farmers.
- More than three-fifth (66.67 per cent) of the farmers had medium level of information input pattern followed by high (17.50 per cent) and low (15.83 per cent) levels of information input pattern.
- Majority of the farmers evaluated the received information through discussion with family members, neighbours and friends and waited till it is tested by others. Most of them preserved the information in memory alone.
- Majority of the respondents disseminated the information to the family members and relatives.
- All the breeding and feeding technologies were perceived as effective by the dairy farmers. Isolation of sick animals, vaccination of animals, deworming in calves, clean milk production and disinfection of navel card were found to be effective in health care and management technologies among the dairy farmers. Cattle insurance practices alone found to be effective in general categories.

Development of e-Courses for B.V.Sc. & A.H. Degree Programme

- On line e-Contents for all 69 courses were developed in moodle and Offline e-contents developed in Portable moodle and made available in DVD's. Peer review of e-contents by external exports completed. Any time – anywhere learning facilitated. Online learning portal, www.elearnvet.net
- E-courses (portable)
- Additional features of animations, quiz, and audio clips.
- First of its kind in veterinary education in India
- E-courses developed were released on 15.06.2012 by the Hon'ble Director General, ICAR and Hon'ble Agricultural Minister, Government of Tamil Nadu.
- e-learning both online and offline. Lecture materials in downloadable audio files. Adjudged as Best NAIP project

Tribal sub plan

- Provided critical inputs such as bird units, Sheep and goat distribution, Rabbit distribution, poultry feed, rabbit feed and goat feed distribution, mineral mixture, DVDs and ACDs for rearing backyard chicken and first aid kits to ST population of Pappanasam (Karaiyar dam) and Puliangudi areas of Tirunelveli district. Papanasam (Karaiyar dam) and Puliangudi are hilly areas with densely populated ST peoples.
- Capacity building programmes and trainings related to various animal husbandry activites were conducted by technical experts to ST population of Pappanasam (Karaiyar dam) and Puliangudi areas
- Capacity building programmes like Spoken English programmes were conducted for the benefit of the ST students at TANUVAS.
- Beneficiaries of Papanasam (Karaiyar dam) and Puliangudi ST population have gained knowledge in backyard poultry rearing, goat rearing and rabbitry in a scientific way after undergoing training and will be able to multiply their stock as they gain experience.



- The training has generated self-employment opportunity to each farmer. The project has enriched the ST beneficiaries knowledge on desi chicken rearing, goat rearing and rabbitry for more profit.
- Knowledge on Animal Husbandry activities of ST population is increased. Knowledge on schemes available on farm animal rearing is increased.

Integrated Agro-Meteorological Advisory Services

- One hundred and three weather based bulletins (biweekly) were issued for the year 2012-13 covering 361 days for the benefit of poultry and agricultural farming for Namakkal, Salem, Dharmapuri and Krishnagiri districts of North West Agro climatic zone of Tamil Nadu.
- Bulletins were issued in Tamil to 15 selected poultry farmers by post and widely circulated using local Tamil dailies, local TV channels and AIR, Trichy. The English version of the same was sent regularly to IMD, Pune for National Level Advisory preparation and to TANUVAS for website hosting and to TNAU for composite bulletin preparation for entire Tamil Nadu.
- Total precipitation recorded in 2012 was 502.0 mm
- The findings of pattern of climatic changes help to fine-tune the management in the farms for vaccination, feeding, summer management and for planning feeding regimens in poultry and for both maneuvering the agriculture practices as well as planning for long term cropping pattern for better yield and transferring the techniques at appropriate time.



Fisheries

Identification and assessment of the expression profiles of important Toll-like receptors (TLRs) in commercially important food and ornamental fishes.

• Expressions of important TLRs (TLR2, TLR3, TLR4. TLR9, TLR21 and TLR22) were identified in selected species of ornamental and food fishes.

- Basal and induced expression profiles of TLRs in various organs of commercially important healthy and experimentally induced ornamental and food fishes were studied by semi-quantitative reverse transcriptase PCR and quantitative Real-time PCR.
- PCR amplified TLRs were confirmed by sequence analysis and submitted to the GenBank.

Dissemination of Better management practices and biofloc technology to enhance SPF Litopenaeus vannamei and Penaeus monodon shrimp production in Tamilnadu

- Workshop and Awareness programme on Better Management Practices and Biofloc technology in shrimp culture was conducted at Thoothukudi, Muthupettai, Pattukottai and Marakkanam respectively.
- Onfarm demonstration trial on Biofloc technology in shrimp farming was conducted in M/S Hitide seafarm, Mahendrapalley, Nagapattinam Distrct and 25.23 percent higher production of L. vannamei was recorded in the trial.
- 154 shrimp farmers were the beneficiaries of the awareness and demonstration programme on biofloc technology in shrimp farming.
- Brochure and video CD on Success story of Onfarm trial on biofloc technology at M/S Hitide seafarm, Mahendrapalli, Kattur, Nagapattinam District was prepared and distributed to all beneficiaries.
- Established Monodon rearing unit with biofloc technology and BMPs in the FCRI campus

Enhancing open water aquaculture production through cage farming

- Low cost cages and bamboo platforms were made and cages were floated in the Institute reservoir for cage farming. The first stage harvest was also done and the production parameters were estimated.
- Cage farming with fishes like, Common carp, Murrel, Pangassius, and Indian Major Carps was demonstrated and the seed rearing was also taken up in the cages.
- Cages were also floated in Manimuthar Dam and two tanks in Kanyakumari district and the cage farming was demonstrated to the farmers.
- Five farmers in three districts have been supplied with cages and rafts and were floated in the tanks in Kanyakumari District and Tirunelveli District. Two more sets of rafts and cages have been earmarked for farmers in Madurai District. Cages were issued and installed in farmers holding.

An export oriented marine value chain for farmed seafood production using Cobia (*Rachycentron canadum*) through rural entrepreneurship

- Developed technology for larval rearing of cobia. The larval rearing techniques using live feeds (rotifer from 3rd day to 7th day) and feeding with artemia (from 7th day to 15th day) and then onwards with formulated diet was developed. First phase of grow out culture of cobia in concrete tanks at 20 per m3(10 g size) attained average weight of 40 g in one month and 150 g in three months. The 40 g size cobia juveniles were found to be suitable for cage culture and 150 g found to be suitable for pond grow out culture.
- Technology on Pond grow out culture of cobia was developed for the first time in India by Fisheries College and Research Institute, Thoothukudi with the production of 1kg/sq.m at the stocking density of 0.25 fish/m2(1fish/4 m2) with an average weight of 4 kg in a period of ten months. Technology on Cage grow out culture of cobia was developed using formulated feed at a stocking density of 4 fish/m3 with the production of 8 kg per m3.

Collagen and gelatin films from fish processing wastes and their functional properties

- Antimicrobial fish gelatin films with clove and pepper having good antimicrobial properties serve as edible coatings to extend the shelf life of VP fish steaks.
- Fish collagen film formation standardized with crosslinkers *viz*. sorbitol, glycerol, GTA, HMCA, transglutaminase and k-carrageen.
- Multi fish composite collagen films with chitosan and calcium acetate with good TS and delayed *in-vitro* biodegradation could serve as a biomaterial.

Economic Empowerment of Rural Fish Farmers through Skill Development in Freshwater Prawn Farming

- Six training programmes were organised on Freshwater Prawn Farming for 150 fish farmers of the selected five districts of Tamilnadu. Three trained fish farmers had taken up the culture of freshwater prawns and carps so as to demonstrate the technology to other fish farmers.
- One book on Freshwater Prawn Farming and four extension pamphlets on different aspects of fresh water prawn farming were published and distributed to the trainees. The culture practice of fresh water prawn along with carps was popularised among the fish farmers of Theni, Madurai, Dindiigal, Tirunelveli and Kanyakumari districts

Environmental factors influencing the spatio – temporal variations of fin and shell fish eggs and larvae in Gulf of Mannar

- 13 species of fin fish eggs and larvae were reported to spawn during the period of study *viz. Caranx* sp., *Stolephcorus* spp(3 species), *Liza* sp., *Ophicthys* sp., *Sardinella* sp., *Chirocentrus* sp., *Escuolosa thoracata*, *Sardinella gibbosa*, *Cynoglossus* sp., *Hemiramphus* sp. and *Saurus* sp., *Stolephorous* sp. eggs were abundant in December 2010 in Mandapam coast.
- *Crab zoea* were abundant in Mandapam waters. More of bivalves were represented in November 2011 in Mandapam waters. *Rhizosolenia* sp. bloom occurred in 11th June 2011 in Mandapam waters. *Bivalve veligers* were abundant in April and June, 2011 in Thoothukudi coastal water
- *Macrosettela gracilis* is abundant in July 2011 in Thoothukudi coast. *Coscinodiscus excentericus* bloom formed in September 2011 and only *Crab zoea* were represented during this bloom in Thoothukudi coast. *Trichodesmium erythraeum* bloom was noticed in October 2011along Thoothukudi coast in Tharuvaikulam waters
- Ditylum brightwelli formed bloom on 30th November 2011 in Manapad coast. Hemiramphus sp. known to spawn in October 2011 in Manapad coastal waters. Microsettella rosea and Bivalve veligers swarm were noticed in October 2011 in Manapad coastal water. The range of numbers of phytoplankton population species observed in Mandapam, Thoothukudi and Manapad coastal waters were 37, 25 and 26.

Generating alternative livelihood options for the coastal community towards fisheries biodiversity conservation in Tamilnadu

- 15 training programmes on crab fattening, lobster fattening, seaweed culture, freshwater ornamental fish culture and spirulina culture were conducted in the selected maritime districts of Tamilnadu *viz.*, Kanyakumari, Thoothukudi, Ramanathapuram, Pudukottai, Thanajvur, Nagapattinam, Cuddalore and Tiruvallur. A total of 300 fishermen / fisher women/SHG members were trained.
- Seven beneficiaries started doing crab fattening; ten persons are doing lobster fattening; sixty beneficiaries are doing seaweed culture and one started doing spirulina culture. Beneficiaries were guided to avail personal loans for lobster fattening and steps were taken to send applications of twenty five seaweed culture training beneficiaries for subsidy to the National Fisheries Development Board, Hyderabad through the State Fisheries Department.

Effect of kisspeptin on change in level of reproductive hormones and gonadal maturation in an air breathing fish, Channa striatus"

 Steroid hormones were analyzed through ELISA kits and histology of the gonad samples were carried out using histological instruments purchased under this scheme. Artificially synthesized the Kisspeptin-10 for inducing maturity in murrel, Channa striatus.

Assessment of impact of Trawling in Gulf of Mannar Biosphere Trust Region

- Square mesh cod panel of 30mm at 30% of the cod end has to be fixed in the cod end of trawl nets of Thoothukudi. Recruitment overfishing was found to be from March to May. Therefore the closed season may be fixed during the months of November to January instead of to April 15 May 31st.
- The following policy decisions can be made in the GOMBART region to reduce the impact of trawling in this region. Square mesh cod panel of 30mm at 30% of the cod end has to be fixed in the cod end of trawl nets of Thoothukudi.
- Recruitment overfishing was found to be from March to May. Therefore the closed season may be fixed during the months of November to January instead of to April 15 May 31st.

Studies on the Bycatch reduction in Trawl fishing of Gulf of Mannar coast for Biodiversity conservation

- Square mesh cod panel of 30mm was found ideal to fit in the cod end of trawl nets of Thoothukudi
- 20mm square mesh panel was found to be Nonselective and fished indiscriminately all sizes.
- Out of the three types of square mesh panels *viz* 20mm,30mm and 40mm, square mesh panel with 30mm was found ideal to fit in the cod ends of mini trawls

Modulation of expressed innate immune genes following viral infection in sea bass (Lates calcarifer. Bloch, 1790) cell lines

- The results showed that the ISGs such as ISG-15, IRF-3, Mx and Viperin constitutively expressed by the SBCP-2 cell line, were differentially regulated by the stimulation with poly I:C and CpG.
- Mx gene expression was very high which is an indication of IFN stimulation so future studies may be progressed in stimulating the gene for Nodavirus prevention.
- The current study revealed that the innate immunity in Asian sea bass could be enhanced by application of PRR ligands such as poly I:C and CpG ODN, which has high application potential for improving the health status of the fish both by non-specific immunostimulation and also by increasing vaccination efficiency as adjuvants.

Effect of squid waste silage on the growth and feed efficiency of cobia Rachycentron canadum and sutchi catfish Pangasius hypophthalmus

- The mean weight gain, percentage weight gain, SGR and ADG of fish fed SW 33.33 diet were significantly higher than those fed other diets (P<0.05). However there was no significant differences in the mean weight gain, percentage weight gain, SGR and ADG between the fish fed on control, SW 66.67, SW100, SWS33.33, SWS 66.67 and SWS 100 diets.
- Feed conversion ratio and feed conversion efficiency of fish fed SW33.33 was significantly better than those fed other diets (P<0.05). The FCR and FCE of fishes fed SW66.67 and SW100 were significantly lower. Protein efficiency ratio (PER) of fish fed SW 33.33 was significantly better than those fed other diets (P<0.05).
- There was significant difference (P<0.05) in mean feed intake and it was highest in SW 33.33 diet. HSI was significantly higher in control diet than those fed other diets (P<0.05). The fishes fed all diets showed 100% survival. The whole body composition of sutchi catfish fed the squid waste and squid waste silage diets did not show any variations in moisture, protein, lipid and ash.

Relative immune gene expression profiling of Penaeus monodon following WSSV infection and herbal remedial application

- The study revealed that tubulin and penaeidin-3 gene expression was up-regulated in response to WSSV infection. However, this up-regulated pattern could not persist in control feed fed animals, which may be due to the lack of immunity in the course of time following WSSV infection.
- In case of herbal feed fed WSSV challenged group of animals, an up-regulated gene expression was observed which could be due to the boosting up of the shrimp immune status by the herbal contents incorporated in their diet.

Fish consumption behaviour of consumers

- The majority (69.36 per cent) of the consumers were male, 55.30 per cent of the consumers were old aged, 42 per cent of the consumers studied upto higher secondary education. The majority (78 per cent) of the consumers were hindus, 42 per cent of the consumers belonged to backward caste, 84 per cent of the consumers married, 72.70 per cent of the consumers adopted nuclear family system and 67.30 per cent had small family upto five members. Majority of the respondents (48.70 per cent) had annual income range from above ₹ 80,000 and 40 per cent of the respondents had annual expenditure ranging from ₹ 70,001 to ₹ 80,000.
- Majority (71. 30 per cent) of the respondents preferred fish as their first choice among the non-

vegetarian food item and consumed more fish because of reasons such as higher nutritive value, palatable taste and low cost. About (51 per cent) of the consumers preferred inland fish varieties over marine fish varieties, favoured by its availability in fresh form and taste. Majority (35.50 per cent) of the fish consumers prefer murrels owing to reasons such as less bony, nutritive value and taste.

Majority (57.90 per cent) of the respondents purchased fish from cycle vendor for easy accessibility. About 44 per cent of the consumers purchase fish fortnight only. The monthly fish consumption range was from 2 to 4 kg. Out of 12 variables, six characteristics namely Age, Caste, Annual income, Annual expenditure, Awareness of fish consumer, Attitude of fish consumer was found to have significant relationship with consumption level of fish consumers. Majority (60 - 90 per cent) of the respondents stated their suggestion for improvement of fish consumption like Establishment of fish market nearby places, opening more number of Tamil Nadu Fisheries Development Corporation fish stall and avoid adulteration like mixing with spoiled fish.

Thermal process evaluation of fish curry with restructured products prepared from minced meat of leather jacket (*Triacanthus brevirosterus*) in retort pouches.

• Low value *Tricanthus brevirosterus* fish was used for preparation of minced meat, surimi and restructured surimi gel products. Seven different restructured surimi gel products prepared using additives such as corn, egg white and casein and their functional properties determined. Restructured surimi curry products processed in retort pouch was a different fish protein product devoid of fishy odour. It had a shelf life of four months in retortable pouches.

Development of multiplex PCR assay for the detection of pathogenic strains of *Aeromonas* spp. from fish and fishery products

• Three multiplex PCR assays for the detection of pathogenic strains of *Aeromonas* spp. (*A. hydrophila* (ATCC 7966), *A. sobria* (MTCC 1608), *A. liquefaciens* (MTCC 2654), *A. caviae* (MTCC 7725)} using different toxin genes (four gene pattern was observed in the isolates such as alt; act/hlyA/aer; alt and act/hlyA/aer; ast, alt and act/hlyA/aer) have been developed and the sensitivity and validation of developed assays were studied.

Hydrobiological parameters of selected fishing grounds of Gulf of Mannar

 The present investigation was undertaken to study hydrobiological parameters of off shore water in relation to plankton availability and fish biomass of four fishing grounds of Gulf of Mannar such as Keezha vaipar (station I), Punnakayal (station II), Vembar (station III) and Thiruchendhur (station IV).

- In the study period, a total number of 46 species of phytoplankton were recorded from all the four stations and station I possessed a maximum of 38 species followed by 32 species were recorded in station II. As per the number of species of phytoplankton availability, diatom contributed a maximum of 55.35% followed by the dinoflagellates (34.30%) and blue green algae (4.35%).
- There were a total number of 37 species of finfish, 4 species of elasmobranch and cephalopods each, 3 species of crab and shrimp each and 1 species of lobster recorded in all the four stations during the study period. The minimum catch (490 kg) was reported in station IV. The maximum fish biomass of 1982 kg was recorded in station II during April, 2012. Among the different species caught Secutor insidiator, Sardinella gibbosa, Paraupeneus indicus, Leiognathus dussumieri and Upeneus tragula contributed a bulk catch in all the stations during the study period. There is a significant difference between fish biomass values of different stations (P < 0.05)</p>

Effect of thermal power plant effluent on the water and sediment quality characteristics of Thoothukudi coastal water

- Water and sediment samples were collected from the three different stations namely station I (about 900 mts away from the coolant water discharge point), station II (about 1250 mts away from the coolant water discharge point) and station III (about 1600 mts away from the coolant water discharge point).
- In the present investigation, minimum temperature (27.7°C) was observed at station III and maximum temperature (33.7°C) was noticed at station I due to discharge of coolant water directly to the station I.
- The dissolved oxygen level increased from the station I to station III with increasing distance from the discharge point, whereas temperature showed decreasing trend.
- In this present study, the heavy metals accumulated in the order of Al > Fe > Cu > Zn in the water samples in all the three stations. In the present study, the sedimentary organic matter was recorded in the range between 29.0 to 87.0 mg/g and it showed a higher value at station I, and lower value at station III.
- The present study clearly explained that, the effluent discharge in adjoining coastal waters affects the

Assessment of diversity and seasonal variations of plankton in coastal waters receiving shrimp farm and salt pan effluents

- A total of 53 species of zooplankton was recorded in all the Stations. The numbers of species recorded ranged between 12 and 23, 11 and 22 and 16 and 23 in Stations 1, 2 and 3 respectively. With regard to zooplankton composition, Station 3 recorded higher numbers of species (42) followed by Station 1 & 2. The copepods contributed 61.42%, 65.54% and 82.41% to total zooplankton population in Station 1, 2and 3 respectively. In all three Stations, the phytoplankton and zooplankton species richness index was found to vary between 0.24 (May, 2012) and 2.05 (December, 2011) and 0.99 (November, 2011) and 3.84 (April, 2012) respectively. The phytoplankton and zooplankton species diversity was ranged from 0.45 (December, 2011) to 1.95 (May, 2012) and 1.64(November, 2011) to 3.25 (April, 2012), respectively.
- The present investigation showed that the physicochemical properties and plankton diversity of coastal waters receiving by shrimp farm (Station 1) and salt pan effluent (Station 2) were significantly influenced by seasonal variations, pollution load and other environmental factors in the study area.

Lethrinid fishery and its management in Thoothukudi coast

- Among the twelve lethrinid species, *L. lentjan* and *L.nebulosus* were predominantly available throughout the year by trawl nets, gill nets, hook and lines along the Thoothukudi coast.
- *L. lentjan* and *L. nebulosus* showed year round occurrence at Thoothukudi coast. The annual catch of *L. lentjan* and *L. nebulosus* were 7799.208 tonnes and 7566.28 tonnes respectively. The estimated life span of *L.lentjan* and *L.nebulosus* was 13 years and 11 years respectively. The estimated total instantaneous mortality (Z) of *L.lentjan* and *L. nebulosus* were 1.28 and 1.15 respectively. The growth co-efficients of *L. lentjan* and *L. nebulosus* infer that both of them are slow growing species.
- The study indicated that the species *L. lenjan* and *L. nebulosus* were underexploited in Thoothukudi

region and the present level of fishing effort could be increased by 36.98 %.and 61.29% respectively to optimally exploit the stock.

Effect of reproductive hormones on gonadal maturation of striped murrel, *Channa striatus* (Bloch)

- Injection of Kisspeptin at the rate of 0.1µg/g body weight in *Channa striatus* accelerated the level of testosterone significantly (P<0.01) compared to control.
- Among the different hormone injected fish, high rate of fecundity 10028 eggs were obtained for Kisspeptin injected fish. Kisspeptininjection could induce maturation in *Channa striatus* and can be used as an alternative for induced maturation of fishes.

Diversity and bioactive properties of Conus species of Thoothukudi coast

- A total of 16 Conus species were recorded from three different stations of Gulf of Mannar belonging to the single genus Conus. Therespuram representing the highest number of species followed by Keelakarai and Vembar. Among the 16 species recorded, *Conus leopardus* was predominant followed by *C. eburneus* species and the majority of the species were recorded from July followed by September.
- The effect of *C. betulinus* venom on isolated heart preparation was studied at three concentrations of 10 µg, 20 µg and 40 µg and the result indicated that increase in the amplitude of contraction at 20µg venom injection.
- The study revealed rich Conus species diversity in Gulf of Mannar region and the vermivorouscone, *Conus betulinus* had neuromodulatory property.

Evolving trapping technique for marine Ornamental fishes with collapsible traps

- Mainly 4 different designs of traditional traps were available of which type 2 trap with single entrance was used mainly.
- Improved Norwegian Collapsible Trap (INCT) was found to be more economic and handy to use.
- Development of INCT has paved way to take more than 80 traps per Vallam for fishing instead of just 20 traditional traps due to its collapsible nature.
- Catch rate was found increased by 1.5 when INCT was used in the place of traditional traps of Keelakarai

Effect of household processing on health benefits of selected freshwater fish

- Level of protein was highest in fried fish followed by steamed fish, boiled fish and fish curry. PUFA content was rich in fish curry when compared to other cooking methods. Vitamin A, Niacin and B12 detected in all the raw fishes in very meagre quantity and the vitamins were reduced in their concentration in all the steamed and boiled samples.
- The nutritional benefits of different types of household processed fish decreased in following order: steaming > boiling > fish curry > frying. Steaming was found to be the most suitable household processing method for retention of beneficial nutritional qualities.

Effect of steroid hormone 17 α - methyl testosterone on the growth and survival of South African ornamental cichlids

- The Effect of steroid hormone 17 α-methyltestosterone on the growth and survival of South African ornamental cichlids-Aulonocara Peacock hybrid, Aulonocara GoldPeacock hybrid, Nimbochromis venustus, Sciaenochromis fryei and Aulonocara albino were studied.
- Hormone treatment was given for 5 days old hatchlings by dietary treatment for two times /day @ 30µg/g, 40µg/g, and 50µg/g of pellet feed for 30 days. Highest survival of 94.8% and growth of 38.9 mm was observed in the hormone treated group @ 30µg/g in the Golden peacock.

ASSESSMENT / TRANSFER, PATENT AND COMMERCIALIZATION OF TECHNOLOGIES





3. ASSESSMENT / TRANSFER, PATENT AND COMMERCIALIZATION OF TECHNOLOGIES

TECHNOLOGIES DEVELOPED

Animal Health

- A diagnostic kit entitled ABT CHOICE was developed by the Department of Animal Biotechnology, Madras Veterinary College, Chennai for identification of appropriate antibiotic treatment of mastitis. The novelty of this kit is the use of magnetic particles that entraps bacteria from the sample and thus removes it from the complex matrix of the mastitis milk sample. The kit also reduces the time required to select the antibiotics required for the treatment of mastitis.
- Dip Disc ELISA for diagnosis of Hydatidosis was developed by the Department of Veterinary Parasitology, Madras Veterinary College, Chennai. This technology is used for diagnosis of hydatidosis in human beings and animals.
- Autogenous Mannheimia haemolytica vaccine for Japanese Quail was developed by Vaccine Research Centre (Bacterial Vaccine), Madhavaram Milk Colony, Chennai to control Mannheimiosis in Japanese Quail
- Johne's disease vaccine for sheep and goat was developed by Vaccine Research Centre (Bacterial Vaccine), Madhavaram Milk Colony, Chennai to control Johne's disease in sheep and goat.

Animal Production

- Mobile poultry processing unit-cum-retail meat stall was designed by the Department of Meat Science and Technology, Madras Veterinary College, Chennai to address the hygiene status of slaughter and dressing of poultry and to serve as an ideal street meat food vending stall in cities where commercial space is highly prohibitive in cost and availability.
- Mango whey drink was developed by the Department of Dairy Science, Veterinary College and Research Institute, Namakkal.

Fisheries

- Multiplex PCR kit for Vibrio cholerae was developed by FC&RI, Thoothukudi for testing seafood for V. cholerae
- Multiplex PCR kit for Salmonella and Vibrio cholerae was developed by FC&RI, Thoothukudi for testing seafood for Salmonella and Vibrio cholerae

TECHNOLOGIES RELEASED

The following 21 technologies developed at TANUVAS were released by Thiru T.K.M.Chinnaiah, the Hon'ble Minister for Animal Husbandry and received by Prof. R. Palanichami, I.A.S., the Director, Department of Animal Husbandry and Veterinary Services, Govt. of Tamil Nadu during the "Kalnadai matrum Meen Vala Vaara Vizha - 2013" celebrated by TANUVAS at Post Graduate Research Institute in Animal Sciences, Kattupakkam on 19.01.2013



To improve animal production, the following new strains / varieties have been developed

- Nandanam Chicken-4 : High yielding strain under backyard poultry
- Nandanam Broiler Breeder quail : Higher body weight and production of more number of chicks
- Namakkal Gold Quail : Egg type quail
- Low fat cross bred pig: a new strain for productivity enhancement: low back fat
- Dorset x Nilagiri Synthetic sheep : better meat quality

To improve milk production, the following technologies have been developed

- TANUVAS GRAND supplement : improved milk production under rice-gruel feeding system
- TANUVAS SMART Mineral Mixture : region based to cut cost
- Fodder seed Bank models for rain-fed condition : profitable as farming business
- Enriching and ensiling sugarcane tops : waste utilization



- TANUAS Infectious bronchitis vaccine for poultry : to protect against field strains
- Biofilm vaccine for Pasturellosis in sheep and goats : better potency
- Antibacterial, antineoplastic pigment
- Follicular wave synchronization for augmenting fertility in dairy cattle
- Hind quarter elevator in a movable trolley for bovines
- Emu sexing kit
- Assay for the detection of chloramphenicol residue in shrimp

For value addition of milk, meat and fish, the following technologies have been developed

- Carotene enriched milk beverage
- TANUVAS Pet treat
- Fish macroni
- Value added fish fingers
- Hot filled, chilled fish curry

COMMERCIALIZATION

- Emu sexing kit and Emu sexing card A novel method for sexing emu even at day-old was developed using proprietary primers and a PCR amplification method by the Department of Animal Biotechnology, MVC, Chennai. The technology had been transferred to VR3 Emu Farms, Puducherry on payment of lumpsum amount of ₹ 6.00 lakhs.
- ◆ Bluetongue Inactivated Vaccine with seed virus developed under ICAR project had been commercialized to M/s. Sanvita Biotechnologicals Private Limited, Hyderabad under non-exclusive basis on lumpsum payment of ₹ 10 lakhs
- Live thermostable D58 viral vaccine for Newcastle disease developed at the Department of Veterinary Microbiology, MVC, Chennai was transferred to M/s. Globion India Ltd. and it has been marketed as "ND unique-Ranikhet disease vaccine, Live, Lentogenic, TANUVAS D58 strain Freeze dried, I.P."

PATENTS FILED

Sl. No.	Name of the product	Scientists and the Department	Patent Application No.
1.	Functionalized magnetic nanoparticles to adsorb bacteria from complex matrices such as milk with one application to select appropriate antibiotics for mastitis treatment	Dr. Kaliyaperumal Viswanathan; Dr. Gopal Dhinakar Raj; Dr. Kathaperumal Kumanan and Dr. Rajamanickam Prabakaran Department of Animal Biotechnology, MVC, Chennai	3883/CHE/2012 dated 18.9.2012
2.	A Novel method to increase Viral titres of Poultry vaccines	Dr. Manoharan Vinoth Kumar; Dr. Gopal Dhinakar Raj; Dr. Krishnaswamy Gopalan Tirumurugaan; Dr. Tuticorin Maragatham Alagesan Senthil Kumar and Dr. Navamani Daniel Joy Chandran Department of Animal Biotechnology, MVC, Chennai	3763/CHE/2012 dated 18.9.2012
EDUCATION



4. EDUCATION

EDUCATIONAL PROGRAMMES

Admission

Tamil Nadu Veterinary and Animal Sciences University had started two new Veterinary College and Research Institutes at Tirunelveli and Orathanadu, Thanjavur districts and one College of Poultry Production and Management at Hosur during the year 2012 and students were admitted during the academic year 2012-13.

The details of admission strength, number of students admitted, overall strength and number of students successfully completed during 2012-13 in TANUVAS are summarized below.

Courses	Admission strength	Admitted during 2012-13	Overall strength during 2012-13	Successfully completed during 2012-13
B.V.Sc. & A.H.	270 *	270	1173	165
B.F.Sc.	44**	44	135	39
B. Tech. in Food Processing Technology	20	20	75	17
B. Tech. in Poultry Production Technology	20	20	37	-
M.V.Sc.	121	91	182	76
M.F.Sc.	33	25	39	14
M. Tech.	5	5	8	-
Ph.D. (Veterinary)	98	29	132	22
Ph.D. (Fisheries)	15	7	8	-
M.Phil. in Biotechnology	8	2	2	9
M.Sc. Bioinformatics	6	1	2	-
PG Diploma in Bioinformatics	6	-	1	-
PG Diploma in Companion Animal Practice	4	2	2	3
PG Diploma in Veterinary Laboratory Diagnostic Technique	6	-	-	1
PG Diploma in Wild Animal Disease Management	6	-	-	-
PG Diploma in Fish Quality Management	6	-	-	-
PG Diploma in Business Management in Animal and Fisheries Science	8	-	2	1
PG Diploma in Diversified Poultry Production	30	-	-	-
Total	706	516	1796	347

* including 5 seats for NRI, 5 seats for Foreign Nationals

** including 1 seat for NRI, 3 seats for Foreign Nationals

ACADEMIC RESEARCH

During the year under report, 162 research scholars registered for M.V.Sc. / M.F.Sc. and Ph.D. programmes. The theses submitted by 126 scholars were accepted by the University for the award of M.V.Sc., M.F.Sc., Ph.D., M.Phil. degrees and PG Diplomas.

Scholarships

During 2012-13, a total of 1,082 students were awarded scholarships to the tune of ₹ 1,54,05,397/-. The collegewise details were furnished below :

Sl. No.	Name of the College	No. of students benefited	Amount (₹)
1.	MVC, Chennai	520	1,06,46,727
2.	VC&RI, Namakkal	355	36,16,382
3.	VC&RI, Tirunelveli	37	90,005
4.	VC&RI, Orathanadu	31	2,02,518
5.	CFDT, Koduvalli	53	3,22,909
6.	FC&RI, Thoothukudi	86	5,26,856
TOTAL		1,082	1,54,05,397

Convocation

The Fifteenth Convocation of the University was held on 3rd August 2012 at Madras University. The Chancellor of the University and His Excellency, The Governor of Tamil Nadu, Dr. K. Rosaiah, conferred the degrees and diplomas and also distributed various prizes and 109 medals to 42 meritorious students, research scholars and N.C.C. cadets.

Award winners for the year 2011					
S. No.	Name of the student	No. of medals	Name of the course	Name of the subject	
1	Ramesh R	1	Ph.D	Veterinary Surgery & Radiology	
2	Sujatha T	2	Ph.D	Poultry Science	
3	Radha Krishna Chaitanya	2	Ph.D	Veterinary Microbiology	
4	Vijayalakshmi P	3	Ph.D	Veterinary Clinical Medicine, Ethics and Jurisprudence	
5	Vinodh Kumar O.R	1	Ph.D	Veterinary Epidemiology and Preventive Medicine	
6	Kapgate Sunil Sanjay	1	Ph.D	Animal Biotechnology	
7	Navinnya George	1	M.V.Sc	Animal Genetics and Breeding	
8	Deepa S	1	M.V.Sc	Poultry Science	
9	Raja. S	1	M.V.Sc	Animal Reproduction, Gynaecology and Obstetrics	
10	Vishvanathan. K	1	M.V.Sc	Dairy Science	
11	Jayashree Chiring Phukon	1	M.V.Sc	Livestock Production and Management	
12	Jayachandra Kempashi	1	M.V.Sc	Veterinary Anatomy and Histology	
13	Umesh C.G.	1	M.V.Sc	Veterinary Clinical Medicine, Ethics and Jurisprudence	
14	Mohd.Saleem Dar	1	M.V.Sc	Veterinary Epidemiology and Preventive Medicine	
15	Ramesh kumar	1	M.V.Sc	Veterinary Microbiology	





ENDOWMENTS

Sl. No.	Name of the Endowment	Instituted by	Purpose	Amount (₹)
1.	TANUVAS Endowment for Excellence in Food Engineering	The Dean, College of Food and Dairy Technology, Koduvalli, Chennai-600 052	Best B.Tech (Food Technology) student	1,00,000/-
2.	Dr. V. Gnanaprakasam former Vice-Chancellor TANUVAS Endowment	Dr. S. Prathaban, Dean, Veterinary College and Research Institute, Tirunlveli	Best outgoing BVSc. & AH students of VC&RI, Tirunelvelli	1,00,000/-
3.	Dr. G. Rangasamy Endowment	The Dean, Fisheries College and Research Institute, Thoothukudi	Capacity building of fisheries students through internship	11,70,008/-
4.	Dr. B.P. Madrewar Gold Medal	Dr. B.P. Madrewar Nanded, Maharashtra	Outgoing M.V.Sc & Ph.D. students for Research work	1,00,000/-
5.	Namakkal N.P.Chellappan Chinnammal Memorial Gold Medal	Thiru R.C. Kathiravan, S/o. R. Chezhian 145 B. Salem Road, Namakkal	Highest OGPA secured BVSc & AH student in the subject of Animal Nutrition of VC&RI, Namakkal	1,00,000/-

STUDENT AMENITIES AND ACTIVITIES

Hostel

During the reporting period, a total of 1440 students (Undergraduates and Postgraduates) have been provided with residential accommodations in the constituent colleges of TANUVAS and the details are furnished hereunder:

	Stude	Percentage of girl		
Campuses	Boys	Girls	Total	students
MVC, Chennai	520	225	745	30.20
VC&RI, Namakkal	234	182	416	43.75
VC&RI, Tirunelveli	26	13	39	33.33
VC&RI, Orathanadu	20	20	40	50.00
CFDT, Koduvalli	23	30	53	56.60
FC & RI, Thoothukkudi	84	63	147	42.86
Total	907	533	1440	37.01

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

University Students Counseling and Placement Cell

University Students Counselling and Placement Cell (USCPC) functioning at MVC, Chennai facilitates to place the graduates in various organisations and the details are given below :

Sl. No.	Date	Name of the company	Selected candidates
1.	26.11.2012	Allianz, Global Leader in Pet Insurance	10
2.	26.11.2012	ABT Industries – Dairy Division	6
3.	04.07.2012	SRF in Projects functioning at TANUVAS	1
4.	10.07.2012	RA/JRFs in Projects functioning at TANUVAS	2
5.	27.02.2013	Project Assistant in Projects functioning at TANUVAS	1
		20	

During 2012-13, the cell had communicated to 5 companies for the placement of the fisheries graduates. The cell made arrangements for campus interview for M/s.C.P.Aquaculture Pvt Ltd, Chennai for the benefit of out going UG and PG students. The cell helped two P.G students and two U.G students in getting placement at Fish Processing companies in and around Thoothukudi. One UG student and six PG students got appointment as Inspector of Fisheries at the State Department of Fisheries, Tamilnadu. Two M.F.Sc. students got Scientist positions at ICAR.

Library

Library facilities are available in all the constituent college of TANUVAS. Facilities like microfilming, reprography, E-mail, Information Retrieval through CD-ROM and databases are available. These libraries were 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 a Company Commander Lt. (Dr) B. Sureshsubramonian and ANO Lt. (Dr) O.R. Sathyamoorthy are functioning with the allotted vacancy of 150 SD boy cadets and 50 SD girl cadets. The activities carried out by the NCC cadets during 2012-13 are furnished below:

- SUO P. Michael had won the RVC Maj. Gen. R.K.R. Balasubramanian award and Rolling cup for the year 2013 for best overall performance in NCC, academic and extra-curricular activities.
- Guard of Honour was given to His Excellency Dr. K. Rossaiah, the Governor of Tamil Nadu and Chancellor of this University during the 15th Convocation on 15.08.2012 at Madras Veterinary College.

- UO K. Balamurugan, B.Arun and M.Silamparasan, participated in the prestigious Republic Day Camp-2012 at New Delhi from 28.12.2012 to 02.02.2013. Cadets took active participation in Prime Ministers Rally. UO K. Balamurugan won Gold Medal and cash prize in Tent Pegging. The participants were honoured by the Government of India and Government of Tamil Nadu with cash prizes and gift articles.
- 20 SD boy cadets attended the Combined Annual Training Camp conducted by 1(TN) R&V SQN NCC at RVC Centre and College, Meerut Cantt from 11.02.2013 to 25.02.2013.
- Cadets took active participation in blood donation, tree plantation, anti-tobacco, anti-plastic campaigns and AIDS awareness rallies.
- During 2012-13, 29 SD cadets passed "C" certificate and 66 SD cadets passed "B" certificate examination.

Veterinary College and Research Institute, Namakkal

The 6/12 TN Battallion NCC (ARMY) units of VC & RI, Namakkal has a total of 50 cadets and they are undergoing regular military training and special corps training. The activities undertaken by the NCC cadets during 2012-13 are detailed below :

- Associate NCC officer of this institution attended the All India Advanced Leadership Camp - 2011 (ALC), held at Bhuj, Gujarat Directorate from 26.08.2012 to 24.06.2012
- Eighteen NCC cadets attended the Combined Annual Training Camp (CATC) held at St. Paul's Higher Secondary School, Salem, from 26.09.12 to 05.10.2012
- Thirteen cadets received NCC 'C' certificates and 32 cadets received NCC - 'B' certificates during the current academic year 2012-13. Twenty three and ten students appeared for the 'C' and 'B' certificate examinations respectively during March 2013.

National Service Scheme

In TANUVAS, National Service Scheme (NSS) Units are functioning in four colleges namely, Madras Veterinary College, Chennai; Veterinary College and Research Institute, Namakkal; College of Food and Dairy Technology, Koduvalli and Fisheries College and Research institute, Thoothukudi. In total, 750 volunteers are servicing in TANUVAS NSS units.

During the year 2012-2013, 8 NSS special camping programmes have been conducted in the 8 NSS adopted villages. NSS volunteers conducted Veterinary Health Camps, arranged free eye, dental camps, blood donation camp and competitions for school students, in the adopted villages during the special camping programme. NSS unit of Madras Veterinary College conducted a one-day workshop on Natural Disaster Awareness Management in association with Sri Sathya Foundation on 07.10.2012 in which 62 NSS volunteers and 5 staff members participated. As a follow up to the workshop, 4 NSS volunteers of MVC attended the National Disaster Management Programme conducted at Mettur dam from 23.12.2012 to 25.12.2012 by the squads of National Disaster Management Academy, Arakkonam and the volunteers were trained in rescue measures to be carried out during disaster. Thirty volunteers and two programme officers participated in the National Youth Leadership Convention-INSPIRO- providing leadership for social cause at Madras School of Social Work on 28.02.2013.



NSS students in the National Disaster management Programme

The NSS unit of VC&RI, Namakkal conducted two special camps at Periyamanali and Thodipatti villages of Namakkal District from 19.02.2013. to 25.02.2013. One dental camp benefitting 56 persons and one eye health camp benefitting school children were organised. Seven Animal health camps were conducted in association with NSS units of other colleges around Namakkal and 2156 animals were benefited. Volunteers donated 79 units of blood to various government hospitals for the benefit of poor people. "Introductory Yoga course" to the volunteers was conducted on 24.09.2012. Volunteers were taught about "Kayakalpa Yoga", "Simplified Physical Exercise" and Meditation. A total of 148 volunteers participated and benefited.





The NSS volunteers of FC&RI, Thoothukudi organized a special Mass Tree Planting Programme on 24.02.2013, on the occasion of 65th birthday of our honourable Chief Minister Ms.J.Jeyalalitha. The NSS volunteers planted 65 tree saplings, developed under "Project Green Hand" a joint initiative of Isha Foundation, Coimbatore and NSS unit of FC&RI, Thoothukudi, inside the college campus.

Student Association Activities

Various Student association activities were held during the year 2012-2013. To mention a few:

- A mass contact programme was organized on 13.07.2012 at Sankagiri along with India Cements, Sankagiri.
- A Lecture was arranged on self improvement 21st class cum workshop for students on 11.08.2012 along with Brahma Kumaris Ishwariya Vishwa Vidyalya, Namakkal. A Yoga class was arranged along with world community centre, Aliyar on 06.10.2012.
 V Zydus All India drawing and painting competition was held on 08.10.2012
- Deepika of IV B.V.Sc. & A.H. participated in IX Agricultural Science congress elocution competition Zone I held on 28th September, 2012 at University of Agricultural Science, Bangalore.
- Vigilance awareness week was observed from 29.10.2012 to 03.11.2012
- Alembic X ceft and M ceft merit award for B.V.Sc. & A.H. outgoing students of 2011-12 was arranged on 06.03.2013. Mr.N.Karuppannasamy and Mr. M.Manobhawan won first and second prize respectively.
- Four B.F.Sc students participated in the Elocution competition conducted by V.O.Chidambaranar Port Trust held on 30.10.2012. Mr. K.Arun Prasath (III year), Mr.A.Kandharajan (III year), Mr. S.Santhose and Ms. S.Sangavi of I year., received consolation prizes.
- The following competitions were held on 29.11.2012 at FC&RI conducted by Paventhar Bharathidasan Trust. The following were the winners

Elocution competition – G. Kandharajan Poetry writing competition – S. Mariappa Composition writing competition – E. Kayal*vizh*i

 FC&RI Students organized inter-college quiz competition (FIZZOREE 2013) on 21st February 2013 and Inter college cultural competition (FISFEST 2013) on 22nd February 2013.

Sports Activities

- An Inter Collegiate Invitation Hockey tournament for city professional colleges was organized in memory of late Prof.Dr.Porchezhian between October 30th and 31st, 2012 at Madras Veterinary College. The matches were played on league basis with College of Engineering, Guindy emerging as the Winners and Madras Veterinary College at Runners up team.
- Madras Veterinary College Cricket team had been participating in the annual Dr.Siva Memorial T20 cricket tournament conducted by the Stanley Medical College since 2011. The college team won the Dr.Siva Memorial trophy for the third year in succession in 2013 also.
- Annual Sports Day of Madras Veterinary College was conducted on 20.02.2013. The following were the winners :
 - Individual Men Athletic championship was shared by J.Prabakaran and R. Anand
 - Individual Women Athletic Championship was shared by K.Kaviyarasi and K.Sreeevarsha
 - The Best Sportsman of the Year was J. Prabakaran while the Best Sportswoman of the year was K.Kaviyarasi

- The overall Interclass Sports Championship was won by the Fourth Years.
- Annual Sports day of Veterinary College and Research Institute was conducted on 15.02.2013.
- Sports week was celebrated from 13.03.2013 to 17.03.2013 at College of Food and Dairy Technology, Koduvalli. All the indoor and outdoor games, group events and athletic events were conducted for both boys and girls.
- Fisheries College and Research Institute, Thoothukudi players namely Mr. C. Celis Kumar, and Mr. R. Ramesh represented Tamilnadu Veterinary and Animal Sciences University Football team for the year 2012-13 and participated in the South Zone Inter-University Football tournament organized by Association of Indian Universities, New Delhi at Annamalai University, Chidambaram during October – Nov., 2012
- Likewise, Mr. P. Sivasankar and Mr. C.Celis Kumar represented TANUVAS Kabaddi Team in the South Zone Inter-University Kabaddi Tournament organized by Association of Indian Universities at University of Madras, Chennai during November 2012
- FC&RI College Annual Sports Meet was conducted on 12.02.2013. The II B.F.Sc. students (men and women) won the overall sports and games championship trophy for the year 2012-13. Mr.P.Pasupathi and Miss.A.Angela Mercy won the Individual Athletic Championship for men and women respectively for the year 2012-13.



HONOURS / AWARDS







5. HONOURS / AWARDS

Sl.No.	Name of the institution / staff / student	Name of the award / honour	Awarding body	Purpose of award	Nature of award
1	Ankita Gogoi, S.M.K. Karthickeyan, K.G. Tirumurugaan, and A. Gopinathan	Best poster presentation award - Second prize	Indian Society of Animal Genetics and Breeding	Draught power and related biochemical Parameters in Bargur and Kangayam breeds of cattle	Certificate
2	Alagudurai S.	Certificate of Appreciation	TANUVAS	Technology on Vermicomposting using poultry droppings	Certificate
3	Balakrishnan V.	Best Research Scientist – 2012 Best Innovation Research Scientist	TANUVAS	Contribution in Research Contribution in Innovative research	Certificates
4	Appa Rao V M.G. Jayathangaraj, S. Balasubramanian, K. Kulasekar and A. Kumaravel	Certificate of appreciation	TANUVAS	Contribution in the development of e- learning course for B.V.Sc & AH	Certificate
5	Balasubramaniam G.A.	Best Poultry Pathologist Award	Indian Association of Veterinary Pathologists	Contribution in the field of Poultry pathology	Certificate
6	Bhaisare Darshana B.	Best Poster presentation Award	TANUVAS	Phytochemical analysis of four herbal seed extracts and their use in poultry ration	Certificate
7	Cecilia Joseph and T. Sathiamoorthy	Best Oral presentation – Second Prize	TANUVAS	Small animal Gynaecology	Certificate
8	Chandrasekaran M.	Best oral presentation award	Indian Society for Veterinary Medicine	Demographic study of the canine diseases treated at small animal out-patient Medical unit of the Madras Veterinary College Teaching Hospital	Certificate
9	Devivaraprasad Reddy (Student)	Best MFSc thesis award	Professional Fisheries Graduates Forum, Mumbai	M.F.Sc Research work in the field of fish processing technology	Certificate
		Young Scientist Award	Asian Fisheries Society of Indian Branch		
		Jaitilal Endowment Award	Central Institute of Fisheries Education, Mumbai		

Name of the

institution / staff /

student

Gautham Kolluri, N.

Sl.No.

10

11

22

Mohan B.

Felix N.

12 Gowri B.,

,	Award	Science Association	of age and rearing systems expression of duck toll-like receptor 7 (dtlr7) in native ducks
aran, Selvaraj, ind	Best Paper Presentation - Third Prize	TANUVAS –INTAS clinical case competition 2012	Equine practice
.V.V., and	Gold Medal	Indian Society for Veterinary Surgery	Small Animal Orthopedi

Awarding

body

Indian Poultry

TANUVAS

Name of the

award / honour

Best Teacher Award

Young Scientist

Certificate of

appreciation

-2012

12	Gowri B., D. Chandrasekaran, R. V. Suresh, P.Selvaraj, P.Pothiappan and A. P. Nambi	Best Paper Presentation - Third Prize	TANUVAS –INTAS clinical case competition 2012	Equine practice	Certificate
13	Harikrishna, N.V.V., S. Ayyappan, A. Arunprasad, R. Jayaprakash and B. Justin William	Gold Medal	Indian Society for Veterinary Surgery	Small Animal Orthopedic	Medal
14	Ilavarsan S. (M.V.Sc.Student)	Dr. B.V.Rao award	Dr. B.V.Rao Research Foundation, Pune	M.V.Sc. thesis on "Fly control in layer farm"	Cash award
15	Jawahar P.	Best Teacher award 2012 Young scientist fellowship	Lions Club, Gandhi Nagar, Chennai Indian Council of Agricultural Research	Contributions in teaching To undergo training in advanced Fisheries research at foreign institute	Citation Travel and Training grant
16	Jeyachandra Kempashi (MVSc Student)	Kalaignar karunanidhi medal	TANUVAS	MVSc thesis in Veterinary Anatomy	Medal
17	Jeyathilakan N.	Certificate of appreciation	TANUVAS	Modified technology on "Dip Disc ELISA for diagnosis of Hydatidosis"	Certificate
18	Kanagaraju P., V.V.Kulkarni, V. Chandirasekaran, M. Arthanari Eswaran and S. Rathnapraba	Best poster presentation award 2012	Indian Poultry Science Association	Preparation of meat pickle from spent hen meat and its quality evaluation	Certificate
19	Karthickeyan S.M.K. and P. Hepsibha	Best poster presentation award - Second prize	Indian Society of Animal Genetics Breeding	Evaluation of within- breed genetic diversity in Krishna Valley cattle: an endangered breed of south India	Certificate
20	Kumaravel A.	Best Paper Presentation Award	District Collect orate, Namakkal	Tamil as official language	Certificate
21	Kumaravel P.	Best Extension worker Award 2012	TANUVAS	Contributions in the field extension activities	Certificate

TANUVAS



Nature of

award

Certificate

Certificate

Purpose of

award

Unraveling the influence

Technology on

sheep and goat

Chaff cutter cum

Feed disintegrator; Multiminerals block making machine and Multiminerals block for

Contributions in teaching Certificate



Sl.No.	Name of the institution / staff / student	Name of the award / honour	Awarding body	Purpose of award	Nature of award
23	Mekala P.	Best Oral Presentation -First Prize	Chennai Valakarinar Pandian Ariviyal Tamil Arakattalai	Veterinary Division	Certificate and Cash award
24	Omprakash A.V., R. Rajendran, D.Thyagarajan, M. Babu, D. Balasubramaniyam, V. Jeichitra and K. Sangilimadan	Certificate of Appreciation	TANUVAS	Development of strain on Nandanam Chicken -4	Certificate
25	Pothiappan P., Capt. G. D. Rao, R. Suresh kumar, M. Shiju simon and H. Vijayakumar	Best Paper Presentation - First Prize	TANUVAS –INTAS clinical case competition 2012	Equine practice	Certificate
26	Prabu M., K.N. Selvakumar, G. Senthil Kumar, N. Meghanathan and A. Serma Saravana Pandian	Best research paper	Alumini Association Southern Regional Station, National Dairy Research Institute, Adugodi, Bengaluru	An economic analysis of milk production in Coimbatore district of Tamil Nadu	Certificate
27	Purushothaman M.R.	Ayurvet award	Indian Poultry Science Association	Best Research publication in Indian Journal of Poultry Sciences	Certificate
28	Puvarajan B.	Dr. B.V. Rao Research Grant Award	B.V.Rao Research Foundation, Pune	Isolation, identification, molecular characterisation of infectious laryngotracheitis virus in chicken	Cash award
29	Rajasundaram R.C., S. Rangasamy and R. Suresh kumar	Best Paper Presentation - First Prize	TANUVAS –INTAS clinical case competition2012	Food animal reproduction	Certificate
30	Rajathi S.	Dr. C. V. Vijayaraghavan Memorial medal	Indian Association of Veterinary Anatomy	Micrometry of the preen gland in the duck	Medal and certificate
31	Ramprabhu R.	DC Blood Gold medal	Indian Society for Veterinary Medicine	Contribution in clinical activities	Gold medal
32	Rangasamy S.	Best Oral presentation – First Prize	TANUVAS	Management of mummified fetus in cattle	Certificate
33	Richard Churchil R., A.V. Omprakash, P. Kanagaraju, C. Pandian, K. Sangili Madan and M. Babu	Best poster presentation award 2012	Indian Poultry Science Association	Innovation of introducing shift mating in Japanese quail breeding	Certificate

47

Sharmila Bharathi C.

Certificate of

Appreciation



TANUVAS

Technology on Pruning

in Guava and Sapota by using electrically operated Guava Pruner Certificate

Sl.No.	Name of the institution / staff / student	Name of the award / honour	Awarding body	Purpose of award	Nature of award
48	Shiju Simon	Best Clinical Case presentation awards	TANUVAS	Diaphragmatic hernia in a pug and its surgical management Testicular seminoma in a dog Feline lymphoma and its management Total uterine prolapse in a cow and its management Equine colic and its emergency medical management	Certificates
49	Sivashankar R., L. Nagarajan, R. Jayaprakash, Md. Shafiuzama, B. Justin William and Ravi Sundar George	Gold Medal	Indian Society for Veterinary Surgery	Soft Tissue	Medal
50	Sivaselvam S.N.	Tamilnadu Scientist Award – 2011	TNSCST	Best scientist in Veterinary Science	Cash and citation
		Honour of the Science Club	TANUVAS	Best contribution in Veterinary Science	Certificate
51	Sowbharneya C., M. Selvaraju, S. Manokaran, K. Ravikumar, M. Palanisamy, R. Ezakial Napolean and V. Prabaharan	Best Clinical Case Presentation Award	TANUVAS	Farm and Companion Animal Practice	Certificate
52	Subramanian A., J.Kalatharan, K. Thilak Pon Jawahar, R. Rajendran and S.N. Sivaselvam	Best poster presentation – First prize	Indian Society of Animal Genetics Breeding	Semen production performance of Kangayam cattle	Certificate
53	Suja C.S.	Young Scientist Award	Indian Poultry Science Association	Value addition of chicken egg with iodine	Certificate
54	Sumathi D.	Best oral presentation award	Indian Society for Veterinary Medicine	Ultrasonographic Studies of splenic disorders in Canines	Certificate
55	Suresh kumar R., M. Shiju simon, P.Pothiappan and Capt. G. D. Rao	Best Clinical Case Presentation Award - Third Prize	TANUVAS –INTAS clinical case competition 2012	Food animal reproduction	Certificate
56	Thilakar P.	Jawaharlal Nehru Award	Indian Council of Agricultural Research	P.G Doctoral Thesis Research in Agricultural and allied Sciences	Citation and certificate

Sl.No.	Name of the institution / staff / student	Name of the award / honour	Awarding body	Purpose of award	Nature of award
57	Thyagarajan D.	Shantha Memorial Prize Certificate of Appreciation	TANUVAS TANUVAS	Book on Diseases of poultry Technology on Packages of practices for Scientific Livestock and Poultry Farming	Certificates
58	Valli C.	KPC Nair Best Teacher Award 2012	TANUVAS	Contribution in teaching	Cash award
59	Vairamuthu S.	Best Clinical Case Presentation Awards	TANUVAS	Feline Practice Companion Animal Medicine	Certificates
60	Vijayarani K., D.Kavitha, R.Anupriya and K.Kumanan	Certificate of Appreciation	TANUVAS	Technology on "Production of antibacterial, antineoplastic pigment, prodigiosin from Salmonella marcescens"	Certificate
61	Vinoth Kumar, M., G.Dhinakar Raj, K.G. Tirumurugaan [,] and N.Daniel Joy Chandran	Best Poster presentation award	Indian Association for Veterinary Microbiologist, Immunologists and specialists in infectious diseases	siRNA mediated silencing of interferon alpha in cultured cells and its effect on Newcastle disease virus replication	Certificate
62	Veterinary University Training and Research Centre, Vellore	Dinamalar memorial award - 3 rd prize	Dinamalar	Best Stall in the Event of Dinamalar Exhibition 2012	Certificate



DISTINGUISHED VISITORS







6. DISTINGUISHED VISITORS

Date of visit	Name of the Visitor	Place of visit
24.04.2012	Dr. Rangasamy Muniappan, Dr. Kevin Desouza, Mr.Gene Ball and Dr. Guru Ghosh, Virginia Tech, USA	Madras Veterinary College, Chennai
28.04.2012	Thiru. R. Gunasekaran, Member, Board of management, TANUVAS	Veterinary College and Research Institute, Namakkal
	Thiru. K.Kanthasamy, B.Com, Member, Planning Board, TANUVAS	
	Dr. Tamilarasan, B.V.Sc., President, Technical Advisory Committee	
	Dr. Kulanthaivelu, MBBS, MD., Member, Hospital Management Committee, TANUVAS	
18.05.2012	Thiru. P. Dayanithi Maran, Hon'ble Member of Parliament	Sheep Breeding Research Station, Sandynallah
04.06.2012	Susan Waage, International Agricultural Development Scientist, Washington, USA	Madras Veterinary College, Chennai
12.06.2012	Dr. Dan Grooms, Professor, Dept. of Large Animal Sciences, Michigan State University, USA	Madras Veterinary College, Chennai
18.06.2012	Mr. Ajay Yadav, IAS, District Collector, Vellore	Veterinary University Training and Research Centre, Vellore
22.06.2012	Dr. Rob Malinowski, Director, Information Technology center, Michigan State University, USA	Madras Veterinary College, Chennai
25.06.2012 - 27.06.2012 -	Dr. J M Nigam, Dr V R Bhamburkar and Dr. R. C. Patra, Team of Inspectors, Veterinary Council of India	Veterinary College and Research Institute, Tirunelveli
12.07.2012	Dr. Kusumakar Sharma, Asst. Director General (HRD), Indian Council of Agricultural Research, New Delhi	Veterinary College and Research Institute, Namakkal
21.07.2012	Nammalwar Sri Ranganathan Virginia Tech, Blacksburg, America	Post Graduate Research Institute in Animal Sciences, Kattupakkam
23.07.2012	Dr. Lara Harrup, Postdoctoral Scientist, The Pirbright Institute, UK	Vaccine Research Centre – Viral Vaccine, Chennai
27.07.2012	Mr. Pasang Tshering, Khadak Singh Bisht and Subba Rao, Regional Support Unit and Sub-regional ECTAD, FAO, Nepal	Post Graduate Research Institute in Animal Sciences, Kattupakkam
03.08.2012	Professor Susan M. Cotter, Punctual Medical and Oncology, Tufts University,North America Dr. Jorg Auer, Professor, School of Veterinary Medicine, Zurich Switzerland	Madras Veterinary College, Chennai
10.09.2012	Th. Gagandeep Singh Bedi, IAS, Secretary, Dept. of Animal Husbandry, Fisheries and Dairying, Govt. of Tamil Nadu	Veterinary College and Research Institute, Tirunelveli
22.09.2012	Dr. V. Gnanaprakasam, Former Vice-Chancellor TANUVAS	Madras Veterinary College, Chennai
01.10.2012	Dr. Gert Breur, Professor, College of Veterinary Medicine, Purdue University. USA	Madras Veterinary College, Chennai
14.10.2012	Dr. M. Hasanuzzaman and Dr. M.S. Pallab, Chittagong Veterinary and Animal Sciences University, Chittagong	Sheep Breeding Research Station, Sandynallah

| 78 |



Date of visit	Name of the Visitor	Place of visit
16.10.2012	Mr. Hang Zei , M/s. Eppendorf, Germany	Madras Veterinary College, Chennai
17.10.2012	Thiru. K.S.S.V.P.Reddy, I.F.S. Chief Conservator of Forests and Director, Arignar Anna Zoological Park, Chennai	Madras Veterinary College, Chennai
19.10.2012	Hon'ble YBhg. Dato' Mohd Hashim Bin Abdullah, Secretary General, Ministry of Agriculture & Agro-based Industry, Govt. of Malaysia with a team of delegates	Post Graduate Research Institute in Animal Sciences, Kattupakkam
29.10.2012	Siba K. Samal, Associate Dean, Virginia Maryland and Regional College of Veterinary Medicine, USA	Madras Veterinary College, Chennai
12.11.2012	Dr. Hansel M.Fletcher, Professor and Vice Chairman, Loma Linda University, USA	Madras Veterinary College, Chennai
10.12.2012	Professor Reza Nassiri, Associate Dean. Global Health Programs, College of Osteopathic Medicine and Director, Institute of International Health, East Lansing, USA	Madras Veterinary College, Chennai
15.12.2012	Th. T K M Chinnaiah, Hon'ble Minister for Animal Husbandry, Govt. of Tamil Nadu Th. Dharmendra Pratap Yadav, IAS, Commissioner of Animal Husbandry. Govt. of Tamil Nadu	Veterinary College and Research Institute, Tirunelveli
23.12.2012	Shri Harish Rawat, Hon'ble Minister for Water Resources, Government of India, New Delhi	Madras Veterinary College, Chennai
24.12.2012	The Secretary, Department of Animal Husbandry Dairying and Fisheries, Government of India, New Delhi	Madras Veterinary College, Chennai
	Dr. Srinivas S. Rao, Diplomate, American College of Veterinary Pathologists, USA	
05.01.2013	Tmt.S.Jayandhi, District Collector, Karur District	Veterinary University Training and Research Institute, Karur
10.01.2013	Dr. Srinivas S. Rao, Diplomate, American College of Veterinary Pathologists, USA	Madras Veterinary College, Chennai
19.01.2013	Thiru. T.K.M.Chinnaiah, Hon'ble Minister for Animal Husbandry, Government of Tamil Nadu	Post Graduate Research Institute in Animal Sciences, Kattupakkam
	Dr. R. Palanisami, I.A.S, Director, Animal Husbandry & Veterinary Services, Government of Tamil Nadu	
21.01.2013	Dr. P. Shankar, IAS, District Collector, Vellore	Veterinary University Training and Research Institute, Vellore
30.01.2013	Dr. Simon Carpenter, Head of Entomology, The Pirbright Institute, U.K.	Vaccine Research Centre – Viral Vaccine, Chennai
08.02.2013	Th. K. Maharabhushanam, District Collector, Salem	Mecheri Sheep Research Station, Pottaneri
11.02.2013	Roger verschoom and Mariehe hoot, ETC Foundation, The Netherlands	Pharmacovigillence Laboratory for Animal Feed and Food Safety, Chennai
16.02.2013	Shri Gokul Chandra Pati, IAS. Secretary to Govt., Dept of Animal Husbandry Dairying and Fisheries(DAHD & F), GOI, New Delhi; Shri S.R. Rao,I.A.S, Secretary to Govt., Dept of Commerce, GOI, New Delhi; Shri Gagandeep	Animal Feed Analytical and Quality Assurance Laboratory, Namakkal
	Singh Bedi, I.A.S, Secretary to Govt., DAHD & F, Govt. of Tamil Nadu, Chennai; Dr. R.Palanisamy, I.A.S, Director of Animal Husbandry and Veterinary Services, Govt. of Tamil Nadu Chennai Dr. D. Jeganathan, I.A.S., District Collector, Namakkal	

Date of visit	Name of the Visitor	Place of visit
21.02.2013	Mr. T.P. Rajesh, District Collector, Krishnagiri	Veterinary University Training and Research Institute, Krishnagiri
21.02.2013	Dr. Ana Batalha, Food Safety Advisor Dr. Cornelia Ibrahim, Federal office of consumer Protection, Berlin Dr. Giles Davis, University of Maryland, UK	Pharmacovigillence Laboratory for Animal Feed and Food Safety, Chennai
24.02.2013	Thiru.N.Subramanian, Hon'ble minister for Adi Dravidar and Tribal Welfare, Govt. of Tamil Nadu Th.S. Manokaran, I.A.S. District Collector, Pudukkottai	Regional Research Centre, Pudukottai
27.02.2013	Dr. R. Palanisamy, I.A.S., Director of Animal Husbandry and Veterinary Services, Tamil Nadu	Regional Research Centre, Pudukottai
11.03.2013	Dr.S.C.Gupta, Assistant Director General, Indian Council of Agricultural Research, New Delhi	Post Graduate Research Institute in Animal Sciences, Kattupakkam
18.03.2013	Dr. Kate Rudge and Dr. Gary Taylor, IFIS Publishing, UK	Madras Veterinary College, Chennai
19.03.2013	Hiroyuki Yamagishi, Director, The Japan Society of Clinical Study for Rabies, Japan	Madras Veterinary College, Chennai
19.03.2013	Dr. A.S. Nanda , Animal Husbandry Commissioner, Animal Husbandry, Dairying and Fisheries Department. Govt. of India, New Delhi	University Research Farm, Chennai
24.03.2013	Shri Navneesh Sharma, Deputy General Manager, Animal Products Export Development Authority, New Delhi Shri R.K. Mondal, Deputy General Manager, Animal Products Export Development Authority, Bangalore	Animal Feed Analytical and Quality Assurance Laboratory, Namakkal
24.03.2013	Dr. Chanda Nimbkar, Director, Animal Husbandry Division, Nimbkar Agricultural Research Institute & Member, Indian Council of Agricultural Research, Phalton, Pune Professor Stephen Walkden-Brown and Ms. Yvonne Langenberg, University of New England, Armidale,	Krishi Vigyan Kendra, Namakkal Mecheri Sheep Research Station, Pottaneri





WOMEN EMPOWERMENT



7. WOMEN EMPOWERMENT

TANUVAS is implementing various training programmes to empower the rural women through Animal Husbandry activities. Some of the salient activities of TANUVAS in the area of women empowerment during the reporting period are as follows:

Seventy two on-and off-campus training programmes were organised by VUTRC, Dharmapuri on dairy cow management, urea enrichment of sugarcane tops, goat farming, pig farming and backyard poultry keeping for the benefit of 8982 farmers inclusive of 8166 women beneficiaries. Five Farm schools were conducted at farmers field of Sekkodi, Thadangam, Semmandakuppam, Thodarthanahalli and Ramarkoodal of Dharmapuri district on "Inclusion of technologies in dairy cows to increase milk yield" with the financial assistance from ATMA, Dharmapuri. Each farm school was registered with 25 dairy farm owners.



Ninety-one on and off-campus training programmes on profitable dairy farming, turkey farming, emu farming and goat farming were organized by VUTRC, Cuddalore for the benefit of the 3624 farmers inclusive of 3393 women. Azolla cultivation in pit was demonstrated in a special demonstration training programme on "Azolla cultivation for Livestock" of Dept of Animal Husbandry, Chidambaram division. A total of 20 Veterinary Assistant Surgeons and 15 progressive farmers attended.



- VUTRC, Karur conducted 36 on-and off-campus training programmes on turkey and desi bird rearing, scientific pig farming, dairy farming and fodder production, vermi compost preparation, azolla cultivation for livestock feeding, goat farming and green fodder production benefitting 858 farmers inclusive of 377 women. With the financial assistance of ATMA, especially for women, a training programme on Capacity building on goat farming was conducted and 7 women benefited.
- * Through 77 on-and off-campus training programmes organized by VUTRC, Madurai, 3407 rural participants including 2518 women were trained 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. With the sponsorship of NABARD, Chennai three off-campus training programme on "Improved Milk Production through Modern Green Fodder Production" were conducted under Micro Enterprise Development Programme (MEDP) for 90 SHG women in three batches. A total of 35 special training programmes were conducted for 2287 women of Madurai and Ramnad districts of Tamil Nadu State Government scheme on "Free distribution of milch cows to the poor families in rural areas". Special training programme was conducted on "Livestock farming for the socio economic upliftment for Transgenders". A total of 25 transgenders participated and got benefited.



A total of 47 on-and off-campus training programmes on feeding & fodder management, profitable livestock farming, backyard poultry farming, clean milk production and fish farming were organised at VUTRC, Melmaruvathur benefiting 1819 farmers inclusive of 1420 women. With the financial assistance of DWDA, Villupuram, training programme on "Capacity building on Livestock management" was conducted benefiting 26 farmers. A total of 10



special training programmes on "Dairy farming" were conducted for 425 women beneficiaries of Tamil Nadu State Government scheme on "Free distribution of milch cows to the poor families in rural areas".

- A total of 84 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 9566 farmers inclusive of 2927 women beneficiaries.
- * A total of 41 on-and off-campus training programme on preparation of concentrate feed for livestock, winter management of sheep and goat, dairy farming and clean milk production were organized by VUTRC, Rajapalayam benefiting 2175 farmers inclusive of 982 women. A total of 15 special training programmes on "Goat farming" and "Fodder development" were conducted for 1321 beneficiaries of Tamil Nadu State Government scheme on "Free distribution of milch cows to the poor families in rural areas". An exclusive special training program on "Balanced Ration for Dairy Cows" was organized by this centre for innovative entrepreneurs to develop skill and knowledge base to bring up the confidence in starting their own business. A total of 16 participants benefited out of this programme.
- Sixty-five on-and off-campus training programmes on desi bird rearing; goat rearing; dairy farming, fodder production and value added milk production were organized by VUTRC, Salem and the total number of women beneficiaries was 1694.
- Sixty-seven on-and off-campus training on Ethno Veterinary Medicine with Poultry farming, Livestock farming and Dairy farming were organised at VUTRC, Thanjavur in which 3406 farmers inclusive of 1651 women benefited. With the financial assistance from Indian Overseas Bank and State Bank of India, a special training programme on "Integrated farming system" was organized benefiting 470 farmers.
- A Total of 106 training programmes on integrated livestock farming, desi fowl farming, livestock



farming, fodder development, sheep and goat farming, livestock health management, importance of fodder for better milk yield were organised by VUTRC, Tiruppur benefiting 6227 farmers inclusive of 4690 women. This centre also provided basic training on Artificial Insemination to rural youth identified by Tamil Nadu Livestock Development Agency. This centre provided training on scientific goat rearing to 4249 women beneficiaries of Tamil Nadu State Government scheme on "Free distribution of goat/sheep to the poor families in rural areas".

- A total of 87 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 to desi chicken benefiting 3725 farmers inclusive of 2463 women. Ttraining programme on dairy farming and fodder production was organized benefiting 34 farmers including 24 women which was sponsored by Indian Overseas Bank. ATMA Farm Schools and trainings were conducted on "Turkey farming, Japanese quail farming, Value added meat and egg products and desi chicken rearing in cages" for 164 rural women.
- * A total of 133 training programmes on environmental management in livestock farming, backyard poultry farming, fodder development, low cost cattle feed computation using locally available feed ingredients, value added milk product preparation and ornamental fish farming were organised by VUTRC, Vellore and a total of 6706 women benefited. This Centre conducted a orientation programme to newly recruited 145 Veterinary Assistant Surgeons from Vellore, Thiruvannamalai and Villupuram Districts at VUTRC, Vellore on Livestock and Poultry Production, fodder development, disease control and preventive measures and administration. In co-ordination with District Water shed development agency (Sponsored agency), Vellore, this centre conducted 15 off-campus training programmes on Dairy farming, Sheep and goat farming in various villages of Vellore district benefiting 456 participants. This centre conducted two days training programme

on "Goat rearing" for 72 self help group female beneficiaries selected by the Department of Animal Husbandry, Vellore district under National Mission for Protein supplement training programme. This centre provided training on scientific goat rearing to 5195 women beneficiaries of Tamil Nadu State Government scheme on "Free distribution of goat/ sheep to the poor families in rural areas".

- A total of 79 on-and off-campus training programmes on dairy farming with value addition of milk, desi chicken rearing, scientific livestock rearing, sheep and goat farming and turkey rearing were organised at VUTRC, Dindigul benefiting 4265 farmers inclusive of 3414 women. This centre provided training on scientific goat rearing to 3073 women beneficiaries of Tamil Nadu State Government scheme on "Free distribution of goat/sheep to the poor families in rural areas".
- * A total of 71 on-and off-campus training programmes on income generation through livestock farming; sheep and goat farming; desifowl farming; profitable turkey rearing; carp seed production and carp farming technology and ornamental fish farming were organised at Regional Research Centre, Pudukottai benefiting 2311 farmers inclusive of 1300 women. Apart from this, this centre has given five training programmes (Dairy and Sheep and goat farming 3, turkey and desifowl farming 2) under District water shed development agency fund from Agricultural department benefiting 150 farm women. A total of 14 trainings were organized [milch cow / sheep and goat rearing (7); fodder development (6) and poultry development (1)] benefiting 505 women of Tamil Nadu State Government schemes.



Krishi Vigyan Kendra, Namakkal conducted 64 oncampus and 34 off-campus training programmes on cattle feed management with azolla cultivation practices; broiler quail chick production and management; small scale incubators usage in backyard poultry; advanced techniques in sheep and goat rearing; freshwater prawn farming; and feed management in fish farming benefitting 3483 women.

- Krishi Vigyan Kendra,, Kundrakudi conducted 120 on-and off-campus training programmes on desi bird 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 1300 women.
- A total of 283 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 the KVK, Kattupakkam benefiting 19792 participants inclusive of 13776 women beneficiaries.
- Fifteen on-campus and 34 off-campus training programmes were conducted by FTC, Theni on different aspects of animal husbandry practices benefiting 1216 women.
- Four on-campus and 5 off-campus training programmes were conducted by FTC, Tiruvarur on different aspects of animal husbandry practices benefiting 339 participants. Apart from this, this centre conducted sponsored training programmes viz Department of Animal Husbandry - "Induction training for the newly recruited VAS of Tiruvarur District"; NABARD - MEDP Training programme on Dairy cattle management and Fodder production; TNLDA - Artificial Insemination training in cattle and Dept. of Agriculture - Dairy farming benefiting 95 participants.
- On-campus (14) and off-campus (49) training programmes were organised by FTC, Kancheepuram on feeding management in dairy cattle, management of infertility in dairy cattle, feeding management and disease prevention in dairy cattle and dairy cattle breed selection and breeding management and 2231 women benefited.







HUMAN RESOURCE DEVELOPMENT



8. HUMAN RESOURCE DEVELOPMENT

Scientists of TANUVAS attended various Trainings / Summer schools / Short-term courses / Workshops / Seminars / National and International conferences organised by other institutions within India as well as abroad during 2012-13 and the same is listed below :

TRAININGS

Name and Designation	Title of the Programme	Duration	Place
C. Sankar, Assistant Professor	Organic farming and Organic Certification	10.09.12 - 14.09.12	Bangalore
S. Arunkumar, Assistant Professor; C. Sreekumar, Professor	Biotechnological applications in Veterinary Parasitology (National)	19.11.12- 09.12.12	Veterinary College, Hebbal, Bangalore
P. Vasanthakumar, Associate Professor	Extraction and Analysis of Nutraceuticals from vegetables, fruits and non-food crops	21.11.12- 24.11.12	IARI, New Delhi
K.G.Tirumurugaan, Programme Director	Next Generation Genomics Data Analysis	13.01.13 - 16.01.13	Bangalore
M. Balagangatharathilagar, R. Sivashankar and P.Thirunavukkarasu Assistant Professors	Principles and Practices in Imaging and Endoscopy in Farm and Pet Animal Practice (National)	01.02.13- 21.02.13	MVC, Chennai
N. Punniamurthy, Professor and Head	EVM to the Veterinarians	04.02.13- 05.02.13	Institute of Ayurveda and Integrative Medicine, Bangalore
D. Ramasamy, D. Baskaran and B. Suresh Subramonian Professors	Application of High Pressure for Food Processing (National)	12.03.13	Central Institute of Fisheries Technology, Cochin

WORKSHOPS

Name and Designation	Title of the Programme	Duration	Place
T.J. Harikrishnan, Professor and Head	Current concepts in the treatment and control of parasitic diseases	28.04.12	Veterinary Council, Thiruvananthapuram
S. Prathaban, Director of Clinics			
A. Natarajan, Professor and Head	Nutritional forum for national level poultry farmers	26.05.12	Hotel Le Meridian, Pune
D.Thyagarajan, Dean	Quality Control and safety of Milk	01.06.12	College of Food and Dairy Technology, Koduvalli
N. Punniamurthy, Professor and Head	Ethno Veterinary herbal medicine for primary health care of livestock in Kerala	14.06.12	Kerala State Veterinary Council, Thiruvananthapuram
C.Balachandran, Registrar; C.Chandrahasan, Controller of Examinations; V. Purushothaman, Director, CAHS;M. Babu, Director, CAPS;	e-Courses for BVSc & AH Degree Programme	28.06.12	Madras Veterinary College, Chennai

Name and Designation

D. Kathiresan, Director of

K. Kumanan. Director of Research; B. Murali Manohar,

Extension Education;

and Head

Dean; S.A.Asokan, Dean, Faculty of Basic Sciences and K.A. Doraisamy, Dean		
D. Sukumar, Professor N.Neethiselvan, Professor and Head	Harvest and Post harvest losses in the fisheries sector	22.06.12
K.S.Vijay Amirtharaj, Assistant Professor	Result dissemination of aquaclimate project	18.07.12

Title of the Programme

e-Courses for BVSc & AH Degree

Programme

Professor and Head			
K.S.Vijay Amirtharaj, Assistant Professor	Result dissemination of aquaclimate project	18.07.12	CIBA, Chennai
N.K. Sudeepkumar, Professor and Head	Participatory Screening and Documentation of Indigenous Veterinary Medicine among Tribal Livestock Healers of Salem District	29.08.12 - 30.08.12	Kalrayan Hills, Salem District
K. Brindha; A. Serma Saravana Pandian; A.Karthiayani; R.Velusamy; M. Ananda Chitra, K.Ravikumar; A.Arivuchelvan; V.Thavasiappan; R.Ravikumar, K. Manimaran; V. Gowthaman; J. Ramesh; K.S. Subramanian; R.Thirumavalavan; B.Puvarajan; N. Akila; T.Lurthu Reetha; R.Selvam; T.Muthuramalingam; T.Hariharan; P.Kanagaraju; C.Senthamil Pandian; P.Muthusamy; P.C.Sakthivel; R.Venkataramanan; K.Devaki, A. Paramasivam; C.Sharmila Bharathi; V. Senthilkumar; P.G.Thenmozhi and G.Senthilkumar, Assistant Professors M.R. Purushothaman, Professor	Preparation of Model Projects	05.09.12 -06.09.12	Veterinari College and Research Institute, Namakkal
N. Punniamurthy, Professor and Head	Ethno Veterinary practices for management of Mastitis	25.09.12	Thrissur, Kerala
G. Kumaresan, Associate Professor C. Naresh Kumar and A.Elango, Professors and Head	Revamping education and research in dairy processing to meet global challenges (National)	27.09.12 - 28.09.12	Kerala Veterinary and Animal Sciences University, Kerala
G.Sarathchandra, Professor & Head	Preclinical GLP Study	08.10.12 - 10.10.12	Veterinary College, Bangalore
N.Punniamurthy, Professor	Ethno Veterinary herbal medicine for	29.10.12	Kumarakom, Kottayam

primary health care of livestock in

Kerala

Duration

28.06.12

Place

Madras Veterinary College, Chennai

CIFT, Cochin

Name and Designation	Title of the Programme	Duration	Place
S.A.Asokan, Dean	ILRI-ICAR Partnership Dialogue	07.11.12	New Delhi
K. Jeyaraja, V. Vijayanand, E.Venkatesakumar, S.Sivaraman and D. Sumathi Assistant Professors	Mars Continuing Veterinary Professional Development (MCVPD) for practicing Vets	20.11.12 - 22.11.12	Madras Veterinary College, Chennai
G.Vijayakumar, P.Selvaraj, M.Chandrasekar, and S.Kavitha Associate Professors B.Nagarajan, Professor P.S.Thirunavukkarasu, and			
P.Ram Prabu Professors and Head			
V.K.Venkataramani, Dean	Sharing the results of the Project on Fisheries Management for sustainable Livelihoods (National)	22.11.12 - 23.11.12	Grand GRT Hotel, Chennai
Rita Narayanan, Assistant Professor T.R. Pugazhenthi, Associate Professor,	Safety Assurance of Foods through Emerging Science and Technology Innovations	06.12.12 - 07.12.12	CSIR-CFTRI, Mysore
B.Mohan, Professor and Head	Recent trends in Impact Assessment and best practices	12.12.12 - 13.12.12	CIFA, Bhubaneswar
V.K. Venkataramani, Dean	National Strategic on Small-Scale	10.01.13 - 11.01.13	Savera Hotel, Chennai
C.Balachandran, Registrar	Wild & pet bird medicine (National)	28.01.13 - 11.02.13	MVC, Chennai
K. Premavalli, Assistant Professor S. Vairamuthu, Associate Professor and Head	Veterinary Pharmacovigilance for Global Food Security (International)	21.02.13 - 22.02.13	Madras Veterinary College, Chennai
K. Brindha, Assistant Professor	Methodologies to assess impact of capacity Building	21.02.13	ICAR, New Delhi
K. Brindha, Assistant Professor	Foresight and Future Pathways of Agricultural Research through Youth in India (National)	01.03.13 - 02.03.13	New Delhi
K. Rathnakumar, Director	Cobia Culture	01.03.13- 02.03.13	FC&RI, Thoothukudi
G. Dhinakar Raj, Director, TRPVB	FADH Project meeting and Workshop	03.03.13 - 04.03.13	NIAB, Hyderabad
R. Kumaresan, Assistant Librarian	Application of Qualitative Indicators for the Excellence of Scholarly Communication	08.03.13 - 09.03.13	Annamalai University, Annamalainagar
N. Murali, Professor and Head	Community Level Conservation of Local Livestock Breeds	08.03.13 - 09.03.13	NBAGR, Karnal
N. Felix, Professor C.Naresh Kumar, Professor and Head	NAIP- Component-2	11.03.13- 12.03.13	ICAR, New Delhi

Name and Designation	Title of the Programme	Duration	Place
V. Perasiriyan; C.Vennila; G. Senthil Kumar; N.Vimal Rajkumar; K. Brindha; S.Ezhil Velan; R.Venkataramanan; R.Murugeswari; T. Sarath; P. Thirunavukkarasu; R.Uma Rani; A.Gopalakannan; A.Yasotha; A. Surendraraj; P.Veeramani; C. Pandian; M. Thangapandiyan; V. Suresh Kumar and T. Satheesh Kumar Assistant Professors S.M.K. Karthickeyan; M.Ramachandran; M.Murugan; K. Sivakumar; P.S.L. Sesh and N. Jeyathilakan Associate Professors	Data Analysis	11.03.13 - 13.03.13	Madras Veterinary College, Chennai
M. Thirunavukkarasu, Controller of Examinations	NAIP Component-1 Sub-Projects	22.03.13- 23.03.13	NAARM, Hyderabad

CONFERENCES

Name and Designation	Title of the Programme	Duration	Place
S. Manoharan, Associate Professor	Prevention and Control of Rabies in India (National)	06.07.12 - 08.07.12	Kolkatta
Sujatha and M. Siddharth, Assistant Professors B. Suresh Subramonian, Professor D. Thyagarajan, Dean	Recent trends and innovations in consumer and bulk packaging (National)	10.07.12	Sheraton Park Hotel, Chennai
S.A. Asokan and K.A.Doraisamy, Deans	Farm and Companion Animal Practice (National)	19.07.12 - 20.07.12	Madras Veterinary College, Chennai
A. Surendraraj, K. Sudha and A. Sundaresan, Assistant Professors D. Ramasamy, Professor	Advanced Technologies for Global Food Market	27.07.12	Hotel Le Royal Meridien, Chennai
G.Thenmozhi, Assistant Professor	12 th Tamil Science	23.08.12- 25.08.12	Periyar University, Salem
S.Krishnakumar; R.Yasothai; R.Thirumavalavan; T.Lurthu Reetha; V. Meenalochani; B.Puvarajan; N.Premalatha; R.Thangadurai; K. Senthil Kumar; R. Ravikumar; V. Ranganathan; S. Jaisree; C.Theophilus Anand Kumar; S. Chitradevi; C. Pandian;	Future of Livestock Health: A Paradigm change to maximize the Productivity for economic gains (International)	06.09.12 - 08.09.12	Madras Veterinary College, Chennai
Name and Designation	Title of the Programme	Duration	Place
--	---	------------------------	---
A. Paramasivam; K.Brindha; K. Senthilkumar; S. Gunasekaran; P.Padmavathy; P.Chidambaram; S.Rathnapraba and Assistant Professors A. Sangaran; K.Senthilvel; K.Vijayalingam; R.Anilkumar and S.Athithan Associate Professors C.Sreekumar; K.Riji John and K.Karal Marx, Professors B.Muruganandan; B.Mohan; S. Murugesan and N. Murali	Future of Livestock Health: A Paradigm change to maximize the Productivity for economic gains (International)	06.09.12 - 08.09.12	Madras Veterinary College, Chennai
Professors and Head	Indian Society of Blood Transfusion and	14.09.12 -	Radisson Blue Resort
Assistant Professor	Immunohematology (National)	16.09.12	Mammalapuram
S.M.K.Karthickeyan, Associate Professor A.K.Thiruvenkadan, Professor and Head	Biological diversity	01.10.12- 19.10.12	NAARM, Hyderabad
G. Sugumar and D. Sukumar, Professors K. Rathnakumar, Director	Value added fish products: Present status & future directions (National)	04.10.12- 05.10.12	Central Food Technological Research Institute Mysore
M.Thirunavukkarasu, Professor and Head	Agricultural inputs and delivery system for accelerating growth and improving farm income	09.10.12 - 11.10.12	Indian Agricultural Research Institute New Delhi
R.Selvakkumar, Assistant Professor	Biodiversity conservation and sustainable utilization (National)	11.10.12 - 12.10.12	Pasumpon Thiru Muthuramalinga Thevar memorial college, Kamuthi
T.Francis, Associate Professor G. Jeyasekaran, Professor	Fisheries Biotechnology (National)	02.11.12 - 03.11.12	Central Institute of Fisheries Education, Mumbai
P. Kumaravel and V.Palanichamy, Associate Professors B. Mohan, Professor and Head K.A. Doraisamy, Dean	Krishi Vigyand Kendra-12 (National)	20.11.12 -22.11.12	Punjab Agricultural University, Ludhiana
M. Ramachandran, Associate Professor	Animal Nutrition Research Strategies for Food Security	28.11.12 - 30.11.12	Rajasthan University of Veterinary and Animal Sciences, Bikaner, Rajasthan
G. Rathinasabapathy, Deputy Librarian	Agricultural Librarians and User Community 12 (National)	05.12.12 - 07.12.12	Orissa University of Agriculture & Technology Bhubaneswar

Name and Designation

P. Senthilkumar, P. Mekala

and V. Ranganathan

Assistant Professors

Professor and Head

T.J. Harikrishnan,

Director L.Gunaseelan,

Professor and Head

B. Madukesvaran,

Assistant Professor

B.Dhanalakshmi, Professor

A. K. Thiruvenkadan, Professor and Head	100 th Indian Science Congress	03.01.13 - 07.01.13	Calcutta University, Kolkata, West Bengal
S. Manoharan, Associate Professor	Strengthening of Rabies Diagnosis in the Indian sub-continent	28.01.13 - 31.01.13 -	Veterinary College, Hebbal, Bangalore
R. Ramprabhu, Professor and Head	Canine Practices (National)	06.02.13 - 08.02.13	Panaji, Goa
P. Sriram, Professor	Laboratory Animal Medicine and Management (International)	07.02.13 - 09.02.13	NAARM, Hyderabad
M.Palanisamy, Assistant Professor	21 st National Tamil Science Conference	09.02.13 - 10.02.13	CAIE, Coimbatore
S. Ezhil Valavan, A.Kalaikannan, D. Santhi, R.K.Kanimozhi, Assistant Professors	Indo-European Conference on Food for Health	10.02.13 - 12.02.13	Indian Institute of Technology, Chennai
C. Pandiyan, Associate Professor			
K. Rathnakumar,			

Zoonotic Mycobacterial infection

and their impact on Public health

Global Dairy Industry & Food Security

Tharkaala Tamizh Illakkanam

(National)

(National)

Title of the Programme

XII Annual Conference of Indian Society of Veterinary Pharmacology &

23rd National congress of Veterinary

Toxicology

Parasitology

Duration

12.12.12 -

14.12.12

12.12.12-

14.12.12

14.02.13-

16.02.13

06.03.13 -

08.03.13

14.03.13 -

16.03.13

Place

College of Veterinary

Science, Guwahati,

All India Institute of

French Institute of Pondicherry,

Mumbai Exhibition

Centre, Mumbai

Pondicherry

Delhi

Medical Sciences, New

KVAFSU, Hebbal,

Bangalore

Assam

• •		
Seminars /	Svm	nosia
o cililiaro /	- y m	PUUlu

Name and Designation	Title of the Programme	Duration	Place
S. Muthu Krishnan, Assistant Professor O.R. Sathymoorthy, Associate Professor S. Usha Kumary, Professor	Innovating methods of teaching Veterinary Anatomy and Wild Anatomy (National)	04.05.12	College of Veterinary Science, Hebbal, Bangalore
M.G. Jayathangaraj, Professor and Head	Forest Vision 2023 (National)	05.07.12 - 06.07.12	Tamil Nadu Forest Academy, Coimbatore
P.Visha, Assistant Professor	Application of Electron Microscopy in Nanotechnology and Biomedical Research	23.07.12 - 24.07.12	Madras Veterinary College, Chennai
G.Sujatha, Assistant Professor D.Ramasamy, Professor	Automation in Dairy & Food Industry (National)	24.09.12 - 25.09.12	Sri Venkateswara Veterinary University, Tirupati

Name and Designation	Title of the Programme	Duration	Place
K. Jeyaraja Assistant Professor M.Chandrasekar Associate Professor	Emerging trends in canine cardiovascular medicine: challenges and strategies (National)	29.09.12 - 30.09.12	College of Veterinary Science, Tirupati
M. Mala Shammi and S.Ayyappan, Professors	Ruminant Surgery in Polyclinics Co-operative dairies and shelters: Perspective 2020 (International)	01.11.12 - 03.11.12	College of Veterinary and Animal Sciences, Anand, Gujarat
S. Gunasekaran Assistant Professor	Sustainable Production of forages from arable and non-arable land and its utilization (National)	02.11.12 - 03.11.12	Jhansi
P. Srinivasan Associate Professor G.A. Balasubramaniam Professor and Head	Emerging trends in diagnosis and control of Poultry Diseases (National)	05.11.12 - 07.11.12	Lala Lajpat Rai University of Veterinary and Animal Sciences, Hissar.
S. Jayachandran Associate Professor P. Selvaraj Professor and Head	New approach to physiological research in changing environmental scenario for sustainable livestock and poultry production (National)	06.11.12 - 08.11.12	Navsari Agricultural University, Navsari, Gujarat
J. Selvaraj Associate Professor C. Balachandran, Registrar	Pathology of aquatic animals, farmed and laboratory fish including integrated aquaculture and waste management (National)	08.11.12	Lala Rajpat Rai University of Veterinary and Animal Sciences, Hisar
P. L. Sujatha Assistant Librarian	Challenges and Strategies in the Prevention and Management of Viral Infections (International)	09.11.12 - 11.11.12	King Institute of Preventive Medicine & Research, Chennai
S. Rangasamy and S. Satheshkumar Assistant Professors T. Sathiamoorthy, Associate Professor K. Kulasekar, Professor R. Ezakial Napolean, Professor and Head C. Chandrahasan, Controller of Examinations	Addressing Reproductive Stresses through Bio-technological tools (National)	21.11.12 - 23.11.12	College of Veterinary Sciences, Assam Agricultural University Guwahati, Assam
T. Ravimurugan, Assistant Professor D. Anandha Prakash Singh and S.M.K.Karthickeyan, Associate Professors A. Subramanian and M. N. Sundararaman, Professors S. N. Sivaselvam, Professor and Head	Improvement of Livestock Productivity through Conventional Breeding and Emerging Technologies in Changing Global Scenario – Challenges, Prospects and Retrospect (National)	22.11.12- 23.11.12	College of Veterinary Science, Rajendra Nagar, Hyderabad

P. S. Rahumathulla, Dean

Name and Designation

S.Sivagnanam

Professor

Assistant Professor

S.Muthukrishnan, Associate Professor Sabiha Hayath Basha; R. Asha Rajini; S.T. Selvan; R. Karunakaran and K. Mani

Geetha Ramesh; S.C.Edwin; K. Balasundaram; N. Ramamurthy; D.Chandrasekaran; A.V.Omprakash and T.A.Kannan Professors and Head	
M.Babu, Director, CAPS D. Thyagarajan, Director, Distance Education	

Title of the Programme

Advances in Applied Anatomy of Domestic and Wild Animals – an interdisciplinary approach for Animal Health and Wealth (National)

Duration

28.11.12 -

30.11.12

Place

College of Veterinary

and Animal Sciences,

Mannuthy

N. Ramamurthy; D.Chandrasekaran; A.V.Omprakash and T.A.Kannan Professors and Head M.Babu, Director, CAPS D. Thyagarajan, Director, Distance Education			
S.A. Shanmugam; B.Sundaramoorthy and S.Balasundari Associate Professors G. Jeyasekaran; D. Sukumar; N.V. Sujathkumar and M. Rosalind George Professors	Aquatic Resources for eradicating hunger and malnutrition-Opportunities and Challenges	04.12.12 - 06.12.12	Mangalore
P. Velayutham; R. Jayaraman and N. Neethiselvan, Professors and Head			
S. Vasantha Kumar; G.Raj Manohar; P. Muthusamy; P. Kanagaraju; C.Pandian; N.Arulnathan; S.Saravanan; D.Kannan; S.Ezhil Valavan; R.Venkataramanan; C.Kathirvelan; P. Veeramani and A. Bharathidhasan Assistant Professors K.Thilak Pon Jawahar; M. Murugan; M.Moorthy, A.Ashok; P. Shamsudeen; V.Thanaseelaan; R.Amutha; P. Vasanthakumar; K. Sangilimadan and P.Srinivasan Associate Professors R. Asha Rajini, S.T.Selvan, R.Karunakaran and K.Mani, Professors N. Ramamurthy, S.C.Edwin, D. Chandrasekaran and A.V.Omprakash Professors and Head M.Babu, Director, CAPS D.Thyagarajan, Director, Distance Education	Commercial and rural poultry production: Novel concepts and strategies to meet growing demand and changing consumer needs (National)	05.12.12- 07.12.12	Sri Venkateswara Veterinary University, Hyderabad

Name and Designation	Title of the Programme	Duration	Place
K.Arunachalam, Associate Professor G.Ponnudurai, Professor and Head	Parasitology Today: From environmental and social impact to the application of geoinformatics and modern biotechnology (National)	12.12.12- 14.12.12	College of Veterinary Science, Khanapara, Guwahati, Assam
C.Bandeswaran Assistant Professor S.Sureshkumar; G.Selvaraju and M.Chellapandian Associate Professors and Head	Future Challenges and Opportunities to Improve Health and Production of Ruminants (National)	22.12.12 - 23.12.12	Central Institute for Research on Goats, Makhdoom
D. Sumathi Assistant Professor M. Chandrasekar; P.Selvaraj and G.Vijayakumar Associate Professors A.P. Nambi, Professor and Head S.Prathaban, Dean S.R. Srinivasan, Director of Clinics	Advancing Veterinary Medicine and its Specialities for augmented productivity and Health-Issues and strategies in farm and companion animals (National)	09.01.13 - 11.01.13	College of Veterinary Sciences & Animal Husbandry, Mhow, Madhyapradesh
S. Saravanan and R.Rishikesavan Assistant Professors K.M.Palanivel Professor and Head	Current status of canine parvovirus infection in India (National)	23.01.13 - 24.01.13	Rajiv Gandhi College of Veterinary and Animal Sciences, Puducherry
A.Yasotha, A.Paramasivam and A.Thennarasu, Assistant Professor V. Ramesh and M.Murugan, Associate Professors V. Ramesh Saravana Kumar, Professor and Head T. Sivakumar, Dean	New paradigms in livestock production: From traditional to commercial farming and beyond (National)	28.01.13- 30.01.13	National Dairy Research Institute, Karnal, Haryana
T.Ravimurugan and R.Venkataraman Assistant Professors A.Subramanian Professor S.Panneerselvam and P.Kumarasamy Professors and Head	Integrated development of vast Biodiversity of Indigenous Livestock for long term rural Livelihood Security (National)	07.02.13 - 08.02.13	College of Veterinary and Animal Science, Pantnagar
M. Sutha and V.Chandirasekaran, Assistant Professors D. Chandrasekaran, D.Narendra Babu and Robinson J.J.Abraham Professors and Head	Emerging technological changes to meet the demands of domestic and export meat sector (National)	07.02.13 -09.02.13	National Centre on Meat, Hyderabad

Name and Designation	Title of the Programme	Duration	Place
A. Meenakshisundaram; P. Mekala; V.Rani and T.Anand Assistant Professors S.Eswari; N. Kumaravelu and M.Chellapandian Associate Professors	Scientific Tamil (National)	09.02.13 - 10.02.13	Thavathiru Santhalinga Adigalar Arts and Science Tamil College, Perur, Coimbatore
B. Sundaramoorthy, Professor A.Kumaravel; P.Mathialagan; S. Athithan and N.Neethiselvan Professors and Head V.K.Venkataramani, Dean	Scientific Tamil (National)	09.02.13 - 10.02.13	Thavathiru Santhalinga Adigalar Arts and Science Tamil College, Perur, Coimbatore
N.R.Senthil Assistant Professor P.I.Ganesan Professor and Head	Modern approaches to disease diagnosis in Veterinary Practice (National)	10.03.13 - 11.03.13	Sri Chakra International, Palakkad
S. Malmarugan Assistant Professor K. Sangilimadan; T.R.Pugazhenthi and A.Vijayarajan Associate Professors	Probiotics in Sustainable Food Production: Current Status and Future Prospects (National)	15.03.13- 16.03.13	Gandhigram Rural Institute, Gandhigram, Dindigul

Overseas Training / Seminars / Conferences

Name and Designation	Title of the Programme	Duration	Place
G. Jeyasekaran, Professor	Food Safety, Quality and Nutrition (International Conference)	11.04.12 - 13.04.12	Manchester, United Kingdom
M.C.Nandeesha Special Officer	28 th ALTECH Annual Animal Health and Nutrition Symposium	21.05.12- 23.05.12	Lexington, Kentucky, USA
A. Surendraraj Assistant Professor	Marine functional ingredients isolation and characterisation (Training)	01.06.12 - 30.06.12	National Food Institute, Technical University of Denmark
G.Senthil Kumar Assistant Professor	27 th World Buiatric Congress	03.06.12 - 08.06.12	Lisbon, Portugal
D.Chandrasekaran Professor and Head	Second Provimi Animal Nutrition Seminar	05.06.12 - 07.06.12	Netherlands
V.Purushothaman Director, CAHS	World Animal Health Congress Asia 12	11.06.12 - 14.06.12	Grand Copthrone Waterfront Hotel, Singapore
G.R.Baranidharan Assistant Professor	Dog blood banking and diagnostic imaging	18.06.12 - 13.07.12	Ohio State University, USA
G.Sarathchandra Professor and Head	12 th International Congress of the European Association for Veterinary Pharmacology and Toxicology (EAVPT)	06.07.12 - 15.07.12	Netherlands



Name and Designation	Title of the Programme	Duration	Place
B. Nagarajan, Professor	7 th World Congress Veterinary Dermatology	24.07.12 - 28.07.12	Canada
K.Riji John, Professor	Regional Proficiency testing programme for Aquatic Animal Disease Laboratories in Asia-Pacific (Workshop)	25.07.12 - 26.07.12	Bangkok, Thailand
S.Ezhil Valavan Assistant Professor P.Tensingh Gnanaraj Professor and Head	XXIV World's Poultry Congress	05.08.12 - 09.08.12	Brazil
D.Baskaran, Professor	Cocoa and Chocolate processing (Workshop)	20.08.12- 04.09.12	Ghent University, Belgium
D. Thyagarajan, Dean	Technology Mission to Thailand on Functional Foods	06.09.12 - 07.09.12	Bangkok, Thailand
A.Bharathidhasan, Assistant Professor P.Vasan, Associate Professor C.Valli, Professor	First International Conference on Animal Nutrition and Environment	14.09.12 - 15.09.12	Thailand
J.Ramesh, Assistant Professor V.M.Sankaran Associate Professor	International Student Summit and Symposium on Food, Agriculture and Environment	29.09.12 - 06.10.12	Michigan State University, USA
D.Chandrasekaran Professor and Head	Technical seminar	01.10.12 - 05.10.12	Belgium
K.Karal Marx Professor and Head	Production of millions of high Quality Tilapia Fry and Grow-out (International Training)	08.10.12 - 20.10.12	Asian Institute of Technology, Thailand
M.C. Nandeesha Special Officer	Global Aquaculture Alliance Conference	29.10.12 - 01.11.12	Bangkok
A.Elango, Professor and Head	International Dairy Federation World Dairy summit 12	04.11.12 - 08.11.12	Cape Town, South Africa
P.Kanagaraju Assistant Professor M.Babu, Director, CAPS	8 th International poultry Show and Seminar	28.02.13 - 02.03.13	Bangabandhu International Convention Centre, Dhaka
D. Chandrasekaran Professor and Head	The next paradigm shift: Nutrition innovation, supply dynamic and Food Chain Safety (Technical Seminar)	12.03.13	Bangkok, Thailand

SEMINARS / SYMPOSIA / WORKSHOPS / SUMMER SCHOOLS / TRAINING PROGRAMMES ORGANIZED

| 102 |



9. SEMINARS / SYMPOSIA / WORKSHOPS / SUMMER SCHOOLS / TRAINING PROGRAMMES ORGANIZED

During 2012-13, various trainings / Summer Schools / Short-term courses / Workshops / Seminars / National and International Conferences conducted for the benefit of the scientists are listed below :

TRAININGS

Name of the Sponsoring No. of Duration **Title of the Programme Department / Institute** Agency **Participants Orientation Training** Livestock Production 01.04.12 -**TANUVAS** 26 Management, MVC, 21.04.13 Programme Chennai 23 01.02.13 21.02.13 14.05.12-3 **Diagnosis of Leptospirosis** Zoonoses Research Private Laboratory Chennai 18.05.12 05.11.12 -20 Department 09.11.12 of Animal Husbandry, Govt. 19.11.12of Tamil Nadu 23.11.12 26.11.12-30.11.12 03.12.12-07.12.12 Microbiological techniques in FC&RI, Thoothukudi 140512 -12 Paid fish quality control 18.05.12 HRD Level II Animal Biotechnology, 15.05.12 -**TANUVAS** 25 MVC, Chennai 16.06.12 17 22.05.12 -18.06.12 Clinics, MVC, Chennai 28.05.12 -Government of 100 Recent developments in medicine and surgery in 06.06.12 Bihar buiatric practice 18.06.12-27.06.12 02.07.12 -11.07.12 Embryo Transfer Technology Animal Reproduction 04.06.12 -Tamil Nadu Land 5 to Field Veterinarian Gynaecology and 13.06.12 Development Obstetrics, MVC, Chennai Agency 16.07.12 -5 25.07.12 Skill upgradation programme Clinics, MVC, Chennai 13.06.12 -Indian Immuno-13 15.06.12 logicals Ltd **Diseases of Integumentary** Veterinary Clinical 13.06.12-Indian 8 system of dog Medicine, Ethics and 15.06.12 Immunologicals Jurisprudence, MVC, Ltd Mars India 9 Chennai 11.07.12-13.07.12 International Pvt. Ltd

Title of the Programme

TNIAMWARM Training

Programme

		of Tamil Nadu
VUTRC, Vellore	18.06.12 – 23.06.12	TANUVAS
MSRS, Pottaneri	18.06.12 – 23.06.12	
VUTRC, Erode	18.06.12 - 23.06.12	TANUVAS
VUTRC, Coimbatore	18.06.12 - 23.06.12	TANUVAS
	01.08.12 - 07.08.12	
Clinics, MVC, Chennai	01.07.12 - 12.08.12	Virginia Maryland Regional College of Veterinary Medicine , USA
	02.07.12 - 27.07.12	Malaysia, University
	VUTRC, Vellore MSRS, Pottaneri VUTRC, Erode VUTRC, Coimbatore Clinics, MVC, Chennai	VUTRC, Vellore 18.06.12 - 23.06.12 MSRS, Pottaneri 18.06.12 - 23.06.12 VUTRC, Erode 18.06.12 - 23.06.12 VUTRC, Coimbatore 18.06.12 - 23.06.12 VUTRC, Coimbatore 18.06.12 - 23.06.12 Clinics, MVC, Chennai 01.07.12 - 12.08.12 O2.07.12 - 27.07.12 02.07.12 -

Name of the

Department / Institute Veterinary Parasitology,

MVC, Chennai

Sponsoring Agency

Department

of Animal

Duration

13.06.12 -

22.06.12

No. of Participants

25

38

25

7

32

2

Clinical activities	Clinics, MVC, Chennai	01.07.12 - 12.08.12	Virginia Maryland Regional College of Veterinary Medicine , USA	6
		02.07.12 - 27.07.12	Malaysia, University Putra Malaysia, Malaysia	7
Opportunities in value addition and challenges in quality control of meat products including slaughterhouse by – product	Meat Science and Technology, VC&RI, Namakkal	04.07.12 - 24.07.12	Indian Council of Agricultural Research	18
Serology and Culture procedures to Diagnose Poultry Diseases	PDDSL, Namakkal	12.07.12- 08.08.12	TANUVAS	1
Ultrasonography	Clinics, MVC, Chennai	23.07.12 - 29.07.12	Bhopal, Madhya Pradesh	1
		08.10.12 - 14.10.12	SSB Veterinary Officers	5
		11.12.12 - 13.12.12	Veterinary practitioners	3
Entrepreneurial Opportunities	Livestock Business Management, MVC, Chennai	25.07.12 - 28.07.12	TANUVAS	120
Current Clinical Technique and protocols in Farm and Pet Animal Practice	Veterinary Clinical Medicine, Ethics and Jurisprudence, MVC, Chennai	01.08.12 - 21.08.12	Indian Council of Agricultural Research	18
<i>In vitro</i> fertilization and embryo co-culture (National)	Animal Biotechnology, MVC, Chennai	06.08.12 - 27.08.12	TANUVAS	16
		15.03.13 - 04.04.13		16

	1	r		F
Title of the Programme	Name of the Department / Institute	Duration	Sponsoring Agency	No. of Participants
Nutritional and management strategies to exploit the genetic potential of hybrid poultry	Poultry Science, VC&RI, Namakkal	22.08.12 - 11.09.12	Indian Council of Agricultural Research	19
Laboratory test procedures for diagnosis of poultry disease	PDDSL, Namakkal	26.08.12- 31.08.12	TANUVAS	1
Basic Training on AI in dairy cows	VUTRC, Coimbatore	03.09.12 - 02.10.12	Tamil Nadu Land Development Agency	9
Cryopreservation of Bovine Semen and Evaluation of Frozen Semen for Quality Assurance	Animal Genetics and Breeding, MVC, Chennai	03.09.12- 07.09.12 24.09.12- 28.09.12 08.12.12- 10.12.12 15.12.12- 19.12.12	National Agricultural Development Programme	40
Small Animal Ophthalmic Surgery	Veterinary Surgery and Radiology, MVC, Chennai	26.09.12 - 28.09.12	MARS International Pvt. Ltd	15
Applied and Topographic anatomy of Equine	Veterinary Anatomy and Histology, VCRI, Namakkal	03.10.12 - 13.10.12	Paid	1
Laboratory diagnostic Techniques for animal diseases	Central University Laboratory, Chennai	10.10.12 - 19.10.12 29.10.12 - 07.11.12	Department of Animal Husbandry, Govt. of Tamil Nadu	10 10
Emergency and Critical Care in small Animal Practice	Veterinary Clinical Medicine, Ethics and Jurisprudence, MVC, Chennai	15.10.12- 17.10.12	Mars India International Pvt. Ltd	8
Endoscopy in Veterinary Practice	Veterinary Clinical Medicine, Ethics and Jurisprudence, MVC, Chennai	15.10.12- 21.10.12	SSB Vet Officers	5
Clinical activities	Clinics, MVC, Chennai	16.10.12 - 30.10.12	Chittagong Veterinary & Animal Sciences University, Bangladesh	8
Clinical procedures in Small Animal Practice	Veterinary Clinical Medicine, Ethics and Jurisprudence, MVC, Chennai	17.10.12 - 19.10.12	Mars India International Pvt. Ltd	11
First Aid in animals	Veterinary Clinical Medicine, Ethics and Jurisprudence, VC&RI, Namakkal	18.10.12 - 19.10.12	TANUVAS	3

Title of the Programme	Name of the Department / Institute	Duration	Sponsoring Agency	No. of Participants
Newer Techniques/ methods for augmenting production in ruminant animals	Livestock Production and Management, VCRI, Namakkal	05.11.12 - 09.11.12 26.11.12 -	National Agricultural Development	25 21
		30.11.12 10.12.12 - 14.12.12	Programme	22
Veterinary Critical Care	Veterinary Clinical Medicine, Ethics and Jurisprudence, MVC, Chennai	12.11.12- 18.11.12	SSB Vet Officers	5
Small Animal Soft Tissue Surgery	Veterinary Surgery and Radiology, MVC, Chennai	26.11.12 - 28.11.12	Mars India International Pvt. Ltd	6
Small Animal Orthopedic Surgery	Veterinary Surgery and Radiology, MVC, Chennai	05.12.12 - 07.12.12	Mars India International Pvt. Ltd	8
Model training course for field veterinarians	Livestock Production Management, MVC, Chennai	06.12.12- 13.12.12	Directorate of Extension Education, New Delhi	25
HRD Level I	Animal Biotechnology, MVC, Chennai	10.12.12 - 15.12.12	TANUVAS	3
Canine breeding management	Animal Reproduction, Gynaecology and Obstetrics, MVC, Chennai	18.12.12 - 20.12.12	Mars International Pvt. Ltd.	11
Refresher training to field veterinarians	Clinics, VC&RI, Namakkal	02.01.13 - 11.01.13 25.02.13 -	Department of Animal Husbandry. Govt. of Tamil Nadu	15
Refresher training to filed	Livestock Production	06.03.13	Department	21
veterinarians	and Management, VCRI, Namakkal	11.01.13 24.02.13 - 25.03.13	of Animal Husbandry. Govt. of Tamil Nadu	21
Current strategies / practices	Animal Reproduction	07.01.13 -	National	23
bovine	Obstetrics, MVC, Chennai	28.01.13 -	Development Programme	21
		11.02.13 -		24
		25.02.13 01.03.13		32
Current strategies /practices in management of infertility	Animal Reproduction, Gynaecology and	21.01.13 - 25.01.13	National Agricultural	24
in bovines	Obstetrics, VC&RI, Namakkal	04.02.13 - 08.02.13	Development Programme	23
		18.02.13 -		24

22.02.13

Title of the Programme	Name of the Department / Institute	Duration	Sponsoring Agency	No. of Participants
Green fodder production through Hydrophonics	KVK, Namakkal	06.01.13	ICAR	98
Principles and practices in Imaging and Endoscopy in Farm and Pet Animal Practice	Veterinary Clinical Medicine, Ethics and Jurisprudence, MVC, Chennai	01.02.13- 21.02.13	ICAR	23
Advances in the treatment of medical and surgical ailments	Veterinary Clinical Medicine, Ethics and Jurisprudence, MVC, Chennai	04.03.13- 08.03.13	Department of Animal Husbandry. Govt. of Tamil Nadu	36
		18.03.13- 22.03.13	Tamil Nadu Co-Operative Milk Producers Federation	36
Weather based management of livestock and Poultry	Livestock Production Management, MVC, Chennai	04.03.13 -08.03.13	Ministry of Earth Science, New Delhi	25
Tissue culture Techniques and Virus Isolation for VAS	Vaccine Research Centre – Viral Vaccines, Chennai	05.03.13 - 11.03.13 12.03.13 - 18.03.13	Department of Animal Husbandry. Govt. of Tamil Nadu	20
Advances in the treatment of medical and surgical ailments	Veterinary Clinical Medicine, Ethics & Jurisprudence, VC&RI, Namakkal	11.03.13 -15.0313 25.03.13 - 29.05.13	National Agricultural Development Programme	23 23
Skill Development Training	Livestock Business Management, MVC, Chennai	25.03.13 - 27.03.13	TANUVAS	120
TNPSC Training courses for aspiring Veterinary graduates	Veterinary Parasitology, MVC, Chennai	25.03.13- 29.03.13	TANUVAS	81

CONFERENCES

Title of the Programme	Name of the Department / Institute	Duration	Sponsoring Agency	No. of participants
XXVI Annual convention of IAVMI and International Seminar on Future of Livestock Health : A Paradigm Change to Maximize Productivity for Economic Gains	Vaccine Research Centre – Viral Vaccines, Chennai	06.09.12 - 08.09.12	IAVMI & TANUVAS	212
Frontiers of Stem Cell and Biotechnology in Human and Veterinary Medicine (International)	Veterinary Surgery and Radiology, MVC, Chennai	10.01.13- 11.01.13	TANUVAS	350

WORKSHOPS					
Title of the Programme	Name of the Department / Institute	Duration	Sponsoring Agency	No. of participants	
Cost and Benefit Calculation	Animal Husbandry Economics, VC&RI, Namakkal	01.06.12	TANUVAS	27	
Preparation of model projects	Animal Husbandry Economics, VC&RI, Namakkal	05.09.12- 06.09.12	TANUVAS	21	
Rabies diagnosis	Veterinary Public Health and Epidemiology, MVC	28.09.12	TANUVAS	25	
Educational opportunities for UG students, Diagnostic and therapeutic approach at field level	Veterinary Clinical Medicine, Ethics and Jurisprudence, VC&RI, Namakkal	11.10.12	TANUVAS	80	
Production diseases	Veterinary Clinical Medicine, Ethics and Jurisprudence, VC&RI, Namakkal	26.10.12	TANUVAS	80	
Workshop and farmers meet.	VUTRC, Madurai	30.11.12	DHAN foundation	500	
Wild and pet bird medicine (National)	Veterinary Pathology, MVC, Chennai	28.01.13 - 11.02.13	TANUVAS	25	
Snake envenomation in livestock	Veterinary Clinical Medicine, Ethics and Jurisprudence, VC&RI, Namakkal	06.02.13	TANUVAS	80	
Cobia Culture (National)	FC&RI, Thoothukudi	01.03.13 - 02.03.13	Indian Council of Agricultural Research	120	

Seminars / Symposia

Title of the Programme	Name of the Department / Institute	Duration	Sponsoring Agency	No. of participants
Advanced Technologies in Livestock Production for Socio- Economic Empowerment of rural farmers	Livestock Production and Management, MVC, Chennai	08.06.12	TANUVAS and Department of Animal Husbandry. Govt. of Tamil Nadu	256
Food Mela	KVK, Namakkal	11.01.13	National Agricultural Development Programme	378

EXTENSION EDUCATION ACTIVITIES



10. EXTENSION EDUCATION ACTIVITIES

Extension Education

Directorate of Extension Education is functioning with the objective of planning and execution of all extension programmes of the University in close consultation and co-operation of the Deans and the Directors of the University. The Directorate collaborates and co-ordinates the research findings and outreach programmes with the Dept. of Animal Husbandry, Tamil Nadu Co-operative Milk Producers Federation Ltd., Tamil Nadu Livestock Development Agency and other Government organizations by conducting regular trainings and refresher courses. To create awareness among the farmers on the latest developments in the field of Veterinary and Fisheries Sciences, it publishes periodicals, bulletins etc. For effective dissemination of information for the rural mass, exhibitions, media coverage, All India Radio and Television coverages are also being organized at regular intervals. It also guides and supervises various centres in conducting training programmes. Correspondence courses through print mode and web mode and other transfer of technology projects are also taken up by this Directorate. Through the outreach programmes, 6,99,010 farmers were benefited and health care services provided to 1,66,145 Livestock including poultry during the report period.



Audio / Video lessons

Totally, 38 video lessons and 3 audio lessons were prepared by utilizing the well equipped video unit and distributed to the VUTRCs / FTCs / KVKs and Research



Stations, information centres, NGOs, line departments and to the farming community to serve as teaching tool for farmers and end users. During the report period, 669 video lessons were screened and 50,821 farmers benefited. The Audio / Video lessons are being sold through the VUTRCs / FTCs / KVKs and Agricultural Technology Information Centre of the University.

Continuing Education programmes

| 111 |

Continuing Education programmes are being conducted for the University faculties, Veterinary Assistant Surgeons, Assistant Directors of Animal Husbandry Department, Officers of various organizations like Tamil Nadu Co-operative Milk Producers Federation Ltd., Tamil Nadu Livestock Development Agency, National Dairy Development Board and livestock farmers. During the year, 353 staff of line Departments trained in 10 different programmes.



Training Programmes

Three FTCs, fifteen VUTRCs, one Regional Research Centre, One Small Animal Ruminants Research Centre, three KVKs, and a scheme on Veterinary Animal Sciences Information and Service Centre are involved in imparting training programmes on various aspects of animal husbandry, poultry, fodder development, products technology, marketing and fisheries. These training programmes are organised based on the needs of the farmers.



The training for farmers and entrepreneurs on dairy farming, sheep and goat farming, pig farming, rabbit farming, poultry farming, composite fish culture, fish seed production, prawn culture, ornamental fish culture, integrated farming on duck-cum-fish culture, agro-forestry, fodder development, mixed farming, preparation of value added milk, meat, fish products, etc., and the demonstration on all aspects of these activities have been successfully conducted. During the period under report, 513 on-campus training programmes and 1151 off-campus training programmes were conducted benefiting 15,293 and 73,118 farmers respectively.

Scientific Advisory Meetings

- The 10th Scientific Advisory Committee (SAC) meeting of KVK, Kundrakudi was held on 01.11.2012. Dr.R. Prabakaran, Vice-chancellor, TANUVAS chaired the meeting. Dr. S. Prabhu Kumar, Zonal Project Director, ICAR, Bangalore participated in the meeting.
- The 7th Scientific Advisory Committee (SAC) meeting of KVK, Namakkal was held on 02.11.2012. Dr. R. Prabakaran, Vice-chancellor, TANUVAS chaired the meeting and Dr. S. Prabhu Kumar, Zonal Project Director, ICAR, Bangalore participated in the meeting.
- The 16th Scientific Advisory Committee (SAC) meeting of KVK, Kattupakkam was held on 05.11.2012. Dr. R. Prabakaran, Vice-chancellor, TANUVAS chaired the meeting and Dr.C.V.Sairam, Principal Scientist, Zonal Project Directorate, ICAR, Bangalore delivered special address.



Sponsored Training Programmes organized

With the coordination of Department of Animal Husbandry, Govt. of Tamil Nadu, training programmes for the beneficiaries of Tamil Nadu Government scheme on "Priceless Distribution of Milch Cows, Goat and Sheep" were organized through the University Peripheral Centres. During the period January 2012 to December 2012 a total of 8800 dairy farmers, 67882 goat farmers and 9665 sheep farmers were trained and benefitted. Likewise, 8805 fodder farmers were trained under



fodder development programme and 1167 poultry farmers were trained under Poultry Development programme.

Advices and Consultancy

The total number of advices and consultancy services rendered during the year in person, by post, telephone, e-mail, touch screen and by way of field visits were 44,552.

Mass Media Coverage

A total of 186 radio programmes and 16 TV programmes were performed during the year 2012-13.

Exhibition cum Mass Contact Programmes

Exhibitions are effective visual media through which the results of research and development are disseminated. During 2012-13, 219 exhibition cum mass contact programmes were conducted benefiting 3,93,596 farmers and 1,66,145 animals.



Regional Livestock and Fisheries Exhibitions

The second of the seven "Regional Livestock and Fisheries Exhibitions" proposed to be conducted in TANUVAS across the length and breadth of Tamil Nadu to educate livestock and fish farmers about various technologies and recent advances in livestock and fisheries sectors was organized at Corporation Exhibition Grounds, Tirunvelveli from 08.09.2012 to 10.09.2012. Tmt. Vijita Sathyananth, Worshipful Mayor, Tirunelveli Corporation inaugurated the exhibition and in her inaugural address requested the livestock and fish farmers to adopt the latest technologies exhibited to improve the living standard and also to increase the national economy. Thiru Dharmendra Pratap Yadav, I.A.S., Commissioner, Directorate of Animal Husbandry and Veterinary Services, Government of Tamil Nadu delivered special address and released the book on dog rearing. More than 8000 farmers visited the exhibition.



Likewise, third of the seven "Regional Livestock and Fisheries Exhibitions" was organized at T.A. Ramalingam Chettiar Higher Secondary School, Coimbatore from 29.12.2012 to 30.12.21012. Thiru T.K.M.Chinnaiyya, Hon'ble Minister for Animal Husbandry, Govt. of Tamil Nadu inaugurated the exhibition and delivered the inaugural address. Thiru S. Damodaran, Hon'ble Minister for Agriculture, Government of Tamil Nadu Thiru K.A.Jayapal, Hon'ble Minister for Fisheries, Thiru Pollachi V. Jayaraman, Hon'ble Deputy Speaker, Tamil Nadu Legislative Assembly, Thiru M.Karunakaran, I.A.S., District Collector, Coimbatore and Thiru S.M. Velusamy, Worshipful Mayor of Coimbatore City Municipal Corporation delivered special addresses. A total of 83 stalls with charts, models, pamphlets, CDs, video programmes and live specimen showcasing farming and product technology inlivestock and fisheries sciences were arranged. Thiru T.K.M.Chinnayya, Hon'ble Minister for Animal Husbandry, Govt. of Tamil Nadu, Thiru Gagandeep Singh Bedi, I.A.S., Secretary, Department of Animal Husbandry, Dairving and Fisheries, Government



of Tamil Nadu and Dr. S.Shanmugasundaram, former Vice-Chancellor, TANUVAS participated in the pet carnival organized on 29.12.2012 in which about 50 per owners participated and prizes were distributed for the best maintained breeds. More than 15000 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.

Touch Screen Information Kiosk

Sixteen Touch Screen Information Kiosk facilities have been created at Madras Veterinary College campus; Agricultural Technology Information Centre, Kattupakkam; Veterinary College and Research Institute, Namakkal; Fisheries College and Research Institute, Thoothukkudi; VUTRCs located at Coimbatore, Dharmapuri, Erode, Karur, Tiruppur, Madurai and Nagercoil; FTCs at Kancheepuram and Theni; Institute of Poultry Production Management, Chennai; Regional Research Centre, Pudukkottai and TANUVAS Headquarters. Softwares on Dairy farming, Goat farming, Poultry farming, Japanese quail farming, marketing avenues and Right to Information Act-2005 have been developed and installed for the benefit of farmers and public.



Agricultural Technology Information Centre (ATIC), Kattupakkam

Agricultural Technology Information Centre is established at Kattupakkam for providing services, product information through single window delivery system under the financial support of National Agricultural Technology Project of ICAR. During the period under report, the following works were carried out at this centre.

 A total of 8808 University Publications, 65 ICAR publications and 1988 video lessons were sold during the period benefiting 4447 farmers / entrepreneurs. A total of 3000 pamphlets / leaflets/ folders, etc were also distributed free of cost.

- Video lessons on various aspects of livestock farming, fisheries and product preparation were screened for the benefit of the farmers visiting ATIC. A total of 1981 farmers / entrepreneurs benefited during the period.
- Technical advisory services rendered during the report period: in-person 1981; through post 41 and through telephone 258.

PONGAL VIZHA - 2013

TANUVAS has a well established network of training, research and diagnostic centres apart from its constituent colleges across the state for ensuring sustainable livelihood through livestock activities. In order to intensify the awareness on the functioning and services provided by TANUVAS, the university celebrated Pongal Vizha-2012 as "Kalnadai Matrum Meenvala Vara Vizha" during January – February 2012 through its constituent colleges and extension outlets. During this celebration, a total of 138 programmes *viz.*, trainings,

seminars, exhibitions, farmers meet nd livestock health camps were conducted during the month of January -2013 as Livestock and Fisheries week (Pongal *vizh*a) involving a total of 39174 beneficiaries. The Livestock and Fisheries week celebrations were organized to showcase the activities and achievements of TANVUAS and importance of livestock, poultry and fisheries sector in promoting the rural economy



Distance Education Programme

The Directorate of Distance Education is functioning with the aim of providing learning opportunity to farmers, farm women, school drop outs, Veterinarians etc., in Animal Husbandry and Veterinary Science through print and online mode. The courses are offered through distance education and candidates enrolled during 2012 - 2013 are listed below.

Sl. No.	Course title	Medium of instruction	Duration of the course	Mode of delivery	No. of candidates enrolled	
1	Animal welfare	English	6 months	Print and Online web based mode	61	
2	Optimizing cattle feeding based on locally available fodder resources	English	6 months	CD – ROM based	12	
3	Management of Infertility in Bovines	English	6 months	Print mode supplemented with CD	18	
4	Recent trends in disease diagnosis and treatment of ruminants	English	6 months	Print mode supplemented with CD	25	
5	Dairy farming	Tamil	6 months	Print mode	189	
6	Goat farming	Tamil	3 months	Print mode	227	
7	Livestock and poultry farm manager	Tamil	6 months	Print mode	3	
8	Livestock product technology	Tamil	6 months	Print mode	1	
9	Animal feed mill management	Tamil	6 months	Print mode	1	
10	Fodder production	Tamil	6 months	Print mode	52	
11	Japanese quail production	Tamil	6 months	Print mode	39	
12	Turkey farming	Tamil	6 months	Print mode	59	
13	Nattu kozhi valarppu	Tamil	3 months	Print mode	25	
	TOTAL					

Skill Development Training Programmes

Sl. No.	Courses offered	No. of candidates enrolled
1	Dairy Farm Assistant	12
2	Dairy Plant Assistant	3
3	Milk and Milk Products Quality Control Assistant	9
4	Feed Mill Supervisor	5
5	Feed Analytical Technical Assistant	7
6	Livestock Farm Manager	13
7	Poultry Farm Manager	7
8	Hatchery Supervisor	4
9	Poultry Farm Supervisor	5
10	Poultry Breeder Farm Supervisor	1
11	Turkey farming Assistant	2
12	Poultry Vaccinator	10
13	Laboratory Assistant	13
14	Surgery Theatre and Radiology Attendant	10
15	Small Animal Attendant	-
16	Live Fish Feed Production Assistant	-
17	Shrimp farming Assistant	5
18	Fish processing assistant	1
	TOTAL	107

Self-Employment Training Programmes

SI. No.	Courses offered	No. of Candidates enrolled
1	Dairy farming	19
2	Sheep Farming	17
3	Goat Farming	40
4	Fodder and Fodder Seed Production	2
5	Preparation of Fermented Dairy Products	2
6	Livestock Farm Waste Utilization	1
7	Rabbit farming	3
8	Pig farming	8
9	Japanese Quail Farming	16
10	Desi-chicken Rearing	42
11	Emu farming	20
12	Fresh Water Fish Farming	6
13	Sea Weed Production	10
14	Ornamental Fish Rearing and Breeding	9
	TOTAL	195

PG Diploma (Distance Mode) courses (English)

Sl. No.	Title	Duration	Mode	No. of Candidates enrolled
1.	Small Animal Orthopedics	1 year	Print	10
2.	Veterinary Ophthalmology	1 year	Print	-
3.	Small Animal Dermatology	1 year	Print	10
4.	Small Animal Emergency and Critical Care Medicine	1 year	Print	10
5.	Feed Manufacturing Technology	1 year	Print	6
6.	Commercial Poultry Production and Management	1 year	Print	2
7.	Diversified Poultry Production	1 year	Print	-
8.	Ethno Veterinary Practices	1 year	Print	9
	TOTAL	47		

University Publication Division

Publication Division of this Directorate is engaged in publishing books related to livestock, poultry and fisheries and are being made available at the University Training and Research Centres, FTCs, KVKs and ATIC for sale.

- *** "Kalnadai Kathir"**, a popular Tamil Journal of this University brought out once in two months. The Life membership fee is ₹ 1000/- and annual subscription is ₹ 100/-
- * "Meenvala Kathir" a popular Tamil Journal of this University brought out once in three moths. The life membership fee is ₹ 400/- and annual subscription is ₹ 50/-.
- "Tamilnadu Journal of Veterinary and Animal Sciences", a scientific journal brought out from the university
 once in two months. The life membership fee is ₹ 1000/- and annual subscription is ₹ 300/-.
- + University "News letter" in English and the Tamil version "செய்தி மடல்" are being published monthly.
- "TANUVAS Technical Reporter" in English is being published bi-monthly from Jan. 2013





RESEARCH STATIONS AND SERVICE UNITS

| 118 |



11. RESEARCH STATIONS AND SERVICE UNITS

Research Stations

TANUVAS has the following seven research and instructional farms:

- 1. Post Graduate Research Institute in Animal Sciences, Kattupakkam
- 2. Mecheri Sheep Research Station, Pottaneri
- 3. Sheep Breeding Research Station, Sandynallah
- 4. Regional Research Centre, Pudukottai
- 5. Instructional Livestock Farm, Tirunelveli
- 6. Institute of Poultry Production and Management, Nandanam
- 7. University Research Farm, Madhavaram Milk Colony, Chennai

The stock position of the different units and revenue generated as on 31.03.2013, are given below;

Post Graduate Research Institute in Animal Sciences, Kattupakkam

Sl. No.	Name of the Unit	Stock as on 31.03.2013	Revenue Generated (₹ in lakhs)
1.	Livestock		
	Cattle and Buffalo		
	Crossbred cattle (Jersey x Sindhi)	115	25.60
	Kangayam cattle (work cattle)	2	23.09
	Murrah buffaloes	42	
	Sheep		
	Madras Red	286	
	Goat		4 20
	Non-descript	30	4.20
	Kanni	31	
	Boer X Non-descript	80	
	Pigs		
	Large White Yorkshire	159	
	Landrace	58	
	Duroc	12	22.02
	F_1 (Large White Yorkshire x Landrace)	17	33.83
	F_1 (Duroc x Large White Yorkshire)	16	
	Three-way synthetic	24	
	75% crossbred pigs	112	
2.	Ostrich	134	3.08
3.	Rabbit		
	New Zealand White	228	0.33
	Soviet Chinchilla	17	
4.	Farm produces	-	0.95
	Total		68.08

Mecheri Sheep Research Station, Pottaneri

Sl. No.	Name of the Unit	Stock as on 31.03.2013	Revenue Generated (₹ in lakhs)
1.	Sheep Mecheri	680	7.77
2.	Goat Salem Black	178	
3.	Farm produces		3.13
Total		10.90	

Sheep Breeding Research Station, Sandynallah

Sl. No.	Name of the Unit	Stock as on 31.03.2013	Revenue Generated (₹ in lakhs)
1.	Sheep Nilagiri Sandyno Dorset cross	499 733 170	10.36
2.	Rabbit New Zealand White Soviet Chinchilla	57 79	0.13
3.	Geese	94	-
4.	Farm produces		1.99
	Total	12.48	

Regional Research Centre, Pudukottai

Sl. No.	Name of the Unit	Stock as on 31.03.2013	Revenue Generated (₹ in lakhs)	
1.	Turkey	600	3.79	
2.	Emu	123	0.75	
Total			4.54	

Instructional Livestock Farm, Tirunelveli

Sl. No.	Name of the Unit	Stock as on 31.03.2013	Revenue Generated (₹ in lakhs)
1.	Sheep		
	Vembur	118	
	Kilakarsal	126	3.06
2.	Goat		5.00
	Jamunapari	36	
3.	Fodder		1.68
Total			4.74



| 121 |

	Fourtry Research Station, Chennar						
Sl. No.	Name of the Unit	Stock as on 31.03.2013	Revenue Generated (₹ in lakhs)				
1.	Japanese quails	7174					
2.	Turkey	929					
3.	Broiler	712					
4.	Rhodo white	1267					
5.	RIR	583	32.60				
6.	Fancy	2418					
7.	Guinea fowl	1095					
8.	WLH	574					
9.	Geese	15					
	Total		32.60				



Nandanam Chicken - I



Nandanam Chicken - II

University Research Farm, Chennai

Sl. No.	Name of the Unit	Stock as on 31.03.2013	Revenue Generated (₹ in lakhs)
1.	Livestock		9.40
	Cattle		
	Bargur	03	
	Deoni	09	
	Gir	12	
	Kangayam	07	
	Rathi	04	
	Sahiwal	19	
	Tharparkar	04	
	Jersey Crossbred	01	
	Crossbred	17	
	Buffalo	08	
	Sheep		
	Madras Red	03	
	Mecheri	04	
	Trichy Black	04	
	Coimbatore	03	
	Nilgiri	03	

	Sandyno	03	
	Ramnad White	03	
	Vembur	01	
	Kilakarsal	03	
	Katchakatti	03	
	Chevaadu	03	
	Dorset X Nilgiri	02	
	Goat		
	Barbari	08	
	Tellicherry	26	
	Kanni Adu	02	
2.	Pigs		
	Large White Yorkshire	29	0.41
	Landrace	10	
	Duroc	02	
3.	Rabbit		0.10
	New Zealand White	35	
	Soviet Chinchilla	31	
	White Giant	19	
5.	Farm produces		23.30
	Total		33.21



Crossbred cows



Graded Murrah Buffalo

Training and Research Centres

TANUVAS has 18 Veterinary University Training and Research Centres (VUTRCs), three Farmers Training Centres (FTCs), one TANUVAS Regional Research Centre, one Instructional Livestock Farm, three Krishi Vigyan Kendras (KVKs) and two Fisheries Training and Research Centres (FTRCs) spread over entire Tamil Nadu to render service to the farming community and transferring technological findings of TANUVAS to the farmers. The services rendered by these centres during this period are given below:



	On campu	and Off s Trainings		Clinica	l activities		nct es	
Location of the Centres	Training	Persons benefited	Specimens analysed	Outbreak attended	Infertility cases treate	Deworming/ Vaccination carried out	Technical Advices given	Mass Conta Programm
Veterinary University Training and Research Centres								
Coimbatore	113	4612	141	2	5	27288	4393	33
Dharmapuri	72	8166	370	2	-	595	547	9
Dindigul	60	3229		1	5	7518	591	32
Erode	94	9566	436	-	120	1721	3252	4
Karur	36	858	487	1	495	8996	2125	19
Madurai	77	3407	1089	-	133	4255	4035	3
Melmaruvathur	47	1819	520	-	1925	6925	473	15
Cuddalore	91	3624	133	-	46	268	410	4
Rajapalayam	41	2175	90	-	-	215	2364	7
Salem	65	4571	111	6	1890	1922	1176	2
Tiruchirapalli	87	3725	43	-	14	4000	1300	14
Thanjavur	67	3406	35	-	119	278	31456	10
Tirupur	106	6227	820	-	-	1280	2925	3
Vellore	133	8125	154	-	1	280	941	1
Parakkai	32	3178	-	-	-	525	1271	2
Villupuram	20	925	-	-	-	-	-	4
Tiruvannamalai	45	1729	2	1	161	263	306	2
Krishnagiri	27	1717	5816	-	-	5505	45	-
Instructional Livestock Farm, Tirunelveli	55	3873	514	-	-	1359	969	-
Regional Research Centre, Pudukottai	71	2311	106	-	-	3451	1272	-
Fisheries Training	and Res	earch Centre	S					
Thanjavur	12	255	-	-	-	-	1050	2
Parakkai	21	409	-	-	-	-	22	4
Krishi Vigyan Kend	dras			· · · · ·	,	,		
Kattupakkam	283	19792	710	-	35	675	1428	2
Kundrakudi	120	2866	-	-	-	-	3611	28
Namakkal	98	4344	-	-	20	1246	2784	-
Farmers' Training	Centres	I						
Tiruvarur	9	339	-	_	159	333	1400	17
Kancheepuram	63	3237	5626	_	-	2105	369	5
Theni	49	2085	-	-	-	1242	1619	3
Total	1994	110570	17203	13	5128	82245	72134	225

SERVICE UNITS

The activities of the service units such as Library, Computer Centre, Bioinformatics Centre, Clinical Services and laboratory services 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 the following four libraries at its constituent colleges with large collection of books and journals. In addition, they possess CD-ROM databases.

- 1. Madras Veterinary College Library, Chennai
- 2. Veterinary College and Research Institute Library, Namakkal
- 3. College of Food and Dairy Technology Library, Koduvalli
- 4. Fisheries College and Research Institute, Thoothukudi.

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 31.3.2013 at TANUVAS libraries

Particulars	MVC, Chennai	VC&RI, Namakkal	CFDT, Koduvalli	FC&RI, Thoothukudi
Books purchased	270	399	-	1,543
Total No. of books	42,903	10,241	2,265	16,255
Periodicals and monthly journal	160	61	13	44
e-Books	250	-	-	-
Journals with online access	90	19	21	-
Access to Online Journals through CeRA	2,800	-	-	1,700
Student and Staff beneficiaries	38,563	14,653	280	42,500
Non-member beneficiaries	3,548	1,123	-	-
Total back volumes	25,731	3,300	-	-
Video lessons	196	48	-	65

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 under NAIP scheme of the Dean, Madras Veterinary College, has been established.
- Scanning, Network Printing, Electronic multicopying and Digital Photography facilities offered by this department are utilized by various departments.
- Periodic updation of TANUVAS website, www. tanuvas.ac.in, for the benefit of students and stakeholders.
- □ One GB net working connectivity was established during this year.



The Student Computer Centre provides a comprehensive environment for computing, browsing, e-mailing and networking, so as to improve the learning productivity 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 particularly in animal sciences. The Computer Centre has 38 systems for the students and trainees to use and Internet Kiosk has 20 systems to enable browsing by students and trainees.

The e-Learning Laboratory caters to the needs of content developers of the courses being offered for the BVSc & AH Degree Programme under the NAIP Scheme on "Development of e-Courses for B.V.Sc. & A.H. Degree Programme" for developing e-contents.

TANUVAS Website (www.tanuvas.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, 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, Govt. of India, New Delhi. This Centre is equipped with the following facilities:

- CD ROM Data bases
- Broad band (128Kbps) 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 the period from 01.04.2012 to 31.03.2013, 439 scientists and research scholars of TANUVAS have utilized the online and offline facilities of this centre. During the reporting period, 13 students from outside colleges completed their projects. The revenue earned through the students research work was ₹ 1,45,000/-

Clinical services

Veterinary Teaching Hospital and the Emergency Critical Care Unit, Centralised Clinical Laboratory at Madras Veterinary College, Peripheral Veterinary Hospital at Madhavaram are under the control of the Directorate of Clinics. Veterinary Teaching Hospital at Veterinary College and Research Institute, Namakkal is under the control of the Dean, Veterinary College and Research Institute, Namakkal. A total of 1,32, 884 cases were treated during 2012-13 with a daily average of 369 cases. A revenue of ₹46,56,888/- was generated through hospital collection and ₹ 20,69,500/- was generated through the conduct of training programmes for the year 2012-13.

Veterinary Teaching Hospital

Clinical ward training is being imparted to the UG and PG students at Madras Veterinary College Teaching Hospital. Hands on clinical training is also being given in this Hospital to the students of Chittagong Government Veterinary College, Bangladesh, Michigan State University, USA, Virginia Tech University, USA and University of Putra Malaysia, Malaysia. 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.

To encourage and motivate UG students, a Clinical Club has been established and Clinical meetings 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 3 months.

In-patient Facilities

- At Madras Veterinary college teaching hospital, 300 large and 87 small animals were admitted and treated as in-patients for various ailments.
- ◆ At Veterinary College and Research Institute, Namakkal, 2,406 large animals and 66 small animals were admitted and treated as in-patients.
- A separate quarantine unit to house animals suspected for rabies is functioning in both the institutions.

Hospital Service

The following are the species wise clinical cases attended during the year 2012-13 :

Description	MVC		VUPH	VC&RI	ΤΟΤΑΙ
Description	Clinics	RVSS	Madhavaram	Clinics	TOME
Bovines	9233	514	1180	9252	20179
Canine	62902	4194	14239	10265	91600
Feline	3391	390	249	283	4313
Equine	1696	41	14	386	2137
Caprine/Ovine	3526	639	820	2706	7691
Avian	4878		976	131	5985
Others	616	62	101	200	979
Total	86242	5840	17579	23223	132884

DETAILS OF PROPHYLACTIC VACCINATIONS CARRIED OUT

Name of the vaccine	Clinics, MVC, Chennai	Clinics, VC&RI Namakkal	VUPH Madhavaram Milk Colony	Total
Anti-Rabies vaccine for Dogs	5334	802	1758	7894
Distemper/ Hepatitis/ Parvo & Leptospirosis vaccine for dogs	10545	1815	2610	14970
Ranikhet disease vaccine for poultry	3592	0	0	3592
Total	19471	2617	4368	26456

Pharmacy

The Pharmacy attached to the teaching hospital dispenses drugs to different units based on prescriptions for treatment of sick animals free of cost. A sum of $\overline{\mathbf{x}}$ 14 lakhs was utilized towards the purchase of drugs for MVC teaching hospital, $\overline{\mathbf{x}}$ 6 lakhs for VC&RI Hospital, Namakkal and $\overline{\mathbf{x}}$ 2.5 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 State of the art facilities are available at TANUVAS Hospitals:

Madras Veterinary College, Chennai

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

Veterinary College and Research Institute, Namakkal

- ➤ Ultra sound scanner
- ⇒ ECG
- ➤ Endoscopy
- ➤ Operating ophthalmic microscope
- ➤ Dental scalar
- ► Vital Sign Monitor
- ► Large and small gas Animal Anaesthetic machine
- → Ventilator
- ► Echo colour doppler

Theatre Services

- 664 major, 438 minor soft tissue, 138 Orthopaedic and 109 Ophthalmic surgeries were done at MVC Teaching Hospital
- * 410 major, 242 minor, 14 orthopaedic and 12 ophthalmic surgeries were done at VC & RI Teaching Hospital, Namakkal
- 22 major and 23 minor surgeries were done at Veterinary University Peripheral Hospital, Madhavaram

Cases attended at the referral clinics

Particulars	MVC Chennai	VUPH, Madhavaram	VC & RI Namakkal
Ultrasonography	2368	4	370
Endoscopy	44		63
ECG	937	6	204
Radiology	6869	8	794
Laparoscopy	14		
Vaginal Cytology	764		
Echo Doppler	350		
Arthroscopy	5		

Emergency and Critical care unit of Resident Veterinary Service Section, MVC, Chennai

During the period under report, the details of emergency cases treated are furnished hereunder:

Species	No. of cases
Bovine	203
Canine	3188
Feline	118
Equine	10
Caprine & Ovine	491
Others	1153
Total	5163

Mobile Veterinary and Ambulance Services

1979 livestock / pets were treated by the Mobile Veterinary Service rendered at the hospitals at Madras Veterinary College, Veterinary College and Research Institute, Namakkal and Veterinary University Peripheral Hospital, Madhavaram Milk Colony, Chennai.

Veterinary Medical Record Section

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

Kalnadai Matrum Meenvala Vara Vizha 2013



A free livestock and pet animal health care campaign was organized on 21.01.2013. Dr.R. Prabakaran, Vice-Chancellor, TANUVAS inaugurated the animal health camp and in the presidential address highlighted the advanced animal health care services offered by TANUVAS. More than 250 dogs were vaccinated against rabies free of cost and a total of 195 animals and 50 birds were dewormed and treated for various health issues. A Rabies awareness programme for more than 100 students of Sakthi Matriculation School, Madhavaram was also conducted.

Revenue Generated

	MV	С	VUPH	VC&RI	TOTAL
	Clinics	RVSS	Colony	Clinics	
Hospital	25,82,883	2,32,885	8,57,215	9,83,905	46,56,888
Training	20,69,500				20,69,500
Total	46,52,383	2,32,885	8,57,215	9,83,905	67,26,388

LABORATORY SERVICES

This University has the following research service laboratories to serve the livestock, poultry and fisheries sector.

Centralised Clinical Laboratory (CCL), MVC, Chennai

The number of samples screened in CCL is furnished below:

Particulars	No. of samples
Hematology	8000
Urinalysis	535
Biochemistry	5458
Coprology	496
Dermatology	47
Clinical microbiology	1319
ABST	443
Cytology	1185
Total	17483

Haematological examination of in companion animals revealed that 21% of positive cases were infected with E.canis, followed by B.gibsoni 7%, H.canis 2%, B.canis 2% and 39% of animals showed anemic changes. In case of farm animals, 14% of positive cases were infected with Theileria sp and 32% were with Anaplasma sp which is correlating with 52% of farm animals showing anemic changes.

A total of 1185 Fine Needle Aspiration Biopsy and impression smears were examined during 2012-13. Out of that, 358 samples were positive for neoplastic condition, which included Transmissible venereal tumour, carcinoma, papilloma, etc., 67 samples revealed inflammatory changes and 183 samples showed the presence of Malassezia sp on tape impression cytology. A total of 496 dung samples were screened for parasitic ova. Ancylostoma sp ova (51), Toxocara sp. (7), Coccidial oocysts (5) and Occult blood (4) were predominant in companion animals, while in farm animals, Strongyles sp. (94), Strongyloides sp.(40), Amphistomes (22), Eimeria oocysts (13), Coccodial oocysts (82), Toxocara sp. (7) and Trichuris sp (7) were prevalent.

Out of 1319 clinical materials subjected for culture and antibiotic sensitivity test, 908 samples were from companion animals, 406 samples from farm animals and 5 samples from wild animals and others. Out of these, 607 samples were subjected for fungal culture. *Staphylococcus sp* was the frequently isolated microorganism from canine pyoderma and was sensitive to enrofloxacin followed by amikacin and relatively resistant to amoxicillin.

In fungal dermatitis, more of opportunistic fungi Aspergillus niger sp was frequently isolated followed by Penicillium sp and Curvularia sp. Along with the molds, Yeasts such as Malassezia pachydermatis and Candida albicans were also isolated.

At total of 5458 serum samples were tested for various biochemical parameters. The request for kidney function test *viz*. Bun and creatinine alone was 4018 (73.6%) and 4251 (77.8%) respectively. 1283 (31.9%) of clinical samples showed elevated bun values and 1131 (26.6%) showed elevated creatinine. In case of liver function test, 3140 samples were tested, of which 572 (18.2%) samples showed elevated ALT. Similarly, 146 samples (24.8%) out of 587 tested showed elevated AST.

Central Instrumentation Laboratory (CIL), MVC, Chennai

During the reporting period, a total of 1335 persons including students, research scholars and staff members of this institution as well as from other institutions utilized the laboratory facilities available in this department. A total number of 366 samples were
received for various examinations (namely Electron Microscopy, Freeze Drying, Cryostat Microtomy and Fluorescent microscopy, Inverted microscopy etc.). A sum of ₹ 6,06,860/- has been collected as fee towards project work undertaken in this laboratory and also towards screening of samples for electron microscopy, and freeze drying.

Central University Laboratory (CUL), MMC, 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 involves in investigation of animal diseases and monitoring of animal health in University Farms and provides Anthrax free health certificate to exporters and creates awareness and provides expert guidance to control livestock and poultry disease problems to the farmers. CUL provides need based short term training on animal disease diagnosis. A total of 12,210 samples received from various parts of Tamil Nadu for various livestock and poultry diseases were screened during the period under report and a sum of ₹ 2,12,180/- was generated as revenue.

Zoonoses Research Laboratory, MMC, Chennai

A total of 4,470 human and 791 animal serum samples from suspected cases were screened by MAT for detection of leptospiral antibodies. Out of 4,470 human samples tested, 1844 (41.25%) were found positive. The predominant serogroup was *Leptospira australis*. Out of the 791 animal samples tested, 377 (45.55%) samples were found positiveand the predominant serogroup was *L.Australis*. Revenue earned during 2012-13 was ₹ 17,82,976/-.

Bacterial Vaccine Research Centre, Madhavaram Milk Colony, Chennai

- During the reporting period, field trial with 1200 doses of heat inactivated Johne's disease (JD) vaccine was carried out in sheep, goat and cattle at PGRIAS, Kattupakkam; SBRS, Ooty; MSRS, Mecheri; VCRI, Namakkal; URF, Madhavaram and a Gosala in Bangalore. The vaccine was found to be safe, effective in reducing clinical cases of Johne's disease, faecal shedding and mortality due to JD.
- Mannheimia haemolytica was isolated from Japanese quail and an autogenous vaccine was developed for the control. 4,38,000 doses were prepared and supplied to Japanese Quail breeders.
- One hundred doses of *Pasteurella* vaccine for Snuffles were prepared and supplied to PGRIAS, Kattupakkam
- Under Indo US Research Project, in collaboration with Virginia Tech, USA, a project was carried out on "Clinical trial with Myoconda® in *Mycobacterium avium subsp. paratuberculosis* (Map) infected small ruminants."
- This unit has generated a revenue of ₹ 1,64,250/through sale of vaccine and student projects

Viral Vaccine Research Centre, Madhavaram Milk Colony, Chennai

- Transfer of Technology of Bluetongue multivalent Inactivated Vaccine (containing BTV serotypes1,2,10,16 and 23) to M/s. Sanvita Biotechnologicals Private Limited, Hyderabad under non-exclusive basis on lumpsum payment of ₹ 10 lakhs.
- Utilizing the laboratory facility and technical guidance from this centre, two students from abroad have completed their project work during the period under report. A sum of GBP 1000 has been generated through student research projects.

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, a total of 290 laboratory animals were maintained at this Unit. Guinea pigs (3), rats (222) and mice (15) were sold to researchers, through which a sum of ₹ 51,550/- was earned during 2012-13.

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

This laboratory is involved in analysis of mycotoxins, pesticides and drug residues in animal feed and food. During the period under report, 2733 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 ₹ 4,75,400/-. The unit is also rendering diagnostic services during disease outbreaks with regard to toxicity (namely Zinc phosphide, Nitrate/Nitrite, Hydrocyanic acid etc).

Animal Feed Analytical and Quality Assurance Laboratory, Namakkal

During the reporting period, 103 weather based bulletins (bi-weekly) were issued for the benefit of poultry and agricultural farming for Namakkal, Salem, Dharmapuri and Krishnagiri districts of North West Agro climatic zone of Tamil Nadu. A total of 15847 samples were received and 38352 tests were carried out at this laboratory. Fifty different parameters covering proximate, mineral, adulterants, contaminants and mycotoxins in feed, feed ingredients and vitamin concentration in premixes were analysed. Results were immediately dispatched by email and SMS to the farmers. The revenue generated during 2012-13 was ₹ 55.61 lakhs.

Poultry Disease Diagnosis and Surveillance Laboratory, Namakkal

Haemagglutination test was conducted for 915 samples. Newcastle disease (ND) virus antigen was detected in 412 samples and Infectious Bronchitis virus antigen in 74 samples. A total of 47,437 blood samples collected from 871 flocks were tested by Haemagglutination Inhibition test. Out of 1741 water samples analyzed, 919 samples (52.8%) were found to be contaminated with coliforms. 327 feed samples were tested for microbial analysis, of which 71 (21.7%), 48 (14.7%), 33 (10.1%) and 3 (0.9%) samples were found to be contaminated with *Clostridium* spp., *Staphylococcus* spp., *E.coli* and *Aspergillus* spp. respectively. Out of 584 samples screened for *Salmonella* organisms, two samples found positive for *Salmonella* samples. The revenue generated during the year 2012-2013 was ₹ 6,05,964/-

Avian Disease Laboratory, Thalaivasal

- In this laboratory, 3067 serum samples were tested by Haemagglutination Inhibition test for Ranikhet disease antibody profiling.
- Out of 68 blood smears of dairy animals examined, 28 percent of the samples were found positive for blood parasitic infestation. Suitable control measures were advised to the dairy farmers. 211 water samples were analysed for the establishment of new poultry farms. The results revealed that the

TDS level was below 1000 ppm in 90 percent of the samples and advised accordingly.

To control mortality, disease outbreaks and to exploit the maximum production potential and profit margin in poultry farming, 516 poultry necropsies, 91 farm visits and 233 farmers queries were attended. 52 least cost feed formulations were designed and given to poultry farmers. Revenue generated during this reporting year was ₹ 29,050/-.

Shrimp Disease Diagnostic Laboratory, Madhavaram Milk Colony, Chennai

This laboratory extends diagnostic services to the farmers undertaking aquaculture. The support services include diagnosis of diseases in shrimp and fish, water quality and microbiological analysis of samples, training on diagnostic techniques to the farmers, technicians and students, extending research facilities to the students to carry out project work and operating research projects of aquaculture relevance. A total of 16 samples which included 13 water samples and 3 shrimp samples were analyzed. A total income of ₹ 29,000/- was generated during the period from 01.04.2012 to 31.03.2013 through diagnostic services, training and student project bench fee.





12. FINANCE

During the year 2012-13, grants totalling to ₹ 20,434.99 Lakhs were received from various sources as detailed below :

ſ₹	in	Labbe)
15	- 111	Lakiisi

Government of Tamil Nadu	14135.66
Government of Tamilnadu Agencies	16.42
Indian Council of Agricultural Research	1758.91
Departments of Government of India	3596.37
Private and Other Agencies	237.30
Revenue generated	690.33
Total	20434.99

Finance and Accounts Revenue

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

i. Government of Tamilnadu

Under section 34 of TANUVAS Act 1989, the Government of Tamilnadu released the following nonlapsable grants to the University.

- a. a 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.
- b. a grant not less than the estimated expenditure on pay and allowances of the staff, contingencies, supplies and services of the University ; and
- c. a grant to meet such additional items of expenditure, recurring and non-recurring, as the Government may deem necessary for the proper fuctioning of the University.

The State Government has released the following grants during the year 2012-2013 :

Non-Plan - For Veterinary	7687.93
Plan (including New schemes) - For Veterinary	5404.08
Plan (including New Schemes) - For Fisheries	1043.65
Total	14135.66

(₹ in Lakhs)

ii. Indian Council of Agricultural Research

The ICAR has continued to support the University by releasing the following grants during the year : $(\notin \text{ in Lakhs})$

	(III Lakiis
For 100% financed schemes	1029.24
For 75% financed schemes	140.05
Development grant	589.62
Total	1758.91

iii. Government of India

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

(₹ in Lakhs)
3596.37

GOI	3596.37
Total	3596.37

iv. Agencies

Tamilnadu Government Agencies	16.42
Other Private Agencies and Training Grants	237.30
Total	253.72

v. Revenue Generated

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	690.33
--	--------

Grand Total

20434.99

Expenditure

The actual expenditure incurred during 2012-13 (Un-audited) under different grants are detailed below:

i. Government of Tamilnadu Grants :

	(₹ in Lakhs)
Non-Plan for Veterinary (Including pension)	7738.11
Plan for Veterinary (including New schemes)	6039.38
Plan for Fisheries (including New Schemes)	1021.80
Total	14799.29

ii. ICAR Schemes Grant

100% financed schemes	1061.52
75% financed schemes	116.16
100% ICAR Development Grant	601.21
Total	1778.89

iii. Government of India Scheme Grant 3663.83

iv. Tamil Nadu Government and Private

Agency Grant	382.74
Grant Total Expenditure	20624.75

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

Sl. No.	Details	(₹in lakhs)
1.	Pay and allowances (including pension)	11381.09
2.	Recurring contingencies	3557.62
3.	Library books and Journals	159.96
4.	Non-recurring	5506.08
	Total	20624.75

PUBLICATIONS

| 136 |

| 137 |

13. PUBLICATIONS

RESEARCH ARTICLES

Cattle and Buffaloes

- Ahirwar M.K. and V.Leela, 2012. Nutritive value and invitro degradability to Azolla pinnata for ruminants. Ind. Vet.J., 89 : 95-96
- Akila N. and K.Senthilvel, 2012. Productivity performance of Kangayam cattle. Ind. J. Anim. Sci., 82 (11):1440-1441
- Ani Bency Jacob, V. Balakrishnan and C. Kathirvelan, 2012. Effect of amount and source of vegetable oils in a high fibrous cattle diet on *in vitro* rumen fermentation, nutrient degradability and rumen cis-9, trans-11 CLA concentration. J. Applied Anim. Res., 40(2) : 148-153
- Jayakumar K., S.Dharmaceelan, S.Senthilkumar, S.Kathirvel, L.Nagarajan, A.Kumaresan, J.Chandran and N.Rajendran, 2012. Caecal dilatation in Jersey crossbred cow. Ind. Vet.J., 89 (12): 61-63
- Jayakumar K., S.Dharmaceelan, S.Senthilkumar, S.Kathirvel, N.Rajendran, L.Nagarajan, A.Kumaresan and J.Chandran, 2012. Six legged notomelia in a Holstein Friesian calf. Ind. Vet. J., 89: 73-74
- Karunakaran M., T.G.Devanathan, K.Kulasekar, P.Sridevi, Tilak Pon Jawahar, K.Loganathasamy, A.Dhali and S.Selvaraju, 2012. Effect of fertility associated protein O oxidative stress of bovine sperm cells. Ind. J. Anim. Res., 33 (1): 43-46
- Karunakaran M., T.G.Devanathan, Tilak pon Jawahar, K. Manimaran, Anandachitra, Dhali and Selvaraj, 2012. Electrophoretic profile of bull sperm membrane proteins as a tool setession of breeding bull. Ind. J. Anim. Sci., 82 :11
- Karunakaran M., T.G.Devanathan, Tilak Pon Jawahar, K.Manimaran, M.Ananda Chitra, A.Dhali, S.Selvaraju, 2012. Electrophoretic profile of bull sperm membrane proteins as a tool for selection of breeding bull. Ind. J. Anim. Sci., 82(11): 1303-1305
- Latha B.R, S.A.Basith, G.D.Raj, C.Sreekumar and M.Raman, 2012. Molecular prevalence of *Cryptosporidium* spp. in dairy calves in Southern states of India. Vet Parasitol. 188 (1-2) : 19 – 24
- Manokaran S., C.P.Devanand, S.H.Patel, R.V.Nikhate and N.N.Chaudhari, 2012. Knobbed acrosome defect in Jersey crossbred bulls. Ind. Vet. J., 89 (10) : 86-87
- Manokaran S., M.Palanisamy, K.Ravikumar, V.Prabaharan R.Ezakial Napolean and M.Selvaraju, 2012. Dystocia due to bulldog calf in a Jersey crossbred cow. Ind. Vet. J., 89(11) : 81-82
- Manokaran S., R.Ezakial Napolean, M.Palanisamy and M.Selvaraju, 2012. Hydroallantois in a Jersey crossbred cow. Ind. Vet. J., 89(11) : 86-87

- Palanivel K.M., R.Rishikesavan, S.M.Sakthivel and D.Jayanthi, 2012. Description of the infection status in Murrah buffalo herd naturally infected by Mycobacterium avium sub sp. Paratuberculosis in Tamil Nadu. Int. J. Food, Agricultural and Vet. Sci., 2 (1): 91-96
- Raja S., T.G.Devanathan, K.Kulasekar, N.Pazhanivel and C.Balachandran, 2012. White side test and endometrial biopsy for diagnosis of endometritis in repeat breeding cows. Ind. J. Anim. Res., 33 (1): 56-58
- Sakthivel P.C., D.N.Kamra, N.Agarwal and L.C.Chaudhary, 2012. Effect of Sodium Nitrate and nitrate reducing bacteria on *in-vitro* methane production and fermentation with buffalo rumen liquor. Asian-Australian J. Anim. Sci., 25 (6) : 812 – 817
- Sarath T., S.K.Singh, S.K.Agarwal, N.Arunmozhi, A.Saxena, Yohindarakumar and Umashankar, 2012 Characteristics of ovarian follicular dynamics and steroid profile during early pregnancy in buffalo. Ind. Vet. J., 90(4): 29-31
- Saravanan S. and D.Kannan, 2012. Seroprevalence of bovine brucellosis in human subjects. Ind. Vet. J., 89 (7): 129-130
- Sathiya Bama K. and P.I.Ganesan, 2013. Detection of BHV-1 in cattle by A- B ELISA Ind. Vet. J., 90(3) : 112-113
- Selvaraju M., M.Palanisamy, K.Ravikumar, S.Manokaran and R.Ezakial Napolean, 2012. Uterine torsion and fetal maceration in a crossbred cow. Ind. Vet. J., 89 (7): 107-108
- Senthilkumar K., S.Manokaran and C.Chandrahasan, 2012. A comparative appraisal of serum progresterone level during natural and induced estrous in fertile and non fertile cows. Ind. Vet. J., : 501
- Senthilkumar S., P.Vasanthakumar, M.R.Purushothaman and D.Chandrasekaran, 2012. Forages for ruminants. The North East Veterinarians (Dec) XXII : 112
- Singh P.K., R.K.Pundir, P. Kumarasamy and P.Vivekanandan, 2012. Management and physical features of migratory Pulikulam cattle of Tamil Nadu. Ind. J. Anim. Sci., 82 (12) : 1587-1590
- Srinivasan P., D.Jagadeswaran, R.Manoharan, T.Giri, G.A.Balasubramaniam and P.Balachandran, 2013. Prevalence and etiology of subclinical mastitis among buffaloes (Bubalus bubalus) in Namakkal, India. Pakistan J. Biological Sci., 16:1776-1780
- Sundararaman M.N., J.Kalatharan and K.Thilak Pon Jawahar, 2012. Computer assisted semen analysis on quantification of motion characteristics of bull semen during cryopreservation cycle. Vet.World. 5(12): 723-726

Thirumeignanam D., S.N.Rai, M.Chellapandian and R.Ravi, 2012. Acacia Tannin as Alfalfa silage additives on natural protection of ruminal protein degradation. Animal Nutrition research strategies for food security. 8:246

- Vignesh A.R., S.Dhanasekaran, G.D.Rai, C.Balachandran, N.Pazhanivel, C.Sreekumar, K.G.Tirumurugan, A.Raja and K.Kumanan, 2012. Transcript profiling of pattern recognition receptors in a semi domesticated breed of buffalo, Toda of India. Vet. Immunol. & Immunopathol., 147(1-2): 51-59
- Vinodh Kumar O.R. and L.Gunaseelan, 2012. Use of Ziehl- Neelsen staining as a preliminary diagnostic tool for bovine paratuberculosis surveillance. Ind. Vet. J., 89.(11) : 122-124
- Vinodhkumar O.R., N.R.Senthil and D.Faris, 2013. Paratuberculosis in young calves. Ind. Vet. J., 90(1) : 29-30

Sheep and Goat

- Arunachalam K., T.J.Harikrishnan, T. Anna and G.A.Balasubramaniam, 2013. Prevalence of gastrointestinal helminths in sheep at western and high altitude hilly region of Tamil Nadu. Ind. Vet. J., 90(3) :115-118
- Balachandran C., N.Pazhanivel, M.Raman and R.Sridhar, 2012. Cutaneous botryomycosis in a goat. Ind. Vet. J., 89 (12) : 114-115
- Balakrishnan G , 2012. Seroprevalence of leptospirosis in goats in Tamil Nadu. TN J. Vet. Anim. Sci., 8 (3) : 138 – 144
- Balasubramanyam D., T.V.Raja, K.T.P.Jawahar, S.Jaishankar, P.Kumarasamy and S.N.Sivaselvam, 2012. Characterization of Madras Red sheep in their breeding tract. Animal Genetic Resources, 50: 37-42
- Chellapandian M., D.Thirumeignanam and R.Ravi, 2012. Chemical composition of tree fodder for small ruminants in southern Tamilnadu. Animal Nutrition research strategies for food security 8:44
- Chitra R., S.Rajendran, D.Prasanna and A.Kirubakaran, 2012. Prediction of body weight using appropriate regression model in adult female malabari goat. Veterinary World. 5(7): 409-411
- Gadekar Y.P., A.K.Shinde, R.S.Bhatt, S.Sureshkumar and S.A.Karim, 2012. Incorporating rumen protected fat in the diet of Malpura lambs. Ind. Vet. J., 89 (10) : 124-126
- Hepsiba P., J.Ushakumari, S.M.K.Karthickeyan, M.Chandra Shekar and R.Muthezhilan, 2012. Genetic diversity in Nilagiri sheep (Ovis aries): a molecular approach through microsatellite markers. J. Scientific Transactions in Environ. and Technovasion. 5 (3) :162-166
- Kishore P.V.S., Geetha Ramesh and Sabiha Hayath Basha, 2012. Histochemistry of Phosphatases in the

epididymis of ram during postnatal development. T.N.J.Vet and Anim.Sci., 8(4)181-188

- Kishore P.V.S., Geetha Ramesh and Sabiha Hayath Basha, 2012. Postnatal differentiation and regional histological variations in the ductus epididymidis of rams. T.N.J.Vet and Anim. Sci., 8(May-June) : 145-152
- Kumaravelu N., 2013. A study on reproductive performance of sheep in field flocks of Tamil Nadu. Int. J. Food, Agriculture and Vet. Sci., 2(3) :1-7
- Manokaran S., R.Ezakial Napolean M.Palanisamy and M. Selvaraju, 2012. Uterine torsion in bicornual pregnancy in goat. Ind. Vet. J., 89(11) : 88-89
- Meenakshi Sundaram S., T.Muthuramalingam, J.S.I.Rajkumar, B.Nishanth and T.Sivakumar, 2012., Growth performance of Tellicherry goats in an organized farm. Int. J. Diary Sci. Res., 1(3): 9-11
- Mekala P., P.Mathialagan and A.Manivannan, 2012. Efficacy of fenbendazole incorporated urea molasses block in sheep and goat in Namakkal district of Tamil Nadu. Noto-are: Agriculture 12706117 (Online)
- Murali N., P.Devendran, K.Jayakumar and S.Panneerselvam, 2013. Sex chromosome chimaerism (60, XX/XY) and sister chromatid exchange frequency variation in a hermaphrodite goat. Ind. J. Small Ruminants. 19(1): 22-24
- Palanisamy M., S.Manokaran, M.Selvaraju and R.Ezakial Napolean, 2012. Uterine prolapse following abortion in a non-descript goat. Ind. Vet. J., 89(9) : 99-100
- Palanisamy M., S.Manokaran, M.Selvaraju and R.Ezakial Napolean, 2012. Hydrallantois in a non-descript goat. Ind. Vet. J., 89(9) : 101-102
- Palanivel K.M., K.Suresh kumar, S.M.Sakthivelan, P.Kumarasamy and S.N.Sivaselvam, 2012. Reproductive losses in Boer cross goats caused by B.melitensis., Ind. Vet. J., 89 (11) : 20-23
- Palanivel K.M., P.Muthusamy, K.Sureshkumar and P.Kumarasamy, 2012. Mortality in boer graded local goats in Tamil Nadu. Ind. Vet. J., 89 (12) : 22-23
- Palanivel K.M., R.Rishikesavan, K.Suresh kumar and H. Gopi,2012. Epidemiology of parasitic infection in Madras Red sheep in Tamilnadu. Int. J. Food, Agricultural and Vet. Sci., 2 : 140-145
- Palanivel K.M., K.Sureshkumar, P.Muthusamy, P.Kumarasamy and S.N.Sivaselvan, 2012. Cause-Specific mortality rates in Madras red sheep – A postmortem analysis. Ind. J. Small Ruminants. 17 (1): 125-127
- Palanivel K.M., R.Rishikesavan, S.M.K.Sakthivel and D.Jayanthi, 2012. Incidence of contagious caprine pleuropneumonia in boer cross local breeds in Tamil Nadu, India – A pathomorphological study. J. Vet. Sci., 113 : 140-143
- Paramasivan S., Geetha Ramesh, S.Ushakumary, H.Sabiha Basha and S.Venkatesan, 2013. Histological Studies



on the Magnacellular Supraoptic Nucleus of Hypothalamus in Madras Red Sheep (Ovis aries). Ind. Vet. J., 90 : 109-110

- Paramasivan S., Geetha Ramesh, S.Ushakumary, C.Balachandran and K.Kulasekar, 2012. Histomorphology of the alveolar epithelium of mammary gland in Madras red sheep. Ind. Vet. J., 89:47-49
- Prabhakar P., A Thangavelu, J. John Kirubaharan, N. Daniel Joy Chandran. 2012. Isolation and characterization of P. multocida isolates from small ruminants of avian origin. TN J. Vet. Anim. Sci., 8(3) : 131-137
- Rahima A., A.P.Nambi, G.Vijaykumar and S.Vairamuthu, 2012. Efficacy of haemodialysis on goats affected with acute ruminal lactacidosis. Ind. Vet. J., 89 (6) : 128 – 130
- Ramachandran M., K.Karunanithi and R.Annal Villi, 2012. Effect of feeding sunhemp (Crotalaria juncea L.) based complete rations on growth and nutrient utilization in lambs. Ind. J. Dairy and Biosci., 23:43-47
- Ranganathan V., S.Vasanthakumar, J.Muralidharan and K.Karunanithi, 2013. Effect of fenbendazole on growth promotion in Mecheri lambs. Vet. World, 6(2): 113-115
- Ravimurugan T. and S.Panneerselvam, 2013. Habitat and Distribution of chevaadu sheep of Tamil Nadu,India. Int. J. Food, Agri and Vet. Sci., 3 : 88-92
- Ravimurugan T., A.K.Thiruvankadan, K.Sudhakar, A.Elango and S.Panneerselvam 2012. Breed Characteristics of Pattnam Sheep of Tamil Nadu, India. Animal Genetic Resources Information FAO Journal. 51: 99-104
- SarathT., S.Mehrotra, N.Arunmozhi, S.K.Agarwal, M.Hoque and Umashankar, 2012. Studies on follicular development and ovarian steroid profile in seasonal anestrus goats. Ind. J. Anim. Reprodouction, June : 6-8
- Selvaraju G., A.Balasubramaniam, D.Rajenderan, D.Kannan and M.Geetha, 2013. Multiple linear regression model for forcasting Blue Tongue disease outbreak in sheep of North- west agroclimatic Zone of Tamil Nadu. Veterinary World. 6(6): 321-324
- Suguna S., T.Sarath, S.Mehrotra, N.Arunmozhi, S.K.Agarwal and Umashankar, 2012. Serum tri-iodothyronine and thyroxine profile in insulin treated pregnant goats. Ind. Vet. J., 90 (3): 123-124
- Suseela P. and K.M. Palanivel, 2012. Serological and molecular detection of B.melitensis in sheep and goats. Ind. Vet. J., 89(3) : 80-82
- Thilagam, K. J.Ramamoorthy, S.N., Sivaselvam, S.M.K.Karthickeyan, and P.Thangaraju, 2012. Molecular genetic characterization of Salem Black goats. Ind.J.Anim.Sci., 82(9): 1087-1089
- VinodhKumar O.R. and L.Gunaseelan, 2012. Seroprevalence of Ovine paratuberculosis. Ind.Vet. J. 89 (11) : 124-126

Poultry

- Anna Anandh M., P.N.Richard Jagatheesan, P.SenthilKumar, A.Paramasivam, G.Rajarajan 2012. Effect of rearing system on reproductive performance of turkey. Veterinary World. 5 (4) : 226 -229
- Anna Anandh M., P.N.Richard Jagatheesan, P.Senthil kumar G.Rajarajan and A.Paramasivam, 2012. Effect of egg weight on egg traits and hatching performance of Turkey (Meleagris gallopavo) eggs. Iranian J. Applied Anim. Sci., 2(4), 391-395
- Arivuchelvan A., S.Murugesan, P.Mekala and R.Yogeswari, 2012. Immunomodulatory effect of Ocimum sanctum in broilers treated with high dose of Gentamicin. Ind. J. Drugs and Disease. 1(5): 109
- Arul kumar T., S.Saravanan, P.Viswanathan and M.Sasikala, 2012. Polymerase chain reaction in the detection of contamination of chicken meat by Campylobacter jejuni. Int. J. Research in Pure and Applied Microbiology, 1 (3) : 61-63
- Arulmozhi A., S.Saravanan, B.Mohan and G.A.Balasubramaniam, 2012. A rare outbreak of Marek's Disease in desi chicken. Ind. Vet. J., 89 (8):64-65
- Arulmozhi A., S.Saravanan, B.Mohan and G.A.Balasubramanium, 2012. An outbreak of Marek's disease in desi chicken. Ind. Vet. J., 89(8): 122-123
- Balakrishnan G. and Parimal Roy, 2012. Isolation, Identification and Antibiogram of Pasteurella multocida isolates of avian origin. TN J. Vet. Anim. Sci., 8 (4): 199 – 202
- Balasubramaniam, A. G.A.Balasubramaniam, S. Sivase elan, T.R.Gopalakrishnamuthy, N. Dorairajan and A. Manickavasaka Dinakaran, 2012. Pathotyping of Infectious Bronchitis virus isolated from broiler chickens showing Nephropathy. Ind. J. Vet. Pathol., 36(1): 49-53
- Bharathy N., R.Sakthivadivu, K.Sivakumar and V.Ramesh Saravanakumar, 2012. Disposal and Utilization of broiler slaughter by composting. Vet. World, 5(6) : 359-361
- Byju S., M.Moorthy, S.C.Edwin and B.Mohan, 2012. Impact of maize bran in broiler diet. Ind. J. Poultry Sci., 47: 194-198
- Ganesan. P. I., 2012, Cost of feed in production of Emu chicks. Ind. Vet. J., 89(6): 127
- Jagadeeswaran A. 2012. Effect of supplementation of Aloe vera extracts on growth performance in commercial broilers. Ind. J. Field Vet., 8 (1): 47-49
- Jagadeeswaran A., S.Selvasubramanian and D.Chandrasekaran, 2012. Effect of supplementation of Phyllanthus Niruri extracts on immune status in commercial broilers. Ind. J. Field Vet., 8 (1): 15-16
- Jagadeeswaran A., S.Selvasubramanium and D.Chandrasekaran, 2012. Supplementation of Licorice (Glycyrrhiza glabra) for commercial broilers. Ind. Vet. J., 89(9) : 68-69

- Jeichitra V. and G.Srinivasan ,2,013. Influence of Xylanase on growth performance of Nandanam colour broilers. Int. J. Food, Agriculture and Vet. Sci, 3(1) : 63-65
- Jeyakumar M., N.Murali, R.Saravanan, D.Cauveri, S.Panneerselvam and K.Sudhakar, 2013. Sexing of Emu Chicks by Polymerase Chain Reaction (PCR) based Molecular Technique. Ind. Vet. J. 90(1): 38-39
- Kanagaraju P., S.Rathna Praba, P.Veeramani, R.Richurd Churchil and M.Babu, 2013. Effect of microbial phytase on the bioavailability of nutrients in broilers. Ind. Vet. J., 90 (4): 117-119
- Kannan D., M.Senthilkumar and K.Mani, 2013. Effect of saturated and unsaturated fat on the performance, serum and meat cholesterol level in broilers. Vet. World, 6(3):159-162
- Kannan T.A., Geetha Ramesh and Sabiha Hayath Basha, S. Usha kumary, G. Dhinakar raj, and S. Vairamuthu.2012. Light microscopic studies of caecal tonsil in chicken (Gallus domesticus). Ind.J, Vet.Anatomy 24(1):52-53
- Kumaravelu N., R.Rajendran and C.Pandian, 2012. Prediction of Body Weight in Native Adult Turkeys. Ind. Vet. J., 89(5): 80-81
- Kumaravelu. N., C.Pandian and M. Babu, 2012. Effect of herbal preparations on louse in poultry. The North East Veterinarian, XIII (3) : 28-29
- Lurthu Reetha T. and P.N. Richard Jagatheesan, 2012, Growth performance of emu chicks, Ind. Vet. J., 89 (10):131-132
- Lurthu Reetha T. and P.N.Richard Jagatheesan, 2012. A study on growth performance of emu chicks. Ind. Vet. J., 89 (10) : 131
- Lurthu Reetha T. and P.N.Richard Jagatheesan, 2012. Prolapse of phallus and cloaca in emu bird (Dromaius novaehollandiae) case study. Ind. Vet. J., 89 (9) : 95
- Malmarugan S., S.Sivaseelan, G.A.Balasubramaniam Johnson Rajeswar, 2012. Experimentally induced necrotic enteritis in broilers. Ind. Vet. J., 89 (12):47-49
- Malmarugan S., T.R.Gopala Krishna Murthy, G.A.Balasubramaniam and J.Johnson Rajeswar, 2013. Effect of aluminium hydroxide adjuvanted toxoid and bacterin combined vaccine for maternal vaccination of broilers against necrotic enteritis. Ind. Vet. J., 90 (1): 40-43
- Murugan M., R.Prabakaran, R.Asha Rajini, D.Thiyagarajan, T.Sivakumar and K.Sangilimadan, 2012. Effect of dietary calcium and phosphorus on egg shell thickness in Breeder Japanese Quail(coturnix Coturnix Japonica). Ind. Vet. J., 89 (10) : 80-81
- Murugan M., R.Prabakaran, R.Asha Rajini, D.Thyagarajan, T.Sivakumar and K.Sangilimadan 2012. Effect of dietary protein on egg production in breeder Japanese quail (Coturnix coturnix japonica). Ind. Vet. J., 89 : 33-35

- Murugan M., R.Prabakaran, R.Asha Rajini, D.Thyagarajan, T.Sivakumar and K.Sangilimadan, 2013. Effect of dietary protein on embryonic mortality in breeder Japanese quail (Coturnix coturnix japonica). Ind. Vet.J., 90 : 77-79
- Murugan M., R.Prabakaran, R.Asha Rajini, D.Thyagarajan, T.Sivakumar and K.Sangilimadan, 2013. Influence of dietary protein on egg weight in breeder Japanese quail (Coturnix coturnix japonica). Ind. Vet. J., 90:40-41
- Palanivel K.M., S.T.Selvan, P.Veeramani and R.Rishikesavan, 2012. Epidemiological Investigation on poor egg hatchability in an ostrich farm – A case report of egg peritonitis. Int. J. Food, Agriculture and Vet. Sci., 2(3): 71-73
- Pandian C. and R.Prabakaran, 2012. Effect of genetic groups and cryoprotectants on pre-freeze and postthaw sperm motility of turkey semen. The North-east veterinarian, 12(2):28-29
- Pandian C., A.Sundaresan, M.Murugan, M.Babu, D.Thyagarajan and R.Prabakaran, 2012. Evaluation of inclusion of meat by product –Ossein in layer diet. Ind. Vet. J., 89(12) : 39-40
- Pandian C., A.V.Omprakash, A.Sundaresan, K.Sangilimadan, D.Thyagarajan and R.Prabakaran, 2012. Effect of Probiotic supplementation on layer chicks growth performance. Ind. Vet. J., 89(12):24-25
- Pandian C., M.Thanga Pandiyan, A.V.Omprakash, D.Thyagarajan and M.Babu, 2012. Effect of Season on hematological profile and erythrocyte indices in White Leghorn layers. TN J. Vet. Anim. Sci., 8(6):389-392
- Pandian C., M.Thangapandiyan, A.Sundaresan, A.V.Omprakash, 2012. HaematologIcal profile and erythrocyte indices in different breeds of poultry. Int. J. of Livestock Res., 2 (3):89-92
- Pandian C., M.Thangapandiyan, A.Sundaresan, N.Kumaravelu and T.Sujatha, 2012. Comparative haematology of different species of poultry. Ind. Vet. J., 89 (8):41-43
- Pazhanivel N. and C.Balachandran, 2012. Spontaneous occurrence of pox in a pigeon (Columba spp.). TN J. Vet. Anim. Sci., 8(2) : 111-114
- Prabhakar P., A.Thangavelu, J.John Kirubaharan, N.Daniel Joy Chandran,
- S.M.Sakthivelan and M.Thangapandian, 2012. Outbreak of pasteurellosis in captive emu birds and detection of virulence genes in P. multocida isolates. TN J. Vet. Anim. Sci., 8(5) : 299-305
- Raj Manohar G., K.Viswanathan, S.C.Edwin and A.Mohammad Safiullah, 2012. Enrichment of Omega-3 fatty acids in Japanese quail eggs (Designer eggs) by dietary manipulation, Ind. J. Poultry Sci., 47(2): 204-208



- Ramani Pushpa R.N., J.John Kirubaharan and A.Koteeswaran, 2012. Confirmation of B-Cell Epitope of Nucleoprotein of Newcastle Disease Viruses by Dot-ELISA and Peptide ELISA. Int. J. Poultry Sci., 11: 349-360
- Ramesh J. and D. Chandrasekaran, 2012. In vitro evaluation of feed grade pure enzymes. Ind. Vet.J. 89 (4) : 76-78
- Ramesh J. and D. Chandrasekaran, 2012. Non-starch Polysaccharides and Phytate phosphorus content of commonly used feed ingredients in Namakkal. Ind. Vet. J., 89 (4) : 38-39
- Ramesh J., D.Thyagarajan and G.Srinivasan, 2012. A note on effect of Protease supplementation in nutritionally marginal low protein diet on Turkey poult performance. TN J. Vet. Anim. Sci., 8(6):337-380
- Richard Jagatheesan P.N., M.Anna Anand, P.Senthil Kumar, G.Rajarajan and A.Paramasivam, 2012. Effect of month and season on hatching performance of turkey. Ind. Vet. J., 89 (12): 118-119
- Richard Jagatheesan P.N., M.Anna Anand, P.Senthil Kumar, G.Rajarajan and A.Paramasivam, 2012, Relationship between breeder age and reproduction performance of Emu birds (Dromaius novaehollandiae), Ind. Vet J., 89 (12) : 116-117
- Richard Jagatheesan P.N., P.Senthil Kumar and T.Lurthu Reetha, 2012. Hatching performance of emu (Dromaius novaehollandiae) eggs under different storage periods. Ind. Vet. J., 89 (12): 103-104
- Richard Jagatheesan P.N., T.Lurthu Reetha, P.Senthil kumar and A.Paramasivam, 2012. Egg production performance of emu. Ind. Vet. J., 89(6) : 59-60
- Sangilimadan K. R.A.Rajini, R.Prabakaran, V.Balakrishnan and M.Murugan, 2012. Effect of dietary protein on layer Japanese quail. TN J. Vet. Anim. Sci., 8:271-278
- Sangilimadan K., R.A.Rajini, R.Prabakaran and M.Murugan, 2013. Dietary lysine and methionine requirement for layer Japanese quail in tropic. Ind. Vet. J., 90: 44-46
- Sangilimadan K., R.A.Rajini, R.Prabakaran, Maqbool Ahmed and M.Murugan, 2012. Effect of different dietary protein on egg quality traits in layer Japanese quail. TN J. Vet. Anim. Sci., 8 : 152-157
- Saravanan S., V.Purushothaman and T.R.Gopala Krishna Murthy, 2012. Multiplex PCR assay for the rapid detection of *Salmonella* in Poultry and its related products. Ind. J. Comparative Microbiology, Immunnology and Infectious diseases. 33 (1 and 2):45-51
- Selvan S.T., P.Kumarasamy and D.Thygarajan,2011. Growth performance of ostriches (Struthio camelus) in India. Ind. J. Anim. Res., 46 (2) : 176-179
- Senthil N.R., M.Saleem, P.C.Sundararajan and L.Gunaseelan, 2012. Prevalence of *Salmonella* sp. in backyard chickens in Tamilnadu. Ind. Vet. J. (89): 85-86

- Senthilkumar P., P.N.Richard Jagadeesan and S.Senthilkumar, 2012. Evaluation of Xyalazineketamine anaesthesia in Emu (Dromaius Novaehollandia) birds. Ind. Vet. J., 89: 78
- Senthilkumar P., P.N.Richard Jagatheesan, M.Anna Anandh, G.Rajarajan, A.Paramasivam, 2012. Influence of incubation temperature in emu (Dromaius novaehollandiae) egg hatchability. Ind. J. Anim. Sci., 82(5): 527-529
- Senthilkumar R.P. and V.Balakrishnan, 2013. Effect of NSP degrading enzyme on the performance of broilers fed ration containing DORB. Ind. Vet. J., 90(3): 36-39
- Senthilkumar R.P., A.Natarajan, T.K.Sundaram and R.Ravi, 2012. Occurrence of Aflatoxin in commonly used feed ingredients for poultry. Ind. Vet. J., 89(12): 15-17
- Shekar R. Badhe, M.N.Fairoze, B.V.Raghunath, S.Sudharshan, S.Wilfred Ruban and V.Chandirasekaran, 2013. Evaluation of antimicrobial efficacy of aqueous extract and essential oil of clove (Eugenia caryophylata thumb) in chicken meat against various food borne pathogens. J. Cell and Tissue Res., 13(1): 3507-3511
- Sivaseelan S., S.Malmarugan, P.Balachandran and Johnson Rajeswar, 2013. Outbreak of Necrotic enteritis in chicken predisposed by Ascardia galli infection. Ind. Vet. J., 90(2): 37-39
- Sonia C., R.A.Rajini and S.Vairamuthu, 2012. Haematological parameters of Pearl Guinea fowl influenced by rearing system, age and sex. Ind. J. Poul. Sci., 47: 395 – 397
- Sonia C., R.A.Rajini, M.Babu and S.Vairamuthu, 2012. The effect of age, sex and rearing system on deep litter in Guinea fowl. Ind. J. Poul. Sci., 47 : 251-253
- Sonia C., R.A.Rajini, M.Babu, S.Vairamuthu and T.Sujatha, 2013. Serum biochemical profile in Pearl Guinea fowl. Ind. Vet. J. 90 : 134-135
- Srinivasan G. and V.Jeichitra, 2012. Utilization of sunflower cake and its effect on growth and carcass traits in Japanese quails. Int. J. Food, Agriculture and Vet. Sci., 2 (2): 56-58
- Srinivasan G., and V.Jeichitra, 2013. Effect of feeding different levels of sunflower oilcake and enzyme supplementation on egg quality traits of breeder quails. Int. J. Food, Agriculture and Vet. Sci..3 (1): 32-38
- Srinivasan G., V.Jeichitra and P.Renga Reddy, 2012. Effect of sunflower cake inclusion on growth survivability and carcass traits in Japanese quails. Int. J. Food, Agriculture and Vet. Sci. 2 (2): 59-61
- Srinivasan P., T.R.Gopala Krishna Murthy, S. Saravanan, and B.Mohan, 2013. Acute Salinomycin toxicity in a turkey flock. Ind. Vet. J., 90(1): 65-66



- Srinivasan P., G.A.Balasubramaniam, T.R.Gopalakrishnamurthy and P.Balachandran, 2012.. Pathology of oviduct in sub optimally producing commercial layer chicken. Int. J. Poultry Sci., 11(9): 577-581
- Sumithra A., P.Srinivasan, G.A.Balasubramaniam, T.R.Gopalakrishnamurthy and P.Balachandran, 2013. Ameliorative effect of Panchagavya on Newcastle Disease in Layer Chicken. Int. J. Agriculture and Biosci., 2 : 60-63
- Sundaresan A and R.A.Rajini, 2012. Effect of dietary protein levels on embryonic mortality in breeder Turkey. Ind. Vet. J., 89:83-86
- Suresh kumar V., G.Sarath chandra and J.Ramesh, 2013. Effect of enrofloxacin on zootechnical performance, behavior and immune histopathological response in broiler chicken. Vet. World 6:337-342
- Suresh kumar V., G.Sarathchandra and J.Ramesh, 2013, Veterinary Pharmacovigliance evaluation on impact of enroflaxacin administration on antioxidant status in broiler chicken. Int. J. Curr. Microbiol. App. Sci., 2(5):335-341
- Suresh kumar V., G.Sarathchandra, J.Ramesh, S.Vairamuthu, P.Thejomoorthy and P.Hariharan, 2012. Effect of enrofloxacin administration on haematological profile in broiler chicken – A safety Pharmacology study. Ind. J. Field. Vet., 8(2): 20-24
- Thangapandiyan M., C.Pandian, A.Sundaresan, M.Murugan, D.Thyagarajan and R.Prabakaran, 2012. Erythrocyte indices of different breeds of poultry. Ind. Vet. J., 89 (12): 94-95
- Theophilus Anandkumar C., J.Selvaraj, G.Balakrishnan, S.Saraswathi, D.Baskaran, Parimal Roy, B.Murali Manohar and H.Gopi, 2012. Aspergillosis in Emu chicks. Ind. Vet. J., 89 (5) : 73-74
- Vasanthakumar P., D.Chandrasekaran, Shivi Maini, S.Malmarugan, C.Kathirvelan, M.R.Purushothaman and S.Senthilkumar, 2012. Efficacy of poly herbal product salcochek on gut health and reducing the impact of Clostridium Species induced enterities in broilers. Int. J. Agric. Env. Biotech., 5(4): 361-366
- Veeramani P., P.Shamsudeen, R.Richard Churchil and S.T.Selvan, 2012. Effect of Acidic and Alkaline drinking water on Haematological Parameters and Carcass Characteristics in Commercial Broilers. Int. J. Applied Sci. and Engineering 1 (1): 13-15
- Veeramani P., R.R.Churchil and K.N.Kutty, 2013. Estimates of heritability and correlations of economic traits in two strains of white leghorn. Int. J. Vet. Sci. 1(2): 44-47

- Velusamy R., S.Abdul Basith, T.J.Harikrishnan, G.Ponnudurai, T.Anna and S. Ramakrishnan, 2012. Ground beetle, Opatroides frater (Coleoptera) as natural intermediate host for the poultry tapeworm, Raillietina cesticillus. J. Parasitic Diseases (Online) DOI 10.1007/s12639-012-0202-4
- Venketesan. S., Sabiha Hayath Basha and Geetha Ramesh, 2012. Morphogenesis and histomorphology of the sclera in layer and broiler chicken. T.N. Vet and Anim.Sci. Vol 8 (May-June)
- Yogeswari, R., S., Murugesan, and A.Jagadeeswaran, 2012. Hepatoprotective effect of Oyster Mushroom (Pleurotus Sajor Caju) in Broilers Fed Aflatoxin. Int. J. Vet. Sci., 1(3):104-107

Swines

- Gopinathan A., S.M.K.Karthickeyan and S.N.Sivaselvam, 2012. Occurrence of Mulberry Heart disease in an organised pig farm in India. Wayamba J. Anim., Sci., 4 : 11
- Gopinathan A., S.M.K.Karthickeyan, J.Ramesh and S.N.Sivaselvam, 2012. Hydrocephalus associated with polydactylism in a Large White Yorkshire pig. Ind. J.Anim.Reprod., 32(2) : 76-77
- Karthickeyan S.M.K., J.Ramesh, A.Gopinathan and S.N.Sivaselvam, 2012. Cyclops in Large White Yorkshire pigs. Ind. J.Anim.Reprod., 32(2): 74-75
- Nagarajan K. and G.Saikumar, 2012. Fluorescent insitu hybridization technique for the detection and localization of classical swine fever virus in infected tissues. Veterinarski Arhive eterinarski arhi 82 (5): 495-504
- Palanivel K.M., S.M.Sakthivelan, A.Gopinathan, S.K.Sriram and P.Kumarasamy 2012. Incidence of mortality among swine due to classical swine fever – Postmortem findings. Ind. J. Anim. Res., 46 (1): 86-88
- Poorani A., B.Suresh, A.Elango, A.Subramanian and S.Vairamuthu, 2012. Impact of supplementation of symbiotic bifidomilk powder on growth, hematological, biochemical and intestinal histological changes on weaned piglets.Int. J. Family and Home Sci., 8:87-95
- Ramesh V., V.Ramesh Saravana Kumar, K.Sivakumar and D.Anandha Prakash Singh, 2012. Comparative efficacy of pungai (Pungamia glabra) and ivermectin against mangeinfestation in pigs. Ind. J. Field. Vet., 8(2): 62 – 63
- Ramesh V., V.Ramesh Saravana Kumar, K.Sivakumar, D.Anandha Prakash Singh and J.Muralidharan, 2012. Performance of Large White Yorkshire pigs under Semi-arid region of Tamil Nadu. Ind. J. Animal Production and Management. (1 and 2): 32-36
- Ramesh, V.Ramesh Saravana Kumar, K.Sivakumar, D.Anandha Prakash Singh and A.K.Thiruvenkatan, 2012. Effect of swill feeding on the reproductive performance of Large White Yorkshire pigs. The Ind. J. Field Veterinarians, 8(2): 42 – 45

Biotechnology

- Ananda Chitra M., S.Ramesh, V.Jayakumar and B.Murali Manohar, 2012. Anti-leptospiral activity of Andrographis paniculata extract. Asian J. Microbiol. Biotech. Env. Sci. 13 (3): 441-443
- Ananda Chitra M., V.Jayakumar and B.Murali Manohar, 2012. Detection and Sequence analysis of LigB and LSA21 genes of leptospires fields isolates. Asian J. Microbiol. Biotech. Env. Sci. 13 (3): 475-479
- Anbarasi P., B.R.Latha, G.Dhinakarraj, C.Sreekumar and S.Senthuran, 2012. Partial sequencing of Bm86 gene for studying the phylogeny of an Indian isolate of Rhipicephalus (Boophilus) micrplus tick. J. Parasitic Diseases. (Online) DOI 10.1007/s12639-012-0228-7
- Angamuthu R, S.Baskaran, G.Dhinakar Raj, J.Devarajan and K.Kumanan, 2012. Rapid detection of the Marek's disease viral genome in chicken feathers by loop-mediated isothermal amplification. J. Clin. Microbiol., 50 (3): 961-965
- Anil Kumar Mishra, Mayank Rawat, Abhishek and Sureshkannan, 2012. Characterization and Lytic activity of endolysin induced by bacteriophage SA4 against Mastitogenic isolates of Staphylococcus of Bovine origin. Ind. Vet. J., 89 : 24-25
- Anitha S., G. Dhinakar Raj, A.Raja, and A.Thangavelu, 2012. Comparison of DNA extraction methods and gene targets from Leptospira interrogans Serovar icterohaemorrhagiae for application in polymerase chain reaction. Ind. J. Anim. Sci., 82 (10) : 1133 - 1136
- Arunachalam K., T.J.Harikrishnan, T.Anna and G.A.Balasubramaniam, 2012. Molecular diagnosis of benzimidazole resistant Haemonchus contortus infective larvae by AS-PCR. Ind.Vet. J., 89(6): 9-11
- Balachandran C., N.Pazhanivel, T.G.Prabhakar, V.Murugadas and V.Prabakar, 2012. Avipox virus infection in rosella parakeet (Platycercus sp.). J. Advanced Vet. Res., 2 : 184-187
- Balakrishnan G., Parimal Roy, K Nagarajan, J Selvaraj and B Murali Manohar, 2012. Isolation, identification and antibiogram of Pasteurella multocida isolates of rabbits suffering from Pasteurellosis. Int. J. Agro-Vet. Med. Sci., 6 (1): 58-61
- Balasubramaniam A., T.R.Gopalakrishnamurthy, S.Sivaseelan, G.A.Balasubramaniam and Johnson Rajeswar, 2012. Evaluation of an inactivated vaccine for nephrogenic infectious bronchitis virus. Veterinary World 6(3):134-138
- Ganesan P.I., 2012. Standard Tube Agglutination Test and C-ELISA in the diagnosis of Brucella abortus infection. Ind. Vet. J., 89(6) : 69-70
- Ganesan P.I., 2012. Comparative efficacy of single intradermal test and gamma interferon assay in the diagnosis of Bovine Tuberculosis. Ind. Vet. J., 89(6): 126

- Kannan T.A. Geetha Ramesh and Sabiha Hayath Basha, S. Usha kumary, G. Dhinakar raj, and S. Vairamuthu, 2012. Flow cytometric analysis of CD4 and CD8 T cellls in spleen of chicken(Gallus Domesticus).Ind. J. Vet. Anatomy. 24(1):54-55
- Nithiaselvi R., S.Panneerselvam, N.Murali and P.Devendran, 2013. Chromosomal Profile of Indian Donkey. Ind. Vet. J., 90(2) : 80-82
- Prabhakar P., A.Thangavelu, T.G.Prabhakar, J.John Kirubaharan, N.Daniel Joy Chandran, 2012. Rapid virulence typing of Pasteurella multocida in sheep isolates of Tamil Nadu. Ind. J. Anim. Sci., 82: 351-354
- Ranganathan V., S.Selvasubramanian and S.Vasanthakumar, 2013. Estimation of humoral immune response in rabbits fed with Cucurbita maxima seeds. Vet. World. 6(7): 396-399
- Senthil N.R., O.R.Vinoth Kumar and D.F.Aris, 2012. Seroprevalence of Equine herpes virus -1 by ELISA. Ind. Vet. J., 89(9) : 140-141
- Surendar S. and Y.Krishnamohan Reddy, 2012. Development of multiplex RT-PCR for the determination of Bluetongue virus serotypes. TN J. Vet. Anim. Sci., 8 (2): 101-103
- Thennarasu S., M.Harishankar and G.D.Raj, 2012. Cloning and sequencing of Indian water buffalo (Bubalus bubalis) interleukin-3 cDNA. Int. J.Immunogenetics. 39 (3): 203-206
- Venkateswara Rao P., M.Raman G.Dhinakar Raj, S.Abdul Basith and S.Gomathi nayagam, 2012. Multiplex PCR assay using SCAR primers to detect Eimeria spp. in chicken. J. Para. Dis., DOI., 10.1007/s12639 : 012-0142
- Venkateswara Rao P., M.Raman, G.Dhinakarraj, S.Abdul Basith and S.Gomathinayagam., 2012. Speciation of poultry Eimeria by morphometry and SCAR PCR in Southern India. Ind. J. Anim.Sci., 82(8) : 805–811
- Vignesh A.R., S.Dhanasekaran, G.Dhinakar Raj, K.G.Tirumurugaan and A.Raja, 2012. buffaloes-Identification of tumour necrosis factor alpha promoter polymorphism. Vet. Immunol. Immunopathol., 150: 189–197

Canines

- Arulmozhi A., A.Dharmaseelan, A.Kumaresan, A.Kathirvel and G.A.Balasubramaniam, 2012. A rare occurance of invasive Lipoma in a dog. Ind. Vet. J., 89(8) : 72-74
- Arulmozhi A., S.Senthilkumar, A.Kumaresan S.Dharmaceelan, S.Sivaseelan and G.A.Balasubramaniam, 2012. Recurring Adamantinoma in a dog. Ind. Vet. J., 89(4): 74-75
- Arulmozhli, A., S.Dharmaceelan, A.Kumaresan, S.Kathirvel and G.A.Balasubramaniam, 2012. Intestinal lymphoma in a dog. Ind. Vet. J., 89 : 91 – 92
- Ganguly C., A.P.Nambi, S.R.srinivasan, and S.Kavitha, 2012. Electron microscopic study of skin changes in dogs with Malassezia dermatitis. Vet. Derm. 23 (suppl.1): 83

- Gunaseelan L., Mohd.Saleem, N.R.Senthil, D.Fariz and K.Sathiyabama, 2012. Molecular characterization and antibiotic sensitivity of salmonellosis in Canines. TN J. Vet. Anim. Sci., 8(5): 333
- Gunaseelan, L., M.Saleem, N.R.Senthil, Faris Delil Yesuf and K.Sathyabama, 2012. Molecular differentiation and changing spectrum of antibiotic sensitivity of *Salmonella* spp. in canines. TN J. Vet. Anim. Sci., 8 (5): 313-320
- Jayakumar K., L.Nagarajan, S.Senthilkumar, S.Dharmaceelan, N.Rajendran, S.Kathirvel, A.Kumaresan and J.Chandran, 2012. Congenital bilateral encircling of nictitatans with multiple anomalies in a pup. Ind. Vet. J., 89: 68-69
- Jayakumar K., S.Dharmaceelan, S.Senthilkumar, S.Kathirvel, A.Kumaresan, N.Rajendran, L.Nagarajan and J.Chandran, 2012. Linear foreign body induced intussusception in a pup. Ind. Vet. J., 89: 60-61
- Krishnamurthy S., A.Subramanian, S.Balasubramanian, M.Selvaraju and S.Manokaran, 2012. Pregnancy diagnosis by biochemical changes during pregnancy in bitches. J. Veterinary Advances 2 : 10
- Kulasekar. K., P.Sridevi, N.Arunmozhi, S.Balasubramanian and T.Sathiamoorthy.2012. Ultra-fast papanicolaou staining for canine vaginal exfoliative cytology. Ind. J. Anim. Res., 33 (1), 79-80
- Kurien M.O., D.Kathiresan, M.Selvaraju and S.R.Pattabiraman, 2012. Efficacy of semen extender and freezing rates on viability of dog semen. Ind. Vet. J., 89(7): 77-80
- Pazhanivel N., R.Sridhar, C.Balachandran and Debi Prasanna Das, 2012. Adrenocortical adenoma in a dog. Ind. Vet. J., 89(10) : 128-129
- Priyanka P., M.Thirunavukkarasu, K.Jeyaraja, A.P.Nambi and S.Vairamuthu, 2013. Tetanus in a dog. Ind.Vet.J., 90 (2): 87-88
- Priyanka P., S.Thirunavukkarasu, K.Jayaraja, A.P.Nambi and S.Vairamuthu, 2012. Therapeutic evaluation of antihypertensive diseases in dogs. Ind. Vet. J., 89 (3): 72-73
- Rani R., P.S.Thirunavukkarasu and S.R.Srinivasan, 2012. Valvular Heart Diseases in Dogs. Ind. Vet. J., 89 (12):31
- Saravanan M., B.Nagarajan, S.Kavitha, C.Balachandran and S.R.Srinivasan, 2012. Duodenoscopic appraisal of duodenal ulcer in dogs. Vet. World. 5(7): 420-422
- Sesh P.S.L., P.Venktatesan, K.Jeyaraja, M.Chandrasekar and V.Pandiyan, 2012. Blood Biochemical, enzymatic and haematological status of dogs affected with DCM. Int. Advanced Vet. Sci. and Tech., 47-51
- Sivaraman S., E.Venkatesakumar, G.Vijayakumar and M.Subramanian, 2012. Neurological blindness in a Labrador Retreiver puppy due to ivermectin toxicity. Ind. Vet. J., 89(6): 58

- Sumathi D., P.Selvaraj, A.P.Nambi., S.Prathaban and P.A.Enbavelan, 2012. Assessment of prothrombin and activated partial thromboplastin time in dogs. TN J. Vet. Anim. Sc., : 238
- Suryanarayanan, P.Sridevi, John Kirubaharan, C.Veerapandian and G.Dhinakar Raj, 2012. Development of a semiquantitative progesterone Enzyme Immuno Assay for determination of ovulation time in bitches. Int. J. Vet. Sci., 1 (3): 89-92
- Thangapandiyan M., C.Balachandran and B. Murali Manohar, 2013. Incidence and haemato – biochemical changes in canine lymphoma. TN J. Vet. Anim. Sci., 9 (1): 29-31
- Vairamuthu S., N.Palanivel, K.Jeyaraja and C.Balachandran, 2012. Blastomycosis in a male dog. Ind. J. Field Vet., 8 : 75-76
- Vijaya M., V.Bharathi, M.Purusothaman, P.I.Ganesan, B.Murali Manohar and
- N.R.Senthil, 2013. Modified direct agglutination and latex agglutination tests for the diagnosis of Toxoplasmosis in canines. Ind. Vet. J., 90(4): 23-24
- Vijayalakshmi P., G.Vijayakumar, P.Selvaraj, M.Chandrasekar, S.Vairamuthu and A.P.Nambi, 2013. Juvenile diabetic ketoacidosis in a Labrador Pup. Ind. Vet. J., 90 (2) : 120-121

Clinical Studies

- Das B.C., SThilagar, S.Ayyappan, B.C.B.Justin William, Mohd. Shafiuzama and A.Arun Prasad, 2012. Surgical management of unstable diaphyseal tibial fracture with conventional Dynamic Compression Plating (DCP) in dogs. Int. Re. J. Applied Life Sci., 1 : 2
- Dharmaceelan S., N.Rajendran, K.Nanjappan, M.Subramaniam and G.A Balasubramaniam, 2012. Incidence of bovine gastrointestinal obstruction in a teaching Veterinary hospital of Tamilnadu,India. Int. J. Vet. Sci., 1 (3): 112-114
- Dharmaceelan S., S.Senthil kumar, S.Kathirvel, K.Jayakumar, R.Thangadurai and N.Rajendran, 2012. Repair of ventral hernia in a mareunder general anaesthesia – A case report. Ind. J. Field. Vet., 7: 53 – 54
- Dharmaceelan S., S.Senthilkumar, A.Kumaresan, S.Kathirvel, K.Jayakumar and N.Rajendran, 2012. Surgical management of rectovaginal fistula in a mare. Ind. Vet. J., 89 : 104 – 105
- Edith R., R.Godara, R.L.Sharma and M.B.Thilagar., 2012. Fasciola gigantica induced adrenal dysfunctions and its patho-physiological significance in riverine. Buffalo Bulletin : 51 – 62
- Gokulakrishnan M., L.Nagarajan and V.Vijayanand, 2012. Surgical Management of vaginal hyperplasia and prolapse in an pug bitch. Ind. Vet. J., (5) : 96
- Gokulakrishnan M., L.Nagarajan, Siju simon V.Vijayanand, 2012. Seminoma in dog-Case report of two cases. The North East Veterinarian



- Jayakumar K., S.Dharmaceelan, N.Rajendran, S.Senthilkumar, S.Kathivel, L.Nagarajan and A.Kumaresan, 2012. Ocular Setariasis in a pony. Ind. Vet. J., 89 (12): 64-66
- Jayakumar K., V.Prabaharan, K.Jeyaraja, K.K.Ponnusamy, S.Sivaraman and J.Chandran., 2012. Dystocia due to fetal hydrocephalus in a crossbred cow. Ind. Vet. J., 89 (12):66-67
- Jayakumar K., S.Dharmaceelan, S.Senthilkumar, S.Kathirvel, L.Nagarajan, J.Chandran, A.Kumaresan and N.Rajendran, 2012. Diaphragmatic abscess in a pregnant heifer. Ind. Vet. J., 89:63-64
- Krishnakumar K., G.S.Senthilkumar, K.Jayakumar, A.Jagadeeswaran and C.Chandrahasan, 2012. Dystocia due to secondary uterine inertia in a non – descript sow. Ind. Vet. J. 89:93
- Krishnakumar K., R.Ezakial Napolean, S.Manokaran, K.Ravikumar, K.Jayakumar,
- A.Jegadeswaran and C.Chandrahasan, 2012. Dystocia due to schistosomus reflexus in a Jersey crossbred heifer. Ind. Vet. J., 89(6) : 79-81
- Krishnakumar K., G.Senthilkumar, K.Jayakumar, A.Jagadeeswaran, K.Ravikumar and C.Chandrahasan, 2012. Dystocia due to fetal ascites in a Jersey cross bred cow. Ind. Vet. J., 89(6) : 78-79
- Krishnamoorthy S., A.Subramanian, S.Balasubramanian, M.Selvaraju and S.Manokaran 2012. Pregnancy diagnosis by biochemical changes during pregnancy in bitches. J. Vet. Adv 2 (10) : 531-532
- Krishnamoorthy S., A.Subramanian, S.Balasubramanian, M.Selvaraju and S.Manokaran, 2012. Changes in haemotological parameters as an aid to pregnancy diagnosis in bitches. J. of Anim. Sci., 2(11): 921-924
- Manokaran S., K.Ravikumar, R.Ezakial Napolean, M.Palanisamy and M.Selvaraju, 2012. Traumatic Ventral Hysterocele in Jersey Crossbred Cow. Ind. Vet. J., 89 (12) : 91-92
- Nambi A.P., G.Vijayakumar and S.Vairamuthu, 2012. Efficacy of haemodialysis in goats affected with acute ruminal lactacidosis. Ind. Vet. J., 89(6): 128
- Palanisamy M., S.Manokaran, R.Ezakial Napolean and M.Selvaraju, 2012. Dystocia due to fetal giantism caused by muscular hypertrophy in a buffalo. Ind. Vet. J., 89(11): 83-84
- Ponnuswamy K.K., M.Arthanarieeswaran, K.Jeyaraja, N.Madhavan Unny, L.Nagarajan and M.Subramanian, 2011. Endoscopic diagnosis of guttural pouch mycosis in a horse. Ind. J. Vet. Sci., 32(2): 146

- Pothiappan P., V.N.Rao, P.Thiruselvame and D.Selvi, 2012. Organochlorine poisoning in dog and its successful treatment. Ind. J. Vet. Med., 32 (1):58-59
- Priyanka P., M.Uppe, K.Jeyaraja and D.Sumathi, 2013. Dilated cardiomyopathy in cats - A case report. Vet World. 6(4): 226-227
- Ramani C. 2012. Incidence of Corneal Ulcers in Dogs. TN J. Vet. Anim. Sci., 8 (5) : 35
- Ramani C., 2012. Persistent papillary membranes in a cat: a case report. Ind. J. Vet. Sci., 33(1)
- Ranjithkumar M., T.A.Malik, A.Saxena, A.Dan, P.C.Sakthivel and S.Dey, 2012. Hyperlipidaemia in trypanosomiasis of naturally infected horses: possible cachexia–anorexia syndrome. Trop. Anim. Health. Prod. 45 (2): 417-421
- Rani R., P.S.Thirunavukkarasu, S.R.Srinivasan, John Kirubaharan and G.Vijayakumar, 2012. Diagnostic use of cardiac troponin I in valvular heart diseases of dogs. Ind. Vet. J., 89 (7) : 142-143
- Ravikumar K., K.Krishnakumar and M.Palanisamy, 2012. Schistosomus reflexus in a Jersey crossbred cow – a case report. Ind. Vet. J., Vol.89 (8) : 98-99
- Ravikumar K., M.Selvaraju and S.Manokaran, 2012. Dystocia due to Dicephalus Tertrabrachius Thorocophagus Tetrapus Dicaudatus monster in a Jersey cross bred cow. Ind. Vet. J., 89 (8) : 96-97
- Selvaraju M., K.Ravikumar, S.Manokaran, M.Palanisamy and R.Ezakial Napoleon, 2012. Dystocia due to perosomus Elumbis in a crossbred cow. Ind. Vet. J., 89(7): 106-107
- Senthil Kumar K., N. Pazhanivel, S.Gomathinayagam, S. Vairamuthu and C. Balachandran, 2012. Notoedric mange (feline scabies) infestation in cats. The Ind. J. Field Vet., 8:76
- Senthilkumar K. and S.Manokaran, 2012. Controlled internal drug releasing device (CIDR) response to Anoestrus murrah buffaloes for estrous synchronization and conception rate. Ind. Vet. J., : 460
- Selvan S.T. and P.Kumarasamy,2011. Management and treatment of paraphimosis in ostriches (Struthio camelus). Ind. Vet. J., 89 (9): 96–97
- Senthilkumar P. and P.N.Richard Jagatheesan, 2012. Production performance of emu under field condition. Ind. Vet. J., 89(6): 97-99
- Senthilkumar P., P.N. Richard Jagatheesan and S.Senthil kumar, 2012. Evaluation of Xylazine- Ketamine anaesthesia in Emu (Dromaius novaehollandiae) birds. Ind. Vet. J., (12): 50-52
- Thangapandiyan M., P.Pothiappan, S.Jayakumar, P.A.Enbavelan and R.Sridhar, 2013. Diaphragmatic hernia in a thoroughbred horse. Ind. Vet. J., 90 : 124-125

- Vairamuthu S., N.Pazhanivel, V.Suresh and C.Balachandran, 2012. Babesia bigemina infection in a 20 day old Non-descript calf-A case report. Ind. J. Field Vet., 7(4): 69-70
- Vijayakumar G., S.Sivaraman, E.Venkatesakumar and M.Subramanian, 2013. Successful management of chylothorax in a dog- a case report. J. Ind. Vet. Assoc., 10(3): 52
- Vijayalakshmi K., P.Selvaraj, D.Chandrasekaran, K.Padmanath, P.Thirunavukkarasu and A.P.Nambi, 2012. Emergency management of concurrent diabetic ketoacidosis and leptospirosis in a spitz. Ind. Vet. J., 89(8) : 94-95
- Vijayanand V., S.Manokaran, M.Gokulakrishnan and L.Nagarajan, 2012. Fish hook as an oral foreign body in a dog-Case report. The North East Veterinarian. 11:4

Extension/Economics/Epidemiology

- Akila N. and M.Chander, 2012. Training needs of farmers in draught animal management. Ind. J. Anim. Res., 46(3):280-283
- Akila N. and K.Senthilvel, 2012. Status of dairy farming in Karur district of Tamil Nadu. Ind. J. Anim. Res., 46(4): 401-403
- Akila N. and M.Chander, 2012. Adoption behavior of the farmers towards draught bullocks in South India. Ind. Res. J. Extn. Edn., 12(3):65-69
- Anandha Prakash Singh D. and V.Ramesh Saravana kumar, 2012. Farming practices followed in Namakkal district of Tamil Nadu. Ind. Vet. J., 89 (1) : 95-96
- Baskar A., D.P Ambrose, K.G.Tirumurugaan, A.T.Fleming, 2012. Ecotypic Diversity in Assassin Bug Rhynocoris marginatus Fabricius (Heteroptera: Reduviidae) Hexapoda: 19:38-46
- Baskar. A., D.P. Ambrose, K.G. Tirumurugaan and A.T.Fleming, 2012. Ecotypic diversity in the assassin bug Rhynocoris fusciples(Fabricius) (Heteroptera: Reduvidae) J. Adv. Zool., 33(2): 113-121
- Baskar. A., D.P.Ambrose and.K.G.Tirumurugaan, 2012. Ecotypic diversity in the assassin bug Rhynocoris kumarii Ambrose and Livingstone (Heteroptera : Reduviidae). J. Ent. Res., 36 : 369-375
- Deepalakshmi R., Jothi Venkateswaran and S.Sureshkannan, 2012. Computational approach tostructural change and dock score on VEGF molecule. Int. J. Emerging trends in Engineering and Development. 7 (2): 339-349
- Devendran P., N.Kandasamy, S.Panneerselvam and S.Selvam, 2012. Economics of Coimbatore Sheep Rearing. Ind. J. Small Ruminants. 18 : 239-243
- Divya P.I., M.Prabu, A.Serma Saravana Pandian, G.Senthilkumar and B. Jaya Varathan, 2012. Energy Use Efficiency in Dairy Farming of Tamil Nadu. Ind. J. Energy. I (5): 50-55

- Geetha M., L.Gunaseelan, P.I.Ganesan and K.Kumanan, 2012. Role of Indian house sparrows (Passer domesticus indicus) in the Epidemiology of Newcastle Disease. TN J. Vet. Anim. Sci., 8(2): 67-68
- Jayavarathan B., M.Prabu, A.Serma Saravana Pandian, G.Senthilkumar and K.N.Selvakumar, 2012. Factors influencing the perception of constraints by self help group members and non-members in livestock farming. Ind. J., Anim. Res., 46 (3) : 276-279
- Jayavarathan B., M.Prabu, A.Serma Saravana Pandian, G.Senthilkumar and
- K.N.Selvakumar, 2012. Production and marketing constraints in Dairy cattle rearing as perceived by Self help group members and non-members.TN. J. Vet. Anim. Sci., 8(2): 68-71
- Jayavarathan, B., M.Prabu, A.Serma Saravana Pandian, G.Senthil Kumar and K.N.Selvakumar, 2013. Impact of Self help group programme on empowerment of women through livestock rearing in Tamil Nadu. Ind. J. Applied Res., 3 (2): 71-73
- Jayavarathan B., M. Prabu, A.Serma Saravana Pandian and G.Senthil Kumar, 2012. Socio-economic constraints in livestock rearing for Self Help Group members and Non-members. Ind. J. Field Vets., 7(3):45-47
- Jothilakshmi M., D.Thirunavukkarasu and N.K.Sudeep kumar, 2013. Exit of youths and feminization in smallholder livestock production – A field study in India. Renewable Agriculture and Food Systems : 1-5
- Kamra D.N., N.Agarwal, P.C.Sakthivel and L.C.Chaudhary, 2012. Garlic as a rumen modifier for eco-friendly and economic livestock production. J. Applied Anim Res., 40 (2) : 92 - 96
- Kathiravan G., M.Thirunavukkarasu, and S.Selvam, 2012. Are Farmers Willing to Pay for Quality Improvements in Livestock Services Delivery? Evidence from South India. Ind. J. Anim. Sci., 82(6) : 634 – 639
- Kathirvelan C., P.Vasanthakumar, M.R.Purushothaman and D.Chandrasekaran, 2013. Incidence of aflatoxin in maize and deoiled ricebran. Ind. Vet. J., 20(2): 105
- Malliga J., N.Narmatha, V.Uma, N.Akila and K.M.Sakthivel, 2012. Relationship between the socio economic characteristics and the post exposure knowledge level of milk vendors in clean milk production practices. Ind. J. Social Res., 53 (6) : 477-481
- Malliga J., N.Narmatha, V.Uma, N.Akila and K.M.Sakthivel, 2012. Effectiveness of CD lesson on the knowledge level of milkvendors in clean milk production practices. J. Dairying, Foods and Home Sci., 31 (1): 52-54
- Manivannan C., G.Kathiravan and G.Srinivasan, 2012. Socio-personal and Socio-psychological characteristics of link worker couples of Tamil Nadu Livestock Development project. Ind. J. Social Res., 53(3): 227-233

- Mathialagan P and K.Senthilkumar, 2012. Extent of awareness and adoption of disease prevention and control by poultry farmers. International J. of Food, Agriculture and Vet. Sci., ISSN: 2277-209X (Online) 2 (2):1-4
- Meenakshi Sundaram S., T.Sivakumar, V.M.Sankaran, J.S.I.Rajkumar and B.Nishanth, 2012. Distribution of soil organic carbon (soc) in agricultural lands by farming forage crops for mitigating climate change. Int. J. Environmental Biology 2(3) : 165-168
- Meenakshi Sundaram S., T.Sivakumar, V.M.Sankaran, J.S.I Rajkumar and B. Nishanth, 2012. Farming forage crops for improving soil organic carbon stocks in agricultural lands. Int J. Research in Biological Sci, 2(3): 116-119
- Mekala P. and A.Arivuchelvan, 2012. Bioenhancer for animal health and production: A Review. Noto-are: Agriculture, 11155755 (Online)
- Nisha P. R. and N.K.Sudeep Kumar, 2012. Job Satisfaction of Teaching Faculty of Madras Veterinary College. T.N. J. Vet. Anim. Sci., 8 (5) : 306- 312
- Palanivel K.M., S.Saravanan, G.Selvaraju, M.Geetha and R.Jayakumar, 2012. A case of furious rabies in a man following unusual long incubation period. J. Vet. Public Health. 9 (2): 127-128
- Prabu M., K.N.Selvakumar, A.Serma Saravana Pandian, G.Senthikumar and B.Jayavarathan, 2012. Changing dimensions of Livestock sector in Tamil an Economic Analysis. Int. J. Food, Agriculture and Vet. Sci., 2 (2): 46-49
- Prabu M., G.Senthil Kumar, A.Serma Saravana Pandian, K.N.Selvakumar and B.Jaya Varathan, 2012. Dynamics of livestock population – India Vis-A – Vis Tamil Nadu. TN.J.Vet. Anim. Sci., 8(5) : 266 – 270
- Prabu M., K.N.Selvakumar, A.Serma Saravana Pandian, G.Senthilkumar and B.Jaya Varathan, 2012. Changing dimensions of livestock sector in Tamil Nadu. J. Food, Agri. and Vet. Sci, 2(2): 5-9
- Rajendran L. and G.Rathinasabapathy, 2012. Growth of Engineering Institutions and their Libraries in Tamil Nadu. Ind. J. Information, Library and Society(ISSN: 0971-4286) 25 : 120-125
- Rajesh Kumar B., D.Baskaran and A.Serma Saravana Pandian, 2012. Factors influencing the adoption of new feeding technology by the Farmer Interest Groups (FIGs) of Vellore District in Tamil Nadu. Ind. J. Anim. Res., 46 (4) : 389-392
- Ramesh J., Ghadevaru Sarathchandra and V.Suresh kumar, 2013. Survey of market samples of food grains and grain flour for Aflatoxin B1. Int. J. Curr. Microbiol. App. Sci., 2(5):184-188
- Ranganathan V. and N.Punniamurthy, 2013. Estimation of phenol contents in Withania somnifera and Asparagus racemoses plants of Thanjavur district, Tamil Nadu. Int. J. Agrl. Sci. and Vet. Med., 1(2): 79-82

- Rathinasabapathy G. and L.Rajendran, 2013. Mapping of World-wide Camel Research Publications: A Scientometric Analysis. J. Library, Information and Communication Technology (ISSN: 0975-3168). 5:35-40
- Rathinasabapathy G., 2012. Scientometric Analysis of Publications on Goat Research: A Profile based on CAB Direct Online. Ind. J. Agrl. Library and Information Services (ISSN: 0974-8776) 28: 35-39
- Rathinasabapathy G., 2013 A Scientometric Study on Duck Research as reflected in CAB Direct Online J. Library, Information and Communication Technology (ISSN: 0975-3168). 5 : 63-68
- Rathinasabapathy G., 2013. Bluetongue Research: A Scientometric Profile based on CAB Direct Online. Asian J. Library and Information Science (ISSN: 0975-315X). 5 : 47-54
- Sakthivel K.M., N.Narmatha, N.Akila and V.Uma, 2012. Management practices followed by goat farmers in Namakkal district of Tamil Nadu. Ind. J. Small Ruminants.18 (1): 125 – 128
- Sakthivel K.M., N.Narmatha, V.Uma and N.Akila, 2012. Gender division of labour and decision making in goat farming in Tamil Nadu. Ind. J. Small Ruminants., 18 (1) :160 -162
- Sakthivel Prakash Khandekar K.M., PVK.Sasidhar and N.Narmatha, 2012. Information sources of rural marginal and landless livestock farmers in Tamil Nadu. Ind. J. Social Res., 53 (6) : 459-462
- Sarathchandra G., 2012. Veterinary Pharmacovigilance – a pilot study in Tamil Nadu. J. Vet. and Pharm. and Therapeutics, 35 (3) : 72-77
- Senthil Kumar G., M.Prabu, B.Suresh Subramonian, P.Tensingh Gnanaraj and P.Thilakar. 2012. Impact analysis of personality development and business motivation programme among professional students. Int. J. Soc. Sci. and Interdisciplinary Res., 1 (9) : 111-119
- Senthil Kumar G., B.Suresh Subramonian, P.Tensingh Gnanaraj, A.Serma Saravana Pandian and B.Jaya Varathan, 2012. Analysis of intention of Professional students to become livestock business entrepreneurs in Tamil Nadu. Ind. J. Field Vets., 7(3):43-44
- Senthilkumar S., T.V.Vishwanathan, A.D.Mercy, P.Gangadevi, K.Ally and P.T.Philomina, 2012. Economics of feeding brewery waste in lactating cows. TN J. Vet. Anim. Sci., 8(5): 286-289
- Senthilkumar S. 2012. Incidence of parasitic infection among ponies. Ind.Vet. J., 89 : 20-21
- Serma Saravana Pandian A., K.N.Selvakumar and M.Prabu, 2012. Analysing the factors associated with the intensity of constraints to milk production in different districts of rural Tamil Nadu. Int. J. Food, Agriculture and Vet. Sci., 2(2):46-49

Serma Saravana Pandian A., K.N.Selvakumar and M.Prabu, 2013. Economics of Buffalo Milk Production – A Case Study in Rural Tamil Nadu. Int. J. Scientific Res., 2 (2): 48-49

- Serma Saravana Pandian A., K.N.Selvakumar, M.Prabu and B.Ganeshkumar, 2012. Technical efficiency of milk production in Tamil Nadu – Frontier production function approach. J. Dairying, Food and Home Sci., 31 (4) : 264-267
- Serma Saravana Pandian. A., K.N.Selvakumar and M.Prabu, 2012. Analyzing the Factors associated with the intensity of constrains to milk production in different districts of rural Tamil Nadu. Int.J. Food, Agri. and Vet. Sci., 2(2): 46-49
- Serma Saravana Pandian A., M.Prabu and B.Jaya Varathan, 2013. Changing dimensions of export of leather and leather products in India – A Markov chain analysis. Ind. J. Applied Res., 3 (2) : 69-70
- Serma Saravana Pandian, A., M.Prabu and N.Kumaravelu, 2013. SWOT analysis of Dairy sector development in Tamil Nadu. Ind.J. Applied Res., 3(4): 238-240
- Sivakumar T., S.Meenakshi Sundaram, V.M.Sankaran, J.S.I.Rajkumar and B.Nishanth, 2012. Enhancement of soil organic carbon(SOC) in agricultural lands with forage crops cultivation in Thenkasi,Tirunelveli district,Tamil Nadu, India. Int. J. Recent Scientific Res., 9(3) 771-774
- Sivakumar T., A.Thennarasu and J.S.I.Rajkumar, 2012. Trend analysis of the climatic parameters (2001-2007) for the northeastern zone of Tamil Nadu. Int. J. Research in Environmental Sci. and Tech., 2(3): 83-86
- Sujatha G., N.Dhivya, K.Ayyadura and D.Thyagarajan, 2012. Advances-In Electronic-Nose Technologies. Int. J. Engineering Research and Applications :1541-1546
- Thirunavukkarasu M., V.M.Sankaran, G.Kathiravan and R.Karunakaran, 2012. Green fodder availability in TamilNadu – A district wise analysis. Ind.Vet.J. 89 (10): 18 – 20
- Thirunavukkarasu, M., T.Senthilkumar and N.K.Sudeep Kumar, 2012. Impact of distance education on dairy farming on learners knowledge gain, skill development and economic benefits. Elixir Social Studies. 48: 9367 – 9370
- Venkatramanan R., S.Krishankumar, C.Sreekumar, R.Anilkumar and M.Iyue, 2012. Soil fertility of grass land under influence of grazing. J. Energy, Environ., and Carbon Credits. 2(3) : 1-6
- Vennila C., C.Jayanthi and V.M.Sankaran, 2012. Vermicompost on crop production – A Review. Agricultural Reviews. 33 : 265-270
- Vijaya Bharathi M., P.I.Ganesan, B.Murali Manohar and N.R. Senthil, 2013. Evaluation of various diagnosis aids for detection of T. gondii antibodies in cats. Ind. Vet. J., 90(4): 23-24

- Vinoth Kumar O.R. and L.Gunaseelan 2012. Milk as a source of paratuberculosis infection. Ind. Vet. J., 89(7): 15-17
- Vinodh Kumar O.R. and L.Gunaseelan, 2012. Milk as a potential source of Mycobacterium avium susp paratuberculosis infection. Ind.Vet. J. 89 (7): 135-136
- Vinodhkumar O.R., N.R.Senthil and D.Faris, 2013. Prevalence on bovine paratuberculosis in sub-urban Chennai city. Ind. Vet. J., 90(1) :31-32

Food Sciences

- Divya S., D.Thyagarajan and G.Sujatha, 2012. Magnetic resonance imaging technology for process control and quality maintenance in food quality operation. Int. J. Engineering and Technology (ISSN: 0975-4024) 4 (6)
- Elango A., B.Dhanalakshmi, T.R,Pugazhenthi, V.Jayalalitha, G.Rajajan, G.Kumaresan, C.Naresh Kumar and K.A.Doraisamy, 2012. Seasonality of Campylobacter jejuni isolated from raw milk. J. Dairying, Foods and Home Sci., 31 (1): 20-24
- Gunasekaran S., K.Viswanathan, K.Pasupathy and L.Radhakrishnan, 2013. Evaluation of leguminous fodders for growth performance in weaned New Zealand white rabbits. Int. J. Applied Sci. and Engineering, 1(1): 10-12
- Ilayabharathi D., F.R.Sheriff and G.Raj Manohar, 2012. Shelf-life of spent chicken sausage and its organoleptic qualities. TN J. Vet. Anim. Sci., 8 : 60-67
- Jeya Shakila R., E.Jeevithan, A.Varatharajakumar, G.Jeyasekaran and D.Sukumar, 2012. Functional characterization of gelatin extracted from bones of red snapper and grouper in comparison with mammalian gelatin. LWT - Food Science and Technology 48:30-36
- Jeya Shakila R., E.Jeevithan, A.Varatharajakumar, G.Jeyasekaran. and D.Sukumar, 2012. Comparison of the properties of multi-composite fish gelatin films with that of mammalian gelatin films. Food Chemistry, 135:2260-2267
- Jeya Shakila R., B.Edwin Raj and N.Felix, 2012. Quality changes of farmed cobia steaks held in cold stores (-18°C). Int. J. Food Science and Tech., DOI:10.1111/j.1365 2621.2012.03119
- Jeya Shakila R., B.Edwin Raj, and N.Felix, 2012. Quality and safety of fish curry processed by sous vide cook chilled and hot filled technology process during refrigerated storage. Food Science and Technology International. 18:.261-269
- Kanagaraju P., R.Richard Churchill, R.A.Rajini, S.Rathnapraba and P.Veeramani, 2013. Factors influencing consumption pattern of duck and duck production among people of Kerala. Ind. Vet. J., 90 : 137-138
- Karthiayani A., D.Thyagarajan and Anandakumar, 2012. Application of Non-migratory Bio-polymers (NMBP) in Food Packaging. Beverages and Food World (ISSN-0970-6194) 39 (11): 45-48

- Manoharan A., D.Ramasamy, B.Dhanalakshmi, K.S.Gnanalakshmi and D.Thyagarajan, 2012. Studies on sensory evaluation of Curcumin powder as natural color for butterscortch flavor ice cream. Ind. J. Drugs and Diseases (ISSN: 2278-2959) [online] 1:1
- Manoharan A., D.Ramasamy, B.Dhanalakshmi, K.S.Gnanalakshmi and D.Thyagarajan, 2012. Organoleptic evaluation of beetroot juice as natural colour for strawberry flavor ice cream. Ind. J. Medicine and Healthcare. 6 : 5-7
- Pandian C., R.Annal Villi, G.Kumerasan, B.Murugan and T.R.Gopalakrishnamurthy, 2012. In vivo and *in vitro* effect of Lactobacillus in symbiotic ice cream enriched with whey protein concentrate. Int. Food Res. J., 19(2): 441-446
- Pandian C., A.Sundaresan, K.Sangilimadan, A.V.Omprakash, M.Babu and R.Prabakaran, 2012. Effect of different storage periods on egg quality traits of ducks. J. Life Sci., 12(6) : 871-873
- Pandiyan C., R.Annal Villi, G.Kumaresan, B.Murugan and T.R.Gopalakrishnamurthy, 2012. Development of synbiotic ice cream incorporating Lactobacillus acidophilus and Saccharomyces boulardii. Int. Food Res. J.,19(3): 1233-1239
- Poorani A., B.Suresh Subramonian, A.Elango, T.R.Pugazhenthi and B.Dhanalakshmi.2012. Evaluation of applicability of spray drying in the production of soy substituted bifidogenic milk powder. Egyptian J. Dairy Sci., 40(2): 85-89
- Poorani A., B.Suresh subramonian, A.Elango, T.R.Pugazhenthi and B.Dhanalakshmi, 2012. Synbiotic bifido milk powder in weaned piglets: effect on growth, hematology and intestinal histology. Egyptian J. Dairy Sci., 40(2): 91-97
- Poorani A., B.Suresh Subramonian, B.Elango, B.Dhanalakshmi and B.Samuel Masilamoni Ronald, 2012. Survivability of Bifidobacterium longum in spray dried soy sunstituted symbiotic milk. Int. J. Family and Home Sci., 7(2): 111-116
- Preethi R., S.K.Mathanghi, K.Sudha and D.Thyagarajan, 2012. Strategies for reduction of rework in a confectionery unit. Int. J. Food. 2 (3) : 37-43
- Ramesh J., Ghadevaru Sarathchandra and V.Suresh kumar, 2013. A Validated HPTLC method for detection of ochratoxin A and citrinin contamination in feed, fodder and ingredient samples. Int. J. Curr. Microbiol. App. Sci., 2(5): 335-341
- Ramesh J., Ghadevaru Sarathchandra and V.Suresh Kumar, 2013. Analysis of feed samples for aflatoxin B1 contamination by HPTLC – a validated method. Int. J. Curr. Microbiol. App. Sci., 2(5):373-377
- Ranganathan V. and S.Selvasubramanian, 2012. Comparative effect of Cucurbita maxima seed with Immunomodulators on biochemical parameters in rabbits. J. Applied Pharmaceutical Sci., 2 (6): 191-193

- Rode Suhas Ramkrishna, F.R.Sheriff and G.Raj Manohar, 2012. Growth performance and carcass yields as influenced by age and sex in different turkey varieties. TN J. Vet. Anim. Sci., 8 : 94-100
- Suresh Kumar J., G.Sujatha and D.Thyagarajan, 2012. Assessment of overall equipment effectiveness, efficiency and energy consumption of breakfast cereal. Int. J. Applied Engineering and Technology (ISSN: 2277-212X) (Online) 2 (2): 39-48
- Thyagarajan D., A.Karthiayani, C.Prem Anandh, N.Dhivya and V.Mathavi, 2012. A shield against growth of micro- organisms. Modern Food Processing.8 (3) : 36-39
- Vasanthakumar P. and R.Ravi, 2012. Chemical composition and Nutritive value of Raw and processed mango seed kernel. Ind. J. Family and Home Sci., 8 (2): 145-150

Wildlife Sciences

- Balachandran C., N.Pazhanivel, B.Murali Manohar and R.Sridhar, 2013. Concurrent thyroid adenoma and intestinal leiomyoma in a water monitor (Varanus salvator). Ind. Vet. J., 90 (2):134-135
- Nishanth B., S.R.Srinivasan, M.G.Jayathangaraj and R.Sridhar, 2013. Fecal cortisol levels in elephants of Tamilnadu state.Ind. Vet.J. 90(2) 42-44
- Sathyamoorthy O.R., R.Thirumurugan, M.Palanivel Rajan, 2012. Gross Anatomical Studies on the Sternum and Ribs of White-rumped Vultures (Gyps bengalensis). Ind. J. Vet. Anatomy, 24(2) : 106-108
- Sivaraman.S, D.Basheer Ahamed, K.Krishnakumar, A.Velavan and N.Vengadabady, 2013. Haemorrhagic mastitis in a Gir cow due to leptospirosis – A case report. Advanced Biotech 12(7): 41-42
- Sivasudharsan L., S.Parthiban, B.Karthikeyan, P.Pothiappan and V.Vaikunta Rao, 2012. Case report: Degloving wound in a Macaque (Macaca radiata). J. Vet. Res., 16:49-52
- Subramanian K.S., K.Kumanan, N.D.J.Chandran, P.I.Ganesan, A.Raja and B.S.M.Ronald, 2012. Tuberculosis in Asian elephants – A threat to conservation and public health. Ind. J. Comparative Microbiology, Immunology and Infectious diseases. 33 (1& 2) :4-6
- Thangapandiyan M., P.Jalantha, T.Mohanapriya, S.D.Rahanae, S.Muthukrishnan and R.Sridhar, 2013. Aspiration pneumonia in a macaw. Ind.Vet. J., 90 : 127-128
- Thilakan N. J.Jeya, Selvaraj Kumar, S.Senthil, M.G.Jaya Thangaraj, John Lalitha, 2012. Concurrent infection of Gnathostoma spinigerum and Ancylostoma braziliense in a tigress. Ind. J. Anim. Health, 21 (2) : 191-192
- Vairamuthu S., K.Senthilkumar, N.Pazhanivel, C.Balachandran and M.G. Jayathangaraj, 2012. Hepatozoon Sp. Like infection in Rat Snake (Ptyas mucosus). Ind. J. Anim. Res., 44 (3) : 230-231

Vijayalakshmi P. M.Chandrasekar, M.G.Jayathangaraj, K.Jeyaraja, S.Vairamuthu and A.P.Nambi, 2012. Leptospirosis in Presbytis entellus (Common Langur). Ind. Vet. J., 89(11) : 84-85

Fisheries

- Anbudhasan P., A.Uma and G.Rebecca, 2012. Assessment of Bacteriological Quality in selected Commercially Important Processed Seas Foods by Polymerase Chain Reaction (PCR). CIB Tech J. Bio technology(ISSN 2277-209X) 2(3) : 20-25
- Arul Oli G. and C.Jeevitha, 2013. An overview of the socio – economic status of fisherfolk of Thoothukudi District, Tamilnadu. J. Fisheries Economics and Development, 13(1): 18 - 28
- Gunalan B., S.Nina Tabitha, P.Soundarapandian, T.Anand and Kotiya Anil. 2012. Estimation of soil nutrients in Litopenaeus vannamei culture ponds. Basic Res. J. Agri. Sc., and Review. 1(5) : 124-131
- Jackie singh Y., R.Santhakumar and H.Bharati, 2012. Hygienic fish handling practices by fisherman. Ind. Res.J.Ext.Edu. 12(1)
- Janarthanam K., M.Rosalind George, K.Riji John, M.J.Prince Jeyaseelan, 2012. In vitro and *in vivo* biocontrol of Vibrio harveyi using indigenous bacterium, Bacillus spp. Ind. J. Geo Marine Sci., 41:83-89
- Jawahar Raj K., A.Uma and G.Rebecca, 2012. Differential expression of Toll-like receptors (TLRs) in gold fish, *Carassius auratus* infected with freshwater lice Argulus sp. Int. Pharma and Bio Sciences (ISSN:0975-6299) 2(5)
- Jeyasekaran G., R.Jeya Shakila and D.Sukumar, 2012. Microbiological quality of Cuttlefish (*Sepia pharaonis*) fillets stored in dry and wet ice. Food Science and Technology International 18:455-464
- Jothilakshmanan N. and K.Karal Marx, 2013. Hybridization between Indian catfish, *Heteropneustes fossilis* (Bloch) and Asian catfish, *Clarias batrachus* (Linn.). African J. Biotech., 12(9):976-981
- Mary Anusha M. and K.Karal Marx, 2012. Induction of meiotic gynogenesis in Indian catfish *Heteropneustes fossilis* (Bloch) using irradiated sperm of *H.fossils* and *Clarias batrachus* (Linn.). Ind. J. Fish., : 107-112
- Padmavathi P., and T.Francis., 2012. Comparative study on the growth of carps using cattle and pig manure. Aquaculture 13(2): 135 – 139
- Padmavathy, P., T.Francis, A.Srinivasan, V.Rani and T.Anand, 2012. Enzyme metabolism in Indian Major carps, Cirrhinus mrigala and Laeo rohita with reference to ambient oxygen. Aquaculture, 13(1): 87-91
- Riji John K. and M.Rosalind George, 2012. Viruses associated with epizootic ulcerative syndrome (EUS) – an update. Ind. J. Virology, 23(2):106–113

- Riji John K., M Rosalind George, Bridget Jeyatha, R.Saravanakumar, P.Sundar, K.P.Jitendran and Erling Olaf Koppang, 2012. Isolation and characterization of Indian betanodavirus strain from infected farm reared Asian seabass Lates calcarifer (Bloch, 1790) juveniles. Aquaculture Res., 10:1111
- Santhakumar R., N.V.Sujathkumar and I.Vasudevan, 2012. Requirement of the women self help Members for Adoption of Ornamental Fish culture technology. J. Interacademicia. 16(4a) : 1180-1181
- Selvaraj S., T.Francis, M.Venkatasamy and S.Santhosh Kumar, 2012. Effect of HCG implants on changes in Testosterone and Estradiol level in blood serum of Murrel, Channa striatus. TN J. Vet. Anim. Sci., 8(5) : 290-298
- Sowmya M.V., A.Uma and G.Rebecca, 2012. Expression of Toll protein gene in litopenaeus vannamei (Pacific white shrimp) experimentally induced with vibrio alginolytians. Int. Pharma and Bio Sciences (ISSN:0975-6299) 3(6)
- Suganthi G., A.Uma, G.Rebecca and K.Saravanabava, 2012. Strain variations in mondon baculovirus (MBV) infecting penaeus monodon. CIB Tech J. Biotechnology (ISSN: 2277-209X) 1(1): 41-45
- Sundramoorthy B., 2013. Long line selectivity and fishing pressure on the fishing of Lethrinus elongates off Thoothukudi. TN J. Vet. Anim. Sci., 7(3)
- Suryakant Patil, B.Ahilan and M.J.Price Jeyaseelan, 2012. Influence of β Glucanase on the growth and survival of Penaeus monodon under different Salinity conditions. TN J. Vet. Anim. Sci., 8 (6) : 198-202
- Uma A., A.H.M.Harresh and G.Rebecca, 2012. Expression of toll protein gene in tissues of tiger shrimp (penaeus monodon) experimentally exposed to vibrio harveyi. Int. Pharma and Bio Sciences (ISSN:0975-6299) 3: 4
- Uma A., G.Rebecca and K.Saravanabava, 2012. In vivo effect of CpG oligo deoxyvcleotids (CpD ODNS) on expression of TLR 9 in catla catla. CIB Tech J. Bio technology (ISSN: 2277-209X) (1): 28-32
- Vaitheeswaran T., N.Jayakumar and V.K.Venkataramani, 2012. Age and Growth of Seahorse, Hippocampus kuda (Bleeker, 1852) (Family: Syngnathidae) From Thoothukudi, Southeast coast of India. TN J. Vet. Anim. Sci., 8(4): 203 – 208
- Vaitheeswaran, T., N.Jayakumar and V.K.Venkataramani, 2012. Length weight relationship of lobster, Panulirusversicolor (Latreille, 1804) (Family: Palinuridae) off Thoothukudi waters, southeast coast of India. TN J. Vet. Anim. Sci., 8(1): 54 – 59

Proceedings of Seminar/Symposium/Conference

Alagudurai S., B. Mohan, K. Senthil kumar, C.Sharmila Bharathi, and S. Aanand, 2013. Evaluation of mixed fodder crops production, Proc. of the Valar Thamil Arivial Conference: 157-160



- Arul Oli G., K.S.VijayAmirhtaraj and M.Venkatasamy, 2013. Thoothukudi mavatta meenavargalin samuga porulathara matrum vazhvathara nilai-oru Ayvu : 117-123
- Arul Oli G.and C.Jeevitha., 2013. Ooraga magalir edaiye nanneer alangara meen valarppu thozhilnutpa paraval – pangerppu anugumurai Ayvu. Proceedings of the 21st National Conference on Science and Tamil : 183-187
- Bharathidhasan A., A.Subramanian, S.Rita Narayanan S.Ezhilvalavan, T.R.Pugazhenthi and Narendra Babu, 2012. Effect of multi enzyme supplementation on performance of Large White Yorkshire pigs. In Proceedings of the 1st International Conference on Animal Nutrition and Environment : 277-280
- Bharathidhasan A., T.R.Pugazhenthi and S.Ezhilvalavan, 2013. Effects of dietary inclusion of probiotics on performance of broilers. In Proceedings of the National Seminar on Probiotics in sustainable food production: current status and future prospects at Faculty of Agricultural and Animal Husbandry :302-305
- Devaraj C., V.Leela, Geetha Ramesh and A.Thangavel, 2012. Changes in electrolyte constituents of sheep allantoic fluid during different stages of pregnancy. 21st Annual conference of National Symposium of SAPI, Navsari
- Devaraj C., V.Leela, Geetha Ramesh and A. Thangavel, 2012. Biochemical Profile of sheep allantoic fluid during different stages of Pregnancy. Proceedings of the 21st Annual conference of National Symposium of SAPI.
- Jawahar P., V. Rani, P. Pavinkumar and V.K. Venkataramani, 2013. Proper utilization of Gulf of Mannar Marine resources. Proceedings of the All India Tamil Scientific Corporation : 103-110
- Juliet Selvarani A, P.Padmavathy, A. Srinivasan and P.Kantharajan, 2013. Performance of Lemna minor on the different wastewater treatment. Proceedings of the 21st National Conference on Science and Tamil: 65 – 69
- Manimekalai D., A.Srinivasan, P.Padmavathy, V.Rani, T.Anand and S. Aruna, 2013. Biodegradation of petroleum hydrocarbon in the coastal environment. Proceedings of the All India Tamil Scientific Corporation : 77-80
- Muthusamy N. and M. Ramachandran, 2013. Yeast and yeast cell wall increase the production performance in broilers. Proceedings of the All India 21st National Scientific Tamil conference. (ISBN 978-93-81102-55-8) : 164-168
- Padmavathy P., P.Kantharajan and A. Srinivasan, 2013. Fishing harbour wastewater treatment using Chitosan treatment. Proceedings of the 21st National Conference on Science and Tamil : 57-64

- Rani V., P. Jawahar, N. Neethiselvan and M. Venkatasamy, 2013. Ornamental fish culture - an overview. Proceedings of the 21st National Conference on Science and Tamil : 141-172
- Rani V., K.Kantharajan, P.Jawahar and T.Francis, 2013. Study on rotifer (Brachionus pilicatilis) using phytoplankton Nannochloropsis aculata. Proceedings of the 21st National Conference on Science and Tamil: 125-134
- Rani V., P.Jawahar and K.Kantharajan, 2013. Effect of neem extract on bacterial and fungal infected guppy, Poecilia reticulata. Proceedings of the 21st National Conference on Science and Tamil : 31-36
- Rani V., P.Jawahar and K.Kantharajan, 2013. Mass production of Moina and its cyst to feed ornamental fish. Proceedings of the 21st National Conference on Science and Tamil : 21-30
- Rani V., P.Jawahar, N.Neethiselvan and M.Venkatasamy, 2013. Aquarium tank maintenance. Proceedings of the 21st National Conference on Science and Tamil : 189-194
- Saravanan R., S.Panneer selvam, K.Senthil kumar, D.Thirunavukkarasu, N.Murali and B.Mohan, 2012. Twinning in Mecheri x NARI swarna cross sheep. Proc. of the Tamil Science Congress : 51
- Suresh kumar V., G.Sarathchandra and J.Ramesh, 2013. Effect of various cooking processes on fluoroquinolone antibiotic enrofloxacin and its primary metabolitic ciprofloxacin residues in broiler chicken tissues. Proceedings of 3rd INCOFTECH 2013, IICPT, ISBN1-0-978-81-926250-0-3
- Usha S. and N.Muthusamy, 2013. Seasonal influence on mineral profiles of normal and delayed sexual maturity crossbred heifers. Proceedings of the All India 21st National Scientific Tamil conference. (ISBN 978-93-81102-55-8) : 131-134
- Vasantharajan M., P.Jawahar, and M.Venkatasamy, 2013. Lethrinid fish resource and management at Thoothukudi coastal region. Proceedings of the All India Tamil Scientific Corporation : 173-182
- Vijay Amirtharaj K.S., M.Venkatasamy, G.Arul oli and S.Athithan, 2013. Kozhi eraichi tholai pon meen unavil maatru purathamaga kodupathal erpadum valarchitthiran –Ayvu. Proceedings of the 21st National Conference on Science and Tamil: 135-140

POPULAR ARTICLES

(In English)

- Akila N., 2012. Employment scenario of rural women in unorganised sector. Intellectual Today. 2(3):18-21
- Amutha R.,K. Rajendran, P. Shamsudeen and S. C. Edwin, 2013. Welfare issues of rearing present day commercial hybrid layers and broilers. Poultry Line (March) :43-46
- Amutha, R., P. Shamsudeen, K. Rajendran and S. C. Edwin, 2012. Impact of drinking water quality for poultry. Poultry Fortune (November) : 38-39

- Anandha Prakash Singh D., 2012. Recent trends in crossbred dairy cattle management . The Indian cow, 27: 49-52
- Anandha Prakash Singh D., 2012. Effect of environmental stress on production and reproduction. The Indian cow. 27: 53-58
- Anna Anandh M. And P.N. Richard Jagatheesan, 2012. Technologies for effective Disposal of dead poultry Carcasses. Poultry line (May)12(5)
- Arunprasad. A., mohd. Shafiuzama, S.Ayyappan, R.Sureshkumar and R.Yeyaprakash, 2012. Incidence of coxofemoral joint affections in dogs, Intas Polivet 13 (2): 281-283
- Ayyappan.S., 2012. Spinal trauma and its management in companion animals, Intas Polivet 13 (2): 309-313
- Ayyappan.S., 2012. Dynamic Compression Plate (DCP) and Limited Contact Dynamic Compression Plate (LC-DCP) application for management of large bone fractures. Intas Polivet (2) 13 : 374-375
- Ayyappan. S., 2012. Technical errors in small animal orthopedic surgery. Intas Polivet. 13 (2): 478-479
- Balasubramanian S., 2012. Estrous synchronization in cattle: Part IV Methods and protocols. Field Vet, 6(5)
- Balasubramanian S., 2012.Infertility in cattle Part I: Early post partum period and chronology of reproductive examination schedule. Field Vet, 6(6)
- Bharathidhasan A., M.Ramachandran, T.R.Pugazhenthi, J.Ramesh, S.Ezilvalavan and V.Balakrishnan, 2012. Dietary manipulation for mitigating methane emission from ruminants to reduce the global warming. Pashudhan, 38(06) :1 and 4
- Chandrasekaran D., P.Vasanthakumar and M.R.Purushothaman, 2012. Role of Nutrients in enhancing reproductive efficiency in dairy cattle. Rakha Technical Review (ISSN 2250-1134) (Dec)
- Gautham Kolluri, R. Richard Churchil and T. R. Kannagi, 2012. Transgenic chicken as bioreactor: A promising tool for gene pharming. Poultry Line, (October) 12: 15-18.
- Gopi M., C.Kathirvelan and P.Vasathakumar, 2012. Role of sulphur in ruminant nutrition. Pashudhan (May)
- Gopi M., S. Srinivasan, R.Amutha, R.Kavitha and S.Senthil Kumar, 2013. Additives for quality poultry products. Poultry Punch (February) : 27-28
- Jeyasekaran P., Inam Akthar Usain. R.Jeyashakila, Thirumalairaj and K.Karl Marx. 2012. Micro array-Diagnosis of microbial quality of fish and fishery products. Infofish Int. 5 : 46-48
- Johnson Rajeswar J., S.Malmarugan, K.Sukumar and M.Arthanari Eswaran, 2012. Diseases of Pigeon. Raksha technical review 2(2) :52-55
- Kalaivanan N., R.Venkataramanan, C.Sreekumar, N.Murali and R.K.Srivastava, 2012. Suspected pseudohermaphroditism in a wild asian elephant, Gajah, 36: 32-34

- Kumaravelu N., 2012. Profitable goat farming. Nilavalam (12) : 1-7
- Kumaravelu N., 2012. Camel. Rani weekly (June)
- Kumaravelu N., 2012. Myths and Facts on Elephants. Rani weekly (July)
- Kumaravelu N., 2012. Note on Elephants. Rani weekly. (July)
- Kumaravelu N., 2012. Elephants. Rani weekly (4.9.2012)
- Kumaravelu N., 2012. Facts about chicken rearing. Rani weekly. (20.11.2012 and 27.11.2012)
- Kumaravelu N., 2012. Ducks. Rani Weekly. (11.12.2012)
- Kumaravelu N., 2012. Turkeys. Rani Weekly. (25.12.2012)
- Kumaresan A, S.Dharmaceelan, S.Kathirvel S.Senthilkumar and K.Jayakumar, 2012. Management of open fractures of Metacarpus and Metacarpus with Epoxy Type II external fixators in caprine – A study of two patients. Intas Polivet, 13 / 399 -400
- Madupriya V., S.Pavithra, A.Kathikeyan and C.Kathirvelan, 2013. Organic trace minerals for animal health and performance. Livestock future (March)
- Mohamed Shafiuzama, A.Arun Prasad, K.Senthilkumar and B.Justin William, 2012. Therapeutic Management of Foot Rot in an Asian Elephant (Elephas maximus). Intas Polivet, 13(2): 482-483
- Moorthy M. and S.C.Edwin, 2013. Pre-slaughter handling, packaging and transport of poultry meat. Poultry Line (January) : 62-65
- Moorthy M. and S.C.Edwin, 2012. Management of layers during peak production. Poultry Line (October) : 34
- Moorthy M. and S.C.Edwin, 2012. Handling and restraining of ostriches. Poultry Punch (April) : 37-38
- Muralidharan K., S.Eswari, K.Vijayarani and A.Thangavel, 2012 Double muscled cattle future prospects of myostatin null animal in beef industry. Pasudhan August : 3
- Nambi. A.P., K,Jeyaraja and P.Selvaraj, 2012. Cardiac emergencies in dogs. Intas Polivet 12 (2) : 241-245
- Pandian C., A.V.Omprakash, M.Murugan and M.Babu, 2012. Vitamins and Poultry nutrition. The north east veterinarians (Dec)
- Parthiban S., P.Pothiappan, M.Ranjithkumar, S.Raja and K.Ravikumar, 2013. Critical points in treatment of canine parvovirus enteritis infection. Pashudhan 39(4)
- Pavithra S., A.Karthikeyan, V.Madhupriya and C.Kathirvelan, 2012. Strategies to reduce ammonia emissions from the poultry house. Poultry Talk (Nov)
- Pazhanivel N., C.Balachandran, R.Bharathi, G.Dhinakar Raj and R.Sridhar, 2013. Nephropathogenic Infectious Bronchitis in Chicken. MVC Annual LXII February 2013 : 46-47



- Ponnudurai G., N.Rani and T.J.Harikrishnan, 2012. Control of houseflies in poultry farms. Poultry punch (November)
- Pothiappan P. and S.Parthiban, 2012. Cnemidocoptes infestation in a cockatiel concurrently infected with coccidiosis and fowl cholera. Pashudhan 38(1)
- Pothiappan P., R.Parthiban, L.Sivasudharshan, 2012. Bog spavin and its management in kathiawari horse. Intas. Polivet13 (II): 185-186
- Pothiappan P., M.Thangapandiyan, and R. Suresh kumar, 2013. Pet owners –summer heat may kill your dogs. Lemon ads 1 (2)
- Prabu Kumar B., R.Amutha and S.C.Edwin, 2012. Feeding of broilers for maximizing profitability. Poultry Line (December): 62-65
- Rajendran K., S.C.Edwin, M.Moorthy and R.Amutha, 2012. Responses of poultry to heat stress. Poultry Line (April) : 77-78
- Rajendran K., S.C.Edwin, M.Moorthy, R.Amutha and M.Anandhi, 2012. Control of pests in poultry farm. Poultry Line (July) : 45-46
- Rajendran K., S.C.Edwin, M.Moorthy, R.Amutha and M.Anandhi, 2012. Influence of high ambient temperature on poultry production. Poultry Punch (July): 35-36
- Ramachandiran N., S.Meenakshi Sundaram and T.Sivakumar, 2012. Habbit of Goat rearing under intensive system of management and their control measure. Kalnadai Kathir (Aug-Sep)
- Ramya K., G.Selvaraju, P.Shankar, D.Kannan and M.Geetha, 2012. Genetic Engeering and its applications to Veterinary medicine. Livestock line (Aug) 6(10) :38-40
- Ramya K., P.Sankar, G.Selvaraju, D.Kannan and M.Geetha, 2013. Public health significance of rickettsial and chlamydial diseases of animals. Livestock line (Feb) 6(10) : 3-6
- Ravaneswaran K., 2012. Spirulina algae for health life. New Bright India (August) 2 (8): 24-25
- Ravaneswaran K. and Cheryl antonym, 2012. A success report on the breeding of loach Lepidocephalus thermalis (Cobitidae) in captive conditions. Science City news letter (June) VIII (3) : 3-5
- Richard Churchil R., N.Ramamurthy, R.Asha Rajini and G.Srinivasan, 2012. Nutraceutical eggs: A novel method of value addition. Poultry Line (December) 12: 27-30
- Rita Narayanan, 2012. Role of probiotics on human gut microbiota. Paripex- Indian Journal of research. 1 (12)
- Rita Narayanan, 2012. Predictive modeling in food products. IJSID, 2 (6): 200-203
- Saravanan S. and A.Manicavasaka Dinakaran, 2013. Parasitic infections and current serological techniques. Livestock line (Feb) 6(10) :3-6

- Saravanan S., A.Manicavasaka Dinakaran, T.Arulkumar and S.Malmarugan, 2012. Herbal protectants and their applications. Raksha technical review 2(2) : 60-62
- Saravanan S., K.M.Palanivel, D.Kannan and M.Geetha, 2013. Nanomedicine: Prospects in its applications. Livestock line (Feb) 6(10) :18-20
- Saravanan S., K.M.Palanivel, R.Rishikesavan and K.A.Doraisamy, 2012. Economic significance of chicken coccidiosis – An overview. Poultry punch : 29-30
- Sathiya Bama K., Keneisezo Kuotsu, S.Balakrishnan and P.I.Ganesan, 2013. Host Factors association on the prevalence of BHV-1 antibody in cattle from different farm. Raksha Tech. Review, 3: 25-28
- Sathiya Bama K. and P.I.Ganesan, 2012. Detection of BHV–1 in cattle by A- B ELISA, Raksha. Tech. Report. 2: 16-19
- Selvakkumar R., 2012. An introduction to canine helminth. Pet India. (April)
- Selvakkumar R., 2013. Successful Breeding in Lovebirds. Creature Companion- A pet care magazine (ISSN 0976-4801) (April)
- Senthilkumar K., K.Devaki and M.G.Jayathangaraj, 2012. Protection against Snake bites. Creature companion, 5(7):51-52
- Senthilkumar K., K.Devaki and M.G.Jayathangaraj, 2012. Introducing your new cat. Creature companion, 5(7):54-56
- Senthilkumar G., S.Dharmaceelan, A.Kumaresan and K.Ravikumar, 2012. Cinical management of phalanges and Horn concurrent fracture in a Indian Deer (Cervus axis).. Intas Polivet ,13:406-407
- Shibi Thomas K., T.Lurthu Reetha, M.Babu and G.Rajarajan, 2013. Azolla an alternative nonconventional feed Source to livestock and poultry. Livestock International (March)
- Sivakumar P., 2012. Importance of fodder crops in cattle feeding and cultivation practices. High Tech Horticulture (August)
- Soundararajan C., S.T.Bino Sundar, P.Azhahianambi, B.R.Latha and T.J.Harikrishnan, 2012. Scope for Veterinarians. (English) MVC, Annual volume LXI : 47-49.
- Sridevi P., 2012. Taking care of the new born pup. Creature Companion, 6 (2) :. 50 – 52
- Sukumar K.,J. Johnson Rajeswar, A. Balasubramaniam, M. Arthanari Eswaran and T. Lurthu Rita, 202. Necrotic enteritis: the ultimate profit eater Zypoul (Nov)
- Thavasiappan V., S.Jayachandran, P.Selvaraj, P.Visha, and K.Nanjappan, 2012. Milk Properties variability and their changes. Dairy Standard (Dec)
- Thavasiappan V., S.Jayachandran, P.Selvaraj, P.Visha, and K.Nanjappan, 2013. Milk composition structure and their formation. Dairy Standard (Jan)

Udhayavel S. and S. Malmarugan, 2013. Prevention and control of necrotic enteritis in Poultry. Egg-Broiler

- Usha S., R.Narendrababu and N.Kumaravelu, 2012. Profitable sheep farming Goattery- 2012 (Aug)
- Velavan A., S.Sivaraman and K.Krishnakumar, 2012. Achilles tendon rupture and its clinical management in an ewe. Intas Polivet, 13(2): 249-250
- Velavan A., H.Pushkinraj and B.Justin William, 2012. Coenurosis and its Surgical management in a Kid, Intas Polivet. 13 (I): 77-78
- Venkataramanan R. and C.Sreekumar, 2012, Bleeding hoof wound and it's management in a pony horse. Intas Polivet, 13/217-18
- Vikrama Chakravarthi, P. K.Senthilkumar and B. Mohan, 2012. Japanese Quail farming for meat and egg production. Spic Farm News (October-November) : 23-26
- Visha P., K.Nanjappan P.Selvaraj, S.Jayachandran,T. Sathyabama and V.Thavasiappan, 2012. Current strategies to reduce nitrogen excretion and ammonia emission in poultry manure and litter. Egg-Broiler (Dec)
- Visha P., K.Nanjappan P.Selvaraj,S.Jayachandran, and T.Sathyabama, 2012. Harnessing the bioactive properties of egg shell powder and membranes. Poultry punch (Dec)
- Visha P., S.Jayachandran, P.Selvaraj, K.Nanjappan and V.Thavasiappan, 2012. Potential nutraceuticals from milk proteins for food and pharmaceutical applications. Dairy Standard (Dec)
- Visha P., S.Jayachandran, P.Selvaraj, K.Nanjappan and V.Thavasiappan, 2012. Optimizing the breeder performance by strategic managemental techniques. Egg broiler (Nov)

(தமிழில்)

- அகிலா என். மற்றும் கே.செந்தில்வேல், 2012. முயல் வளர்ப்பில் ஏற்படும் தொல்லைகளும் தீர்வுகளும். கால்நடைக் கதிர் (ஆகஸ்ட்–செப்டம்பர்): 13–14
- அகிலன் பி. மற்றும் கே.ராவணேஸ்வரன், 2012. நன்னீர் கெண்டை மீன் வளர்ப்புத் தொழில். மீன்வளக் கதிர் (அக்டோபர்–டிசம்பர்) 5(3) : 20–23
- அகிலன் பி., என். பெலிக்ஸ் மற்றும் டி.பிரான்சிஸ், 2013. அலங்கார மீன்கனின் சூழ்நிலை பாதுகாப்பு குறிப்புகள். கால்நடைக் கதிர் (ஜனவரி – மார்ச்)
- அகிலா என். மற்றும் என்.பாரதி, 2013. செம்மறியாடு உற்பத்தியை அதிகரிக்க வழிமுறைகள். தினகரன் (பிப்ரவரி)
- அண்ணா ஆனந்த் எம். மற்றும் பி.என்.ரிச்சர்ட் ஜகதீசன், 2012. ஈமூ குஞ்சு பொரிப்பு மேலாண்மை. நமது பண்ணை வளம் (அக்டோபர்) 1 (4) : 24–29
- அறிவுச்செல்வன் ஏ., பி.மேகலா, ஏ.ஜகதீஸ்வரன் மற்றும் எஸ்.செந்தில்வேலன், 2012. குடி குடியை கெடுக்கும். கோழி நண்பன் (ஜுன்) : 20–22

- அறிவுச்செல்வன் ஏ., எஸ்.செந்தில்வேலன் மற்றும் எம்.செல்வராஜு, 2012. புகை உடலுக்குப் பகை – விழிப்புணர்வு செய்தி. கோழி நண்பன் (ஜுலை) : 24–25
- அறிவுச்செல்வன் ஏ., பி.மேகலா, எம்.ஜே.ராஜா, ஆர்.யோகேஸ்வரி மற்றும் ஏ.ஜகதீஸ்வரன், 2012. நச்சுக்கடிகளுக்கான பராமரிப்பு வைத்திய முறைகள் – ஒர் அலசல். கோழி நண்பன் (அக்டோபர்) : 24–25
- அருள்மொழி ஏ. மற்றும் ஜி.ஏ.பாலசுப்பிரமணியம், 2012. ஆடுகளில் இரத்தக் கழிச்சல் நோய். கோழி நண்பன் (நவம்பர்)
- அருள்ஒளி கோ. மற்றும் க. ஜுடித் பெட்சி, 2012. மீன்வளத்தில் தகவல் தொடர்பு தொழில்நுட்பம். மீன்வளக் கதிர் (ஜனவரி – மார்ச்): 15–77
- அருண்குமார் எஸ்., ஏ.சங்கரன் மற்றும் கே.பாலகிருஷ்ணன், 2012. குடற்புழுக்கள் மருந்துகளுக்கு எதிராக ஏற்படுத்தும் எதிர்ப்புத் திறனைக் குறைக்கும் வழி முறைகள். கால்நடை கதிர் (ஜீன்– ஜீலை)
- அருண்குமார் எஸ்., எம்.சந்திரசேகர். எம்.டென்சிங் ஞானராஜ் மற்றும் சி.சௌந்தரராஜன், 2013. பெட்டை மற்றும் கிடாக் குட்டிகளில் இரத்தக் கழிச்சல் நோய். வேளாண் வணிக உலகம் (ஜனவரி) : 56–58
- பாலச்சந்திரன் சி., என்.பழனிவேல் மற்றும் ஆர்.ஸ்ரீதர், 2013. கோழிகளில் நச்சுயிரியால் அழற்சி நோய். கால்நடைக் கதிர் (பிப்ரவரி–மார்ச்) : 10–11
- பாலகிருஷ்ணன் கே., டி.வி.மீனாம்பிகை, கே.ரவி குமார், எஸ்.அருண்குமார் மற்றும் வி.புருஷோத்தமன், 2012. ஆடுகளைத் தாக்கும் அம்மை நோயும் தடுக்கும் முறைகளும். கால்நடை கதிர் (அக்டோபர்–நவம்பர்)
- பாலகிருஷ்ணன் கே., டி.வி.மீனாம்பிகை மற்றும் கே.ரவி குமார், 2013. ஆடுகளைத் தாக்கும் துள்ளுமாரி நோய் – ஒரு கண்ணோட்டம். கால்நடை கதிர் (டிசம்பர் 2012–ஜனவரி 2013)
- பாலமுருகன், ஆர்., ஏ.சுந்தரேசன், சி.பாண்டியன், ஜே.ரமேஷ், ஏ. பாரதிதாசன் மற்றும் வி.பாலகிருஷ்ணன், 2012. வெயில் காலங்களில் வெப்ப அயற்சியில் இருந்து பறவைகளைப் பாதுகாப்பது எப்படி ? கோழி நண்பன், 30(9) : 5–7
- பாலமுருகன் ஆர்., ஏ.சுந்தரேசன் ஏ.கிருபாகரன், சி.பாண்டியன், எம். அராமசந்திரன், ஆர். கவிதா மற்றும் வி. பாலகிருஷ்ணன், 2012. கறிக்கோழியில் சிறந்த மாற்றுத் தீவனத் திறனைப் பெறுவது எப்படி ? கோழி நண்பன். 30(10) : 5–7
- பந்தேஸ்வரன் சி., எஸ்.குணசேகரன், கே.விஸ்வநாதன் மற்றும் எம்.மகேஷ்கிருஷ்ணா, 2012. ஆடுகளுக்கான தீவன தேவை மற்றும் பசுந்தீவன உற்பத்தி முறைகள். நவீன வேளாண்மை (நவம்பர்)
- பந்தேஸ்வரன் சி., 2013. கறவை மாடுகளில் பால் உற்பத்தி செலவைக் குறைப்பதற்கான வழிமுறைகள். வேளாண் வணிக உலகம் (பிப்ரவரி)
- பந்தேஸ்வரன் சி., 2013. மரம் வளர்ப்போம். நவீன வேளாண்மை (மார்ச்)
- பாரதிதாசன் ஏ., ஜே.ரமேஷ், எஸ்.எழில்வளவன் மற்றும் வி.பாலகிருஷ்ணன், 2012. கால்நடைகளுக்கான பசுந்தீவனங்களை உலர் தீவனமாக பதப்படுத்தும் முறைகள்–ஒர் கண்ணோட்டம். கால்நடைக் கதிர் 31(6): 29–31
- பாரதி என்., 2012. இனப்பெருக்கத்திற்கான ஆடுகளைத் தெரிவு செய்யும் வழிமுறைகள். பசுமை விகடன் (ஜுன்) : 28–29

Annual Report 2012-2013

- பாரதி என். மற்றும் என்.முரளி, 2012. ஆடுகளில் நீல நாக்கு நோய். நம்ம ஊரு செய்தி (ஆகஸ்ட்) : 13–14
- பாரதி என்., ஆர்.சக்திவடிவு, கே.சிவக்குமார் மற்றும் வி.ரமேஷ் சரவணகுமார், 2012. கோழி இறைச்சிக் கழிவுகளை அகற்றி மட்குதல் முறையில் மீண்டும் பயன்படுத்துதல். வேளாண் வணிக வளாகம் (நவம்பர்) : 45–46
- பாரதி என். மற்றும் என்.முரளி, 2012. வீட்டில் வளர்க்கப்படும் கோழி இறைச்சிக் கழிவுகளில் இருந்து மட்கு உரம் தயாரித்தல். நம்ம ஊரு செய்தி (நவம்பர்)
- பாரதி என். மற்றும் என்.அகிலா, 2013. குட்டிகளைப் பாதுகாத்தலும் பராமரித்தலும். புதிய வணிகம் (ஜனவரி–பிப்ரவரி) : 25–27
- பாரதிதாசன் ஏ., எஸ்.எழில்வளவன், ஜே.ரமேஷ் மற்றும் வி.பாலகிருஷ்ணன், 2013. பசுந்தீவனம் அல்லது ஊறுகாய்ப்புல் தயாரிக்கும் முறை. கால்நடைக் கதிர் 32(1) : 15–19
- பாரதிதாசன் ஏ., டி.ஆர்.புகழேந்தி, ஜே.ரமேஷ், எஸ்.எழில்வளவன் மற்றும் சி.வள்ளி, 2013. ஆடு வளர்ப்பதற்கான வரவு செலவு கணக்கீடு–ஒர் பார்வை. கோழி நண்பன் 31(7) : 21–22
- பினோ சுந்தர் எஸ்.டி., என்.ஜெயதிலகன், சி. சௌந்திரராஜன், எம்.இராமன், எஸ்.கோமதிநாயகம் மற்றும் எஸ்.அப்துல் பாசித், 2012. செம்மறியாடுகளில் குடற்புழு நீக்கக் கொல்லியின் எதிர்ப்புத் திறன்–ஒர் உரையாடல். வேளாண் வணிக உலகம் (அக்டோபர்): 60–62
- பினோ சுந்தர் எஸ்.டி., 2013. வாழ்க்கை முன்னேற்றத்திற்கு வெள்ளாடு வளர்ப்பு. கால்நடைக் கதிர் (டிசம்பர்–ஜனவரி) : 44–48
- பினோ சுந்தர், எஸ்.டி., கே.டி.கவிதா, என்.ஜெயதிலகன், சி.சௌந்தரராஜன் மற்றும் பாஸ்கரன் ரவி லதா, 2013. கால்நடைகளில் உண்ணிகளினால் ஏற்படும் தொல்லை மற்றும் அதனைக் கட்டுப்படுத்துதல். வேளாண் வணிக உலகம் (பிப்ரவரி): 53–55
- சந்திரசேகர் எம்., 2012. கோழிகளில் சிற்றுண்ணிகளின் தாக்கம். வேளாண் வணிக உலகம். (செப்டம்பர்)
- சந்திரசேகர் எம்., 2012 வான்கோழி வளர்ப்பு, வேளாண் வணிக உலகம். (அக்டோபர்)
- சந்திரசேகர் எம்., 2012 இறைச்சிக் காடை வளர்ப்பில் பண்ணை மேலாண்மை வேளாண் வணிக உலகம் (அக்டோபர்)
- சந்திரசேகர் எம்., 2012 கறவை மாடுகளில் இனப்பெருக்க உத்திகள். வேளாண் வணிக உலகம். (ஜனவரி)
- சந்திரசேகர் எம்., 2012 ஆட்டுக்குட்டிகளில் இரத்தக்கழிச்சல் நோய், வேளாண் வணிக உலகம். வளர்ப்பு, வேளாண் வணிக உலகம் (மார்ச்)
- சந்திரசேகரன் வி., என்.நா்மதா, கே.எம்.சக்திவேல், வி.உமா மற்றும் வி.ரமேஷ், 2012. வேலை வாய்ப்பளிக்கும் வெண்பன்றி வளா்ப்பு. வளரும் விவசாய தமிழகம் (மே) : 35–37
- ஷெரில் ஆண்டனி மற்றும் கே.ராவணேஸ்வரன், 2012. மசாலா உலர் மீன் தயாரிக்கும் தொழில்நுட்பம். மீன்வளக் கதிர் (ஜுலை– செப்டம்பர்) 5(3) : 48
- சிதம்பரம் பி, எஸ்.சந்தோஷ்குமார், கே.காரல் மார்க்ஸ் மற்றும் கே.ராவணேஸ்வரன், 2013. மீன்வளர்ப்பில் உயிர்தொழில் நுட்பத்தைப் பயன்படுத்தி வருமானத்தை அதிகரித்தல். மீன்வளக் கதிர் (ஐனவரி – மார்ச்)

- தேவகி கே., கே. செந்தில் குமாா் மற்றும் பி. குமரவேல், 2012. வளா்ப்பு பிராணிகளில் வெறிநோய் அறிகுறிகள் மற்றும் சிகிச்சை. விஞ்ஞான சுடா் (டிசம்பா்)
- தேவகி கே., கே.செந்தில் குமார் மற்றும் பி.குமராவேல், 2013. கால்நடைகளுக்கான தீவன மேலாண்மை. நவீன வேளாண்மை (பிப்ரவரி) : 13–16
- தேவகி கே., 2013. கால்நடை வளாப்பில் நாய்க்கடி. வேளாண் வணிக உலகம் (பிப்ரவரி)
- தேவி வரபிரசாத், ரெட்டி, ஏ., பி.ஜெயசேகரன், ஆர்.ஜெயசகிலா மற்றும் வித்யா சாகர் ரெட்டி, 2012. இறால் பொருட்களில் வெண்புள்ளி நோயுண்டாக்கும் வைரஸ் கடந்து தாக்கும் திறன். பிஸிங் சைம்ஸ் 31(12): 34–37
- துரைசாமி கே.ஏ. மற்றும் என்.நா்மதா, 2012. மழைக் காலங்களில் கால்நடைப் பண்ணைகள் பராமரிப்பு முறைகள். தினமணி (15.11.2012)
- எழில்வளவன் எஸ்., எஸ்.ஆர்.சீனிவாசன், ஏ.பாரதிதாசன், டி.செந்தில்குமார், ஏ.ஷியாம்பாபு மற்றும் என்.வெங்கடபதி, 2013. நாட்டுக்கோழி வளர்ப்பிற்கான தீவன முறைகளும் அதன் முக்கியத்துவமும். கோழி நண்பன் (ஜனவரி)
- பெலிக்ஸ் என், 2012. அலங்கார மீன்வளர்ப்பு இந்தியாவின் ஒரு சிறந்த குடிசைத்தொழில். பிஸிங் சைம்ஸ் (ஏப்ரல்)
- ஞானலஷ்மி கே.எஸ்., 2012. பால் பொருட்களில் குறைந்த கலோரி இனிப்பூட்டி. கால்நடைக் கதிர் (ஜுன்–ஜுலை) : 51–52
- ஞானலஷ்மி கே.எஸ்., 2012. முட்டைகளின் பயன்பள். உங்கள் உணவு உலகம் (ஆக்டோபர்) : 21–23
- கீதா எம்., டி.கண்ணன், ஜி.செல்வராஜு, கே.எம்.பழனிவேல், எஸ்.சரவணன், ஆர்.ரிஷிகேசவன் மற்றும் கே.ரம்யா, 2012. கால்நடை பொருட்கள் உற்பத்தியில் நானோ தொழில்நுட்ப வாய்ப்புகள். கோழி நண்பன் (ஆகஸ்ட்)
- கோமதிநாயகம் எஸ்., சி.சௌந்தரராஜன், எஸ்.அப்துல் பாசித் மற்றும் கே.செந்தில்குமார், 2012. சுகாதாரமற்ற சூழ்நிலைகளினால் மாட்டுப் பண்ணைகளில் ஒட்டுண்ணிப் பரவல். கால்நடைக்கதிர் (எப்ரல்–மே): 10–14
- கோபி எச்., எம்.சுதா, கே.கிருஷ்ண குமார், பி.பழனிவேல் மற்றும் எஸ்.என்.சிவசெல்வம், 2012. பால்பண்ணைத் தொழிலில் தரமான பால் உற்பத்திக்கான வழி முறைகள். கால்நடைக் கதிர் (ஏப்ரல்–மே): 43–46
- கோபிநாதன் ஏ., எஸ்.எம்.கே.கார்த்திகேயன் மற்றும் எஸ்.என். சிவசெல்வம், 2012. கோமாரி நோய்க் கிளர்ச்சி ஏற்படாதிருக்க தடுப்பு முறைகள். நவீன வேளாண்மை (அக்டோபர்) 7 : 26–27
- குணசேகரன் எஸ்., சி.பந்தேஸ்வரன், கே.விஸ்வநாதன் மற்றும் எம்.மகேஷ்கிருஷ்ணா, 2012. வேளாண் காடுகள் மூலம் பசுந்தீவன உற்பத்திக்கான வாய்ப்புகள். வேளாண் வணிக உலகம் (டிசம்பர்)
- குணசேகரன் எஸ்., சி.பந்தேஸ்வரன், கே.விஸ்வநாதன் மற்றும் சி.கதிர்செல்வன், 2013. பசுந்தீவனத்தைப் பதப்படுத்தும் முறைகள். வேளாண் வணிக உலகம் (மார்ச்)
- ஹரிகிருஷ்ணன் டி.ஜே., கே.அருணாச்சலம் மற்றும் ஏ.குமாரவேல், 2013. செம்மறியாடு மற்றும் வெள்ளாடுகளில் குடற்புழு நீக்கம். (பிப்ரவரி–மார்ச்) : 54–55
- ஜெயந்தி டி., வி.சங்கர் மற்றும் என்.முரளி, 2013. பாலைப் பதப்படுத்துதல் மற்றும் அதன் பயன்கள். நம்ம ஊரு செய்தி (மார்ச்)

- ஜெயந்தி டி., வி.சங்கா் மற்றும் என்.முரளி, 2013. வெள்ளாட்டுத் தீவனங்கள். நம்ம ஊரு செய்தி (மாா்ச்)
- ஜெயந்தி டி. மற்றும் வி.வி.குல்கா்னி, 2013. கோழி இறைச்சி ஊறுகாய் தயாரித்தல். நம்ம ஊரு செய்தி (மாா்ச்)
- ஜெயந்தி டி., எல்.ராமன் மற்றும் என்.முரளி, 2013. கோழி இறைச்சியைக் கொண்டு மதிப்பூட்டிய இறைச்சி உருண்டை தயாரித்தல். நம்ம ஊரு செய்தி (மார்ச்)
- ஜெயந்தி டி., எல்.ராமன் மற்றும் என்.முரளி, 2013. கோழி இறைச்சியைக் கொண்டு சூப் தயாரித்தல். நம்ம ஊரு செய்தி (மார்ச்)
- ஜெயதிலகன் என்., 2012. கால்நடைகளில் கொக்கிப் புழுத் தாக்கம் மற்றும் அதனைக் கட்டுப்படுத்தும் முறைகள். கால்நடைக்கதிர் (எப்ரல்–மே) : 8–9
- ஜெயதிலகன் என்., எஸ்.டி.பினோசுந்தர், எம்.இராமன் மற்றும் எஸ்.அப்துல்பாசித், 2012. செம்மறியாடு மற்றும் வெள்ளாடுகளின் மூளை முதுகுத் தண்டுவடத்தில் நீள் உருண்டைப் புழு நோய். வேளாண் வணிக உலகம் (ஜுன்) : 56–57
- ஜெயதிலகன் என்., எஸ்.டி.பினோசுந்தர் மற்றும் எம்.இராமன், 2012. குளிர் காலங்களில் செம்மறியாட்டு மேலாண்மை. வேளாண் வணிக உலகம் (ஆகஸ்ட்) : 22–25
- ஜெயதிலகன் என்., எஸ்.டி.பினோசுந்தா் மற்றும் எம்.இராமன், 2012. பன்றிகளில் முள்தலையுடன் கூடிய புழுக்கள் மற்றும் அதனைக் கட்டுப்படுத்துலும். வேளாண் வணிக உலகம் (செப்டெம்பா்) : 22–25
- ஜெயதிலகன் என்., எஸ்.டி.பினோசுந்தர், சி.சௌந்தரராஜம், எம்.இராமன் மற்றும் எஸ்.அப்துல் பாசித் 2012. செம்மறியாடு மற்றும் வெள்ளாடு வளர்ப்பில் இனப்பெருக்க ஆணின குட்டி மேலாண்மை . வேளாண் வணிக உலகம் (அக்டோபர்) : 35–37
- ஜெயதிலகன் என்., எஸ்.டி.பினோ சுந்தர், சி.சௌந்தரராஜன் மற்றும் கே.டி.கவிதா, 2013. செம்மறியாட்டில் புழுக்களின் தாக்கத்தைக் கட்டுப்படுத்த மேலாண்மை முறைகள். கால்நடைக் கதிர் (டிசம்பர்–ஜனவரி): 15–17
- ஜெயதங்கராஜ் எம்.ஜி., கே.செந்தில்குமார் மற்றும் எம்.பழனிவேல்ராஜன், 2012. யானை விவசாயிகளுக்கு நண்பனா? கால்நடைக் கதிர் (மார்ச்)
- ஜெயதங்கராஜ் எம்.ஜி., கே.செந்தில் குமார் மற்றும் எம்.பழனிவேல்ராஜன், 2012. குரங்குகள் பற்றி விவசாயிகள் அறிய வேண்டிய தகவல்கள். கால்நடைக் கதிர் (அக்டோபர்– நவம்பர்)
- ஜெய்சித்ரா வி. மற்றும் ஜி.சீனிவாசன், 2012. இனவிருத்தி வான்கோழி வளர்ப்பு. கால்நடைக் கதிர் (அக்டோபர்–நவம்பர்) : 70–72
- ஜெய்சித்ரா வி. மற்றும் ஜி.சீனிவாசன், 2012. கால்நடை வளர்ப்பு மற்றும் உற்பத்தியில் மங்கையரின் பங்கு. கால்நடைக் கதிர் (ஏப்ரல்–மே) : 67–68
- ஜெய்சித்ரா வி. மற்றும் ஜி.சீனிவாசன், 2012. ஆவும் தமிழர் பண்பாடும். கால்நடைக் கதிர் (ஜுன்–ஜுலை) : 26–29
- கண்ணதாசன் எம்.எஸ்., பி.திலகா், பி.ஆா்.நிஷா, என்.விமல் ராஜ்குமாா் மற்றும் பி.மதியழகன், 2012. புறக்கடை கோழிகளில் தீவன மேலாண்மை. கோழி நண்பன், 31 (6) : 5–10
- கண்ணதாசன் எம்.எஸ்., என்.விமல் ராஜ்குமார், பி.ஆர்.நிஷா, பி.திலகர் மற்றும் பி.மதியழகன், 2012. சுகாதாரமான பால் உற்பத்தி. கோழி நண்பன், 31 (7) : 14–20

- கனகராஜு பி., ஆர்.ரிச்சார்ட் சர்ச்சில், எஸ்.ரத்னபிரபா, சி.பாண்டியன், கே.பிரேமவல்லி, ஏ.வி.ஒம்பிராகாஷ் மற்றும் எம்.பாபு, 2013. நாட்டுக்கோழி பண்ணையின் பொது சுகாதாரம் மற்றும் கிருமிநீக்கம் செய்வதற்கான மேலாண்மை. கோழி நண்பன் (மார்ச்)
- கனகராஜு பி., ஆர்.ரிச்சார்ட் சர்ச்சில், எஸ்.ரத்னபிரபா, சி.பாண்டியன், கே.பிரேமவல்லி, ஏ.வி.ஒம்பிராகாஷ் மற்றும் எம்.பாபு, 2013. நாட்டு கோழிகளின் தீவன மேலாண்மை. கோழி நண்பன் (பிப்ரவரி)
- கனகராஜு பி., எஸ்.அருண்குமார், பி.டென்சிங், எஸ்.ரத்னபிரபா மற்றும் எம்.பாபு, 2012. முயல்களில் இனப்பெருக்க மேலாண்மை. வேளாண் வணிக உலகம் (அக்டோபர்)
- கனகராஜு பி., எஸ்.அருண்குமார், பி.டென்சிங், எஸ்.ரத்னபிரபா மற்றும் எம்.பாபு, 2012. முயல் பண்ணைகளில் கட்டட அமைப்பு. வேளாண் வணிக உலகம் (அக்டோபர்)
- கனகராஜு பி., எஸ்.அருண்குமாா், பி.டென்சிங், எஸ்.ரத்னபிரபா மற்றும் எம்.பாபு, 2012. முயல் தீவன மேலாண்மை. வேளாண் வணிக உலகம் (அக்டோபா்)
- கதிரவன் ஜி. மற்றும் கே.என்.செல்வகுமார், 2013. உலகளாவிய கால்நடை உற்பத்தி–தற்போதைய நிலை மற்றும் எதிர்கால வாய்ப்புகள். கால்நடைக் கதிர் (பிப்ரவரி–மார்ச்)
- காா்த்திகேயன் என்., ஜி.குமரேசன், ஆா்.சுபாஷ் மற்றும் ஏ.இளங்கோ, 2013. பால் உற்பத்தியும் அதன் முக்கியத்துவமும். கோழி நண்பன் (மாா்ச்)
- கார்த்தியாயினி ஏ., வி.பேராசிரியன், எஸ்.கே.மாதங்கி மற்றும் டி.தியாகராஜன், 2012. மாங்காய் அறுவடைக்குப் பிந்தைய தொழில்நுட்பம். விஞ்ஞான சுடர் (செப்டம்பர்) : 13–15
- கதிர்வேலன் சி., வி.மதுப்பிரியா, பி.வசந்தகுமார் மற்றும் டி.சந்திரசேகரன், 2012. மதிப்பூட்டிய பால் பொருட்கள். கோழி நண்பன் (ஏப்ரல்)
- கதிர்வேலன் சி., பி.வசந்தகுமார், எம்.ஆர்.புருஷோத்தமன் மற்றும் டி.சந்திரசேகரன், 2012. கறவை மாடுகளுக்கான கோடைகால தீவன மேலாண்மை முறைகள். கோழி நண்பன் (மே)
- கதிர்வேலன் சி., பி.வசந்தகுமார், எம்.ஆர்.புருஷோத்தமன் மற்றும் டி.சந்திரசேகரன், 2012. கோடைகாலத்தில் பால் வரவை அதிகரிக்க வழிமுறைகள். தினமலர் (10.05.12)
- கதிர்வேலன் சி., பி.வசந்தகுமார், எம்.ஆர்.புருஷோத்தமன் மற்றும் டி.சந்திரசேகரன், 2013. கறவை மாடுகளுக்கான தாதுக் கலவையின் முக்கியத்துவம். தினமலர்–விவசாயி மலர் (ஜனவரி)
- கதிர்வேலன் சி., பி.வசந்தகுமார், எம்.ஆர்.புருஷோத்தமன் மற்றும் டி.சந்திரசேகரன், 2012. கறவை மாடுகளக்கான சரிவிகித தீவனம். தினமலர் (பிப்ரவரி)
- கவிதா என்., என்.நா்மதா, வி.உமா மற்றும் கே.எம்.சக்திவேல், 2012. காடை வளா்ப்பு – முக்கிய விவசாய உப தொழில். வளரும் விவசாய தமிழகம் (ஜுலை) : 40–41
- கவிதா ஆர்., பி.வசந்தகுமார் மற்றும் எஸ்.செந்தில்குமார், 2013. பாரம்பரிய தீவனம். கால்நடைக் கதிர் (பிப்ரவரி)
- கவிதா கே.டி., பி.ஆர்.லதா மற்றும் எஸ்.அப்துல்பாசித், 2012. கால்நடைகளில் ஒரணு ஒட்டுண்ணித் தாக்கம். கால்நடைக்கதிர் (ஆகஸ்ட்–செப்டெம்பர்) : 61–63

குமரேசன் ஏ., எஸ்.தர்மசீலன், எஸ்.கதிர்வேல், எஸ்.செந்தில்குமார் மற்றும் கே.ஜெயகுமார், 2012. ரேபிஸ் நோயும் அதனைக் கட்டுப்படுத்துதலும். நமது பண்ணை வளம் (அக்டோபர்)

குமரேசன் ஜி., என்.காா்த்திகேயன், ஆா்.சுபாஷ் மற்றும் ஏ.இளங்கோ, 2012. பாலின் மருத்துவ குணங்கள். தினத்தந்தி (22.12.2012)

குமரேசன் ஏ., எஸ்.செந்தில்குமார், கே.ஜெயகுமார், எஸ்.தர்மசீலன், எல்.நாகராஜன் மற்றும் ஆர்.செல்வராஜ், 2012. கன்றுகள் மற்றும் வெள்ளாட்டுக் குட்டிகளில் ஏற்படும் மூட்டு அயற்சி நோய்களுக்கான காரணங்களும் தவிர்ப்பு முறைகளும். கோழி நண்பன் (ஏப்ரல்)

- குமரேசன் ஏ., ஏ.செந்தில்குமார், எஸ்.தர்மசீலன், என்.ராஜேந்திரன், எல்.நாகராஜன், எம்.செல்வராஜு மற்றும் எஸ்.ஸ்வர்ணாம்பிகை, 2012. நாய்களில் சினைக் கருப்பை சீழ்பிடித்தல். மலரும் மேலாண்மை (மே)
- குமரன் சி., பி.டென்சிங் ஞானாராஜ், டி.முத்து ராமலிங்கம், கே.செந்தில் குமார் மற்றும் எம்.பாபு. 2012. மண் இல்லாமலேயே பசுந்தீவன உற்பத்தி –ஹைட்ரோ போனிக்ஸ். கால்நடை கதிர் : 45
- குமரன் சி., ஏ.சுப்பிரமணியன், பி.டென்சிங் ஞானாராஜ், கே.திலக் பொன் ஜவஹர், டி.முத்து ராமலிங்கம் மற்றும் கே.செந்தில் குமார், 2012. அதிக விளைச்சல் தரும் புல் வகைத் திவனம் – கம்பு நேப்பியர் ஒட்டுபுல் ரகம்– கோ 4. நிலம் வளம் : 19
- குமரன் சி., ஏ.சுப்பிரமணியன், பி.டென்சிங் ஞானாராஜ், கே.திலக் பொன் ஜவஹர், டி.முத்து ராமலிங்கம் மற்றும் கே.செந்தில் குமார், 2012. விளை நிலங்களை வளமாக்கும் மண்புழு உரம். நிலம் வளம் : 24–26
- குமாரவேல் ஏ., எஸ்.ராஜாத்தி, டி.ரவிமுருகன் மற்றும் எஸ்.முத்துகிருஷ்ணன், 2012. ஈமுவிற்கு ஈமச்சடங்கா. அறிக அறிவியல் (டிசம்பர்)
- குமாரவேல் ஏ., எஸ்.பரமசிவம் மற்றும் எஸ்.ராஜாத்தி, 2013. அதிசய பறவை–வாத்து. புதிய தென்றல் (ஜனவரி) : 44–45
- லூா்து ரீத்தா டி., கே.ஷிபி தாமஸ், ஜான்சன் ராஜேஸ்வா், சுகுமாா் மற்றும் எம்.அா்த்தநாாீஸ்வரன், 2012. கோழிகளைத் தாக்கும் மேல்மூச்சுக் குழல் நோய். தினகரன் (31.07.12)
- லூா்து ரீத்தா டி. மற்றும் கே.ஷிபி தாமஸ், 2012. அதிக வருவாய் ஈட்ட கோழிப் பண்ணை சுற்றுப்புறம் ஈரப்பதமின்றி பராமரிப்பது எப்படி ? தினகரன் (07.08.12)
- லூர்து ரீத்தா டி., ஜி.ராஜராஜன் மற்றும் கே.ஷிபி தாமஸ், 2012. நடமாடும் வங்கி நாட்டுக்கோழி. தினகரன் (16.10.12)
- லூர்து ரீத்தா டி., ஜி.ராஜராஜன், கே.ஷிபி தாமஸ் மற்றும் எம்.பாபு, 2012. நாட்டுக்கோழி வளர்ப்பு–கேள்வி பதில். கோழி நண்பன் (டிசம்பர்)
- லூர்து ரீத்தா டி., கே.ஷிபி தாமஸ் மற்றும் ஜி.ராஜராஜன், 2013. நோய்கள் மற்றும் இறப்பில் இருந்து ஆடுகளைக் காக்கும் முறைகள். தினகரன் (07.03.13)
- மால்மருகன் எஸ்., ஜே.ஜான்சன் ராஜேஸ்வர், பி.சுரேஷ் மற்றும் எம்.அர்த்தநாரீஸ்வரன், 2012. கோழிகளில் குடல் அழற்சி நோயினை கட்டுப்படுத்தும் முறைகள். கால்நடைக் கதிர் 32 (1): 29–31
- மால்மருகன் எஸ் மற்றும் ஜே.ஜான்சன் ராஜேஸ்வர், 2012. இறைச்சி மற்றும் முட்டைக் கோழிகளின் உடல் சோர்வை நிவர்த்தி செய்தல். தினமலர் (27.06.12)

- மால்மருகன் எஸ்., ஏ.மீனாட்சி சுந்தரம், ஆர்.ராம்பிரபு மற்றும் சிஜு சைமன், 2013. செல்லப் பிராணிகளை வதைக்கும் வெறி நோய். தமிழக விவசாயி உலகம் : 64–67
- மங்கள கௌரி ஏ., 2012. ஆதார குறுத்தணுக்கள். விஞ்ஞான சுடர் (ஏப்ரல்) : 61
- மங்கள கௌரி ஏ. மற்றும் சி.வள்ளி, 2012. பீட்ரூட்டின் குறுத்தணு ஊக்குவிப்புத் திறன். விஞ்ஞான சுடர் (மே) : 51
- மங்கள கௌரி ஏ., 2012, உயிரணு வளர்ப்புத் தொழில்நுட்பமும் மருந்து தயாரிப்பும் . விஞ்ஞான சுடர் (அக்டோபர்) : 21
- மங்கள கௌரி ஏ., 2012. கடற்பாசியின் மருத்துவப் பயன்கள். விஞ்ஞான சுடர் (நவம்பர்) : 63
- மதுகேசவன் பி., 2012. கால்நடைப் பழமொழிகள் உணர்த்தும் உண்மைகள். கால்நடைக் கதிர் (அக்டோபர்–நவம்பர்) : 18–20
- மீனாட்சி சுந்தரம் ஏ. மற்றும் எஸ்.மால்மருகன், 2012. ஆடுகளில் குடற்புழு நீக்கம். கோழி நண்பன் : 21–22
- மேகலா பி., எஸ்.கதிர்வேல் மற்றும் எஸ்.முருகேசன், 2012. கறவை மாடுகளின் காம்புகளில் நோய்த்தொற்றில்லாத காரணிகளால் ஏற்படும் பாதிப்புகள். கோழிநண்பன் (ஏப்ரல்) : 14–16
- மேகலா பி., ஏ.அறிவுச்செல்வன், ஆர்.யோகேஸ்வரி, எம்.ஜே.ராஜா, மற்றும் ஏ.ஜகதீஸ்வரன், 2012. நச்சுக்கடிகளுக்கான பராமரிப்பு வைத்திய முறைகள் – ஓர் அலசல். கோழி நண்பன் (அக்டோபர்) : 24–25
- மேகலா சி., ஏ.க்ளெமண்ட் எபனேசர் ஹென்றி, ஏ.பரமசிவம் மற்றும் பி.என்.ரிச்சா்ட் ஜகதீசன், 2012. இறைச்சி வான்கோழிகளுக்கான தீவன பராமரிப்பு. கோழி நண்பன் (நவம்பர்) 31(4) : 9–13
- மீனலோச்சனி வி. மற்றும் எம்.முருகன், 2012. பால் மாடுகளில் அசோலா தீவனத்தின் பயன்கள். கால்நடைக் கதிர் (ஏப்ரல்– மே) : 51–54
- மூர்த்தி எம். மற்றும் எஸ்.சி.எட்வின், 2012. நெருப்புக் கோழிகளைக் கையாளுதலும் கட்டுப்படுத்துதலும். நம்ம ஊரு செய்தி (அக்டோபர்) : 9–11
- முருகன் எம். மற்றும் வி.மீனலோச்சனி, 2012. இறைச்சிக்காக ஆடு வளா்ப்பு. கால்நடைக் கதிா் (ஏப்ரல்–மே) : 57–60
- முருகன் எம். மற்றும் ஆர்.செல்வகுமார், 2013 அதிதீவிர கால்நடை பண்ணையத்திற்கான புதர்வேலி குதிரை மசால் செடிகள். கால்நடைக் கதிர் (ஜனவரி)
- முருகன் பி. மற்றும் பி.குமாரவேல், 2012. உயர்ரக சோள உற்பத்தி– கிராம வெற்றிக் கதை. வளரும் வேளாண்மை (ஏப்ரல்)
- முரு கன் பி. மற்றும் பி.குமாரவேல், 2012. காஞ்சிபுரம் மாவட்டத்திற்கான சோள உற்பத்தித் தொழில்நுட்பம். கரும்புக் கரங்கள் (ஜுன்)
- முருகானந்தன் பி., பி.பூவராஜன் மற்றும் ஆர்.உமாராணி, 2012. பசுக்களின் தீவன செலவை குறைக்கும் அசோலா. தினத்தந்தி (19.04.12)
- முருகானந்தன் பி., ஆர்.உமாராணி மற்றும் பி.பூவராஜன், 2012. புறக்கடை நாட்டுக் கோழி வளாப்பு. தினத்தந்தி (06.07.12)
- முருகானந்தன் பி., 2012. யோகா்ட் தயாரித்தல். தினமலா் (08.09.12)
- முத்துராமலிங்கம் டி., என்.வி.ராஜேஸ், பி.டென்சிங் ஞானாராஜ் மற்றும் எஸ்.மீனாட்சி சுந்தரம், 2012. கன்று குட்டிகளில் கொம்பு வெட்டுதல். நிலம் வளம் : 21–23
- நா்மதா என்., கே.எம்.சக்திவேல், வி.உமா மற்றும் பி.பரத்குமாா், 2012. வாத்து வளா்ப்பு. வளரும் விவசாய தமிழகம் (அக்டோபா்): 25–28

- நா்மதா என்., கே.எம்.சக்திவேல் மற்றும் எம்.ஜோதிலஷ்மி, 2012. இளங்கன்றுகளைப் பாதுகாக்கும் முறைகள். தினமணி (13.12.2012)
- நா்மதா என்., கே.எம்.சக்திவேல் மற்றும் எம்.ஜோதிலஷ்மி, 2012. புற ஒட்டுண்ணிகளைக் கட்டுப்படுத்த ஆடுகளுக்கு மருந்துக் குளியல். தினமணி (20.12.2012)
- நா்மதா என்., கே.எம்.சக்திவேல் மற்றும் எம்.ஜோதிலஷ்மி, 2012. புறக்கடை முறையில் நாட்டுக் கோழி வளா்ப்பு. தினமணி (27.12.2012)
- நா்மதா என்., கே.எம்.சக்திவேல், வி.உமா மற்றும் பி.பரத்குமாா், 2012. கால்நடைகளை மழைக்காலங்களில் பராமாிப்பது எப்படி. வளரும் விவசாய தமிழகம் (டிசம்பா்)
- நா்மதா என்., வி.உமா மற்றும் கே.எம்.சக்திவேல், 2012. ஆடு வளா்ப்பு எவ்வளவு முக்கிய தொழில் தெரியுமா ? வளரும் விவசாய தமிழகம் (ஆகஸ்ட்) : 32–34
- நா்மதா என்., வி.உமா மற்றும் கே.எம்.சக்திவேல், 2012. சிறந்த கறவை மாடுகளைத் தோ்வு செய்வது எப்படி? தினமணி (02.08.2012)
- நர்மதா என்., வி.உமா மற்றும் கே.எம்.சக்திவேல், 2012. கறவை மாட்டுப் பண்ணைகளில் இயந்திரங்களின் பயன்பாடு. தினமணி (09.08.2012)
- நா்மதா என்., வி.உமா மற்றும் கே.எம்.சக்திவேல், 2012. நீல நாக்கு நோயிலிருந்து ஆடுகளைக் காப்போம். தினமணி (30.08.2012)
- நா்மதா என்., வி.உமா மற்றும் கே.எம்.சக்திவேல், 2012. சினைப் பசுக்கள் பராமரிப்பு வழி முறைகள். தினமணி (06.09.2012)
- பாண்டியன் சி., ஏ.வி.ஒம்பிராகாஷ், கே சங்கிலிமாடன், ஏ.சுந்தரேசன், கே பிரேமவல்லி மற்றும் எம்.பாபு, 2013. கருங்கோழி – ஒரு பார்வை. கால்நடைக் கதிர் (டிசம்பர்–ஜனவரி)
- பாண்டியன் சி., ஏ.வி.ஒம்பிராகாஷ், ஏ.சுந்தரேசன் மற்றும் எம்.பாபு, 2012. வருமானம் தரும் வான்கோழி வளர்ப்பு. விவசாயி (ஜுலை)
- பாண்டியன் சி., ஏ.வி.ஒம்பிராகாஷ், ஏ.சுந்தரேசன் மற்றும் எம்.பாபு, 2012.பாதுகாக்கப்பட வேண்டிய இந்திய கோழி இனம். 12வது தமிழக மாநாட்டு கூட்டறிக்கை (ஆகஸ்ட்)
- பழனிசாமி எம்., எஸ்.மனோகரன், எம்.செல்வராஜு, கே.ரவிக்குமார், வி.பிரபாகரன் மற்றும் ஆர்.இழக்கியல் நெப்போலியன், 2012. மாடுகளில் மலட்டுத் தன்மையை ஏற்படுத்தும் காரணிகளும் அதற்கான தீர்வுகளும். கோழி நண்பன் (ஜுன்)
- பழனிசாமி எம்., எஸ்.மனோகரன், வி.பிரபாகரன், ஆர்.இழக்கியல் நெப்போலியன் மற்றும் எம்.செல்வராஜு, 2012. சூலகத்தில் ஏற்படும் நீர்க்கட்டியைக் குணப்படுத்தும் வழிமுறைகள். கோழி நண்பன் (ஜுலை)
- பழனிவேல் கே.எம்., ஆர்.ரிஷிகேசவன் மற்றும் டி.ஜெயந்தி, 2012. கால்நடைகளில் ஒட்டுண்ணித் தாக்கம். நாம் உழவர்
- பழனி வேல் ராஜன் எம்., கே.செந்தில் குமார் மற்றும் எம்.ஜி.ஜெயதங்கராஜ், 2013. செல்லப் பறவைகளை வளர்ப்பது எப்படி ? வேளாண் வணிக உலகம் (பிப்ரவரி) : 20–21
- பரமசிவம் ஏ., பி.என்.ரிச்சா்ட் ஜகதீசன், ஏ.க்ளெமண்ட் எபனேசா் ஹென்றி மற்றும் சி.மேகலா, 2013. நாட்டுக்கோழிகளில் அதிக குஞ்சுகளைப் பெற வழிமுறைகள். தினமலா்–விவசாய மலா் (23.01.13)
- பரமசிவம் ஏ. மற்றும் கே.வி.எஸ்.குமார், 2013. கறவை மாடு வளர்ப்பில் இலாபம் பெற வழிமுறைகள். கூட்டுறவு மாத இதழ் (பிப்ரவரி) 85 (11) : 37–39

- பரமசிவன் எஸ். மற்றும் எஸ்.ராஜாத்தி, 2012. அதிசயப் பறவை வாத்து. புதிய தென்றல் (டிசம்பா்) : 44–45
- பன்னீர்செல்வம் எஸ்., டி.ரவிமுருகன், என்.முரளி, ஏ.கே. திருவேங்கடன் மற்றும் ஆர்.சரவணன், 2013. கால்நடை மரபுவழியில் நாட்டினமாடுகளின் பாதுகாப்பு. கால்நடைக் கதிர் (பிப்ரவரி–மார்ச்) : 56–60
- பொன்னுதுரை ஜி., என்.ராணி மற்றும் டி.ஜே.ஹரிகிருஷ்ணன், 2012. மாட்டுப் பண்ணைகளில் உண்ணிகள் மற்றும் ஈக்களைக் கட்டுப்படுத்துதல். கால்நடைக் கதிர் (ஜுன்)
- பூவராஜன் பி. மற்றும் ஏ.விஜயராஜன், 2012. வெள்ளாடு குட்டிகள் அதிக எடை பெற உத்திகள். தினத்தந்தி (12.07.12)
- பூவராஜன் பி. மற்றும் ஏ.விஜயராஜன், 2012. பசு மாடுகளை நோய்களில் இருந்து காப்பாற்ற தடுப்பூசிகள். தினத்தந்தி (23.08.12)
- பூவராஜன் பி. மற்றும் ஏ.விஜயராஜன், 2012. சுவையான இறைச்சி தரும் கூஸ் வாத்து வளர்ப்பு முறைகள். தினத்தந்தி (06.09.12)
- பூவராஜன் பி. மற்றும் ஏ.விஜயராஜன், 2012. கால்நடை தீவனமான அசோலா தாவரம் வளாப்பு முறைகள். தினத்தந்தி (18.10.12)
- பூவராஜன் பி. மற்றும் ஏ.விஜயராஜன், 2012. கறவை மாடுகளுக்கு பதப்படுத்திய கரும்புத்தோகை தீவனம். தினத்தந்தி (08.11.12)
- பூவராஜன் பி. மற்றும் ஏ.விஜயராஜன், 2012. குறைந்த செலவில் கால்நடைகளுக்கு மூலிகை மருத்துவம். தினத்தந்தி (29.11.12)
- பிரேமலதா என். மற்றும் வி.புருஷோத்தமன் 2012. நல்ல இலாபம் பெற நாட்டுக் கோழி. நவீன வேளாண்மை (ஆகஸ்ட்) 3 : 50–53
- பிரேமலதா என்., சி.மேகலா மற்றும் வி.புருஷோத்தமன், 2012. வெண்மைப் புரட்சிக்கு வித்திடும் பச்சைக் கம்மல்–கால்நடை தீவனத்தில் அசோலாவின் பயன்பாடு. ஸ்பிக் பண்ணை செய்தி (செப்டம்பர்) 4 : 9–12
- பிரேமலதா என். மற்றும் சி.மேகலா, 2012. கோமாதா எங்கள் குலமாதா–இலக்கியத்தில் வரையாடுகள். நமது பண்ணை வளம் (அக்டோபர்) 4 : 17–19
- ராகவேந்திரன் வி.பி., எஸ்.உதயவேல் மற்றும் என்.முரளி, 2013. கருவுற்ற ஆடுகளைப் பராமரிக்கும் முறைகள். நம்ம ஊரு செய்தி (பிப்ரவரி)
- ராஜ்மனோகர் ஜி., என்.ராமமூர்த்தி, ஜி.சீனிவாசன், ஆர்.ஆஷா ரஜினி, என்.கார்த்திகேயன், பி.கனகராஜு மற்றும் ஏ.சுந்தரேசன், 2013. முட்டை–ஒர் உயர்ந்த ஊட்டச்சத்து உணவு. கால்நடைக் கதிர் (டிசம்பர்–ஜனவரி): 49–52
- ராஜாத்தி எஸ்., எஸ்.முத்துகிருஷ்ணன் மற்றும் ஏ.குமாரவேல், 2013. பச்சைப்பசேல் இறகு. கால்நடைக் கதிர் (மார்ச்) : 5–7
- ராஜராஜன் ஜி., டி.லூர்து ரீத்தா மற்றும் கே.ஷிபி தாமஸ், 2012. லாபத்தை அள்ளித் தரும் வெண்பன்றி வளர்ப்பு. தினகரன் (05.12.12)
- ரமேஷ் ஜே., எஸ்.என்.சிவசெல்வம் மற்றும் ஜி.பிரபுகுமார், 2012. மழை பெய்யும் காலங்களில் தீவன விதை வங்கிகள் அமைத்தலின் மூலம் தீவன உற்பத்தியை அதிகரித்தல். கால்நடைக் கதிர் 31 (6) : 10–12
- ரமேஷ் ஜே., ஏ.பாரதிதாசன் மற்றும் ஜி.பிரபுகுமார், 2012. கால்நடை வளர்ப்பில் பாரம்பரிய மற்றும் மதிப்புக் கூட்டப்பட்ட தீவனங்களின் பயன்பாடு. கால்நடைக் கதிர் 32 (4) : 50–52
- ரமேஷ் ஜே., கரு.பசுபதி, ஆர்.ரவிக்குமார், பி.கோபு மற்றும் வி.பாலகிருஷ்ணன், 2013. இலாபகரமான முயல் வளர்ப்பிற்கு தீவன மேலாண்மை. கால்நடைக் கதிர் 32 (5) : 38–40

ரமேஷ் வி., வி.ரமேஷ் சரவண குமார்,கே.சிவகுமார், டி.அனந்தபிரகாஷ் சிங், ஜே.முரளிதரன் மற்றும் பி.வசந்தகுமார், 2012. பசு மற்றும் எருமைகளில் இனப்பெருக்கம் மற்றும் நோய் மேலாண்மை முறைகள். கால்நடைக் கதிர் (ஏப்ரல்–மே) 32(1) : 61–66

- ரமேஷ் வி., வி.ரமேஷ் சரவண குமாா், கே.சிவகுமாா், டி.அனந்தபிரகாஷ் சிங், ஜே.முரளிதரன் மற்றும் பி.வசந்தகுமாா், 2012. வெண்பன்றி பண்ணைகளில் பதிவேடு பராமாிப்பின் முக்கியத்துவம். கால்நடைக் கதிா் (ஆகஸ்ட்–செப்டம்பா்) 32(3) : 66–72
- ரமேஷ் வி, கே.கருணாநிதி, ஜி.செல்வராஜு, சி.பந்தேஸ்வரன், என்.அருள்நாதன், கே.சின்னமனி மற்றும் பி.ரவி, 2012. ஆட்டுப் பண்ணைகளில் உபயோகப்படுத்தும் கிருமி நாசினி மருந்துகளும் அவற்றின் உபயோகமும். கால்நடைக் கதிர் (அக்டோபர்–நவம்பர்) 32(4) : 32–35
- ரமேஷ் வி, கே.கருணாநிதி, ஜி.செல்வராஜு, சி.பந்தேஸ்வரன், என்.அருள்நாதன், கே.சின்னமனி மற்றும் பி.ரவி, 2012. மழைக் காலங்களில் ஆட்டுப் பண்ணைகளில் ஏற்படும் நோய்களும் அதனைத் தடுக்கும் முறைகளும் . கால்நடைக் கதிர் (டிசம்பர்– ஜனவரி) 32(5) : 59–62
- ராணி என்., ஜி.பொன்னுதுரை மற்றும் டி.ஜே.ஹரிகிருஷ்ணன், 2012. ஆடுகளில் குடற்புழு நோய்த்தாக்கம். கால்நடைக் கதிர் (ஆகஸ்ட்)
- ராணி வி. மற்றும் கே.சுந்தராஜன், 2012. மன்னார் வளைகுடா பகுதிகளில் காணப்படும் கடற்புற்களின் முக்கியத்துவமும் அதனை பாதுகாக்கும் வழிமுறைகளும். மீன்வளக் கதிர் (ஜுலை முதல் செப்டம்பர்) : 15–16
- ராவணேஸ்வரன் கே., பி.என்.ரிச்சர்ட் ஜகதீசன் மற்றும் டி.செந்தில்குமார், 2012. அலங்கார மீன்களுக்கான உணவு. மீன்வளக் கதிர் (ஜுலை–செப்டம்பர்)5 (2) : 43–45
- ராவணேஸ்வரன் கே., பி.என். ரிச்சர்ட் ஜகதீசன் மற்றும் ஏ.க்ளெமண்ட் எபனேசர் ஹென்றி, 2012. கத்திவாள் மீனிற்கான இனப்பெருக்கத் தொழில்நுட்பம். மீன்வளக் கதிர் (ஜுலை– செப்டம்பர்) 5 (2) : 46–47
- ராவணேஸ்வரன் கே., பி.என்.ரிச்சா்ட் ஜகதீசன் மற்றும் ஏ.க்ளெமண்ட் எபனேசா் ஹென்றி, 2012. மீன் பண்ணையில் பயன்படுத்தப்படும் உபப்பொருட்கள். மீன்வளக் கதிா் (அக்டோபா்–டிசம்பா்) 5 (3) : 24–25
- ராவணேஸ்வரன் கே., பி.என்.ரிச்சா்ட் ஜகதீசன் மற்றும் ஏ.பரமசிவம், 2012. சண்டை மீனிற்கான இனப்பெருக்கத் தொழில்நுட்பம். மீன்வளக் கதிா் (அக்டோபா்–டிசம்பா்) 5 (3) : 43–45
- ராவணேஸ்வரன் கே., டி.செந்தில்குமார் மற்றும் ஏ.பரமசிவம், 2012. அலங்கார மீன் பண்ணைகளில் தண்ணீர் பராமரிப்பில் ஏற்படும் பிரச்சினைகளும் தீர்வுகளும். மீன்வளக் கதிர் (ஜுலை– செப்டம்பர்) 5(3): 25–30
- ராவணேஸ்வரன் கே. மற்றும் பி.அகிலன், 2012. ரோசி பார்ப் வகை அலங்கார மீனிற்கான இனப்பெருக்கத் தொழில்நுட்பம். மீன்வளக் கதிர் (ஜுலை–செப்டம்பர்) 5(3) : 32–33
- ராவணேஸ்வரன் கே., ஷெரில் ஆண்டனி மற்றும் பி.சிதம்பரம், 2012. அலங்கார மீனிகளுக்கான இனப்பெருக்கத் தொழில்நுட்பம். மீன்வளக் கதிர் (ஜுலை–செப்டம்பர்) 5(3) : 38–40
- ராவணேஸ்வரன் கே., பி.அகிலன் மற்றும் ஷெரில் ஆண்டனி, 2012. கெண்டை மீன்களுக்கான இனப்பெருக்கத் தொழில்நுட்பம். மீன்வளக் கதிர் 5(3) : 38–40

- ராவணேஸ்வரன் கே., பி.அகிலன் மற்றும் ஷெரில் ஆண்டனி, 2012. பலவகையான தங்க மீன் வளர்ப்பு. மீன்வளக் கதிர் (அக்டோபர்–டிசம்பர்) 5(3) : 40–42
- ராவணேஸ்வரன் கே. மற்றும் ஆர்.சாந்த குமார், 2012. லாபம் ஈட்டித்தரும் அலங்கார அரவான் மீன் வளர்ப்பு தொழில்நுட்பம். மீன்வளக் கதிர் (அக்டோபர்–டிசம்பர்) 5(3) : 47–48
- ராவணேஸ்வரன் கே., பி.அகிலன் மற்றும் ஷெரில் ஆண்டனி, 2012. கெண்டை மீனிகளுக்கான இனப்பெருக்கத் தொழில்நுட்பம். மீன்வளக் கதிர் (அக்டோபர்–நவம்பர்) 5(3) : 30–32
- ராவணேஸ்வரன் கே., செரில் ஆண்டனி டி.பிரான்சிஸ் மற்றும் பி.சிதம்பரம், 2013. வளி மண்டலக் காற்றை சுவாசிக்கும் மீன்களும் அவற்றின் வளர்ப்பும். கால்நடைக் கதிர் (ஐனவரி – மார்ச்)
- ராவணேஸ்வரன் கே., டி.பிரான்சிஸ், பி.அகிலன், கே.வீரபத்ரன் மற்றும் டி.செந்தில்குமார், 2013. நீலப்பசும் பாசிகளின் பயன்கள். கால்நடைக் கதிர் (ஜனவரி – மார்ச்)
- ராவணேஸ்வரன் கே., செரில் ஆண்டனி, டி.பிரான்சிஸ் மற்றும் பி.சிதம்பரம், 2013. காற்றை சுவாசித்து வளரும் மீன் வகைகளும் மற்றும் வளர்ப்பும். மீன்வளக்கதிர் (ஐனவரி – மார்ச்)
- ரவிமுருகன் டி., ஏ.இராமசந்திரன், ஏ.கே.திருவேங்கடன், என்.முரளி மற்றும் எஸ்.பன்னீர்செல்வம், 2013. பட்டணம் இன செம்மறி ஆடு–ஒரு அறிமுகம். கால்நடைக் கதிர் (டிசம்பர்–ஜனவரி) : 28–31
- ரவிக்குமார் கே., ஆர்.இழக்கியல் நெப்போலியன், எம்.பழனிசாமி, எம்.செல்வராஜு மற்றும் வி.பிரபாகரன், 2012. சினைமாடுகள் பராமரிப்பு. கால்நடைக் கதிர் (ஆகஸ்ட்–செப்டெம்பர்)
- ரவி ஆர்., கே.பத்மநாத் மற்றும் டி.சத்தியபாமா, 2013. கோழி முட்டைகளின் முக்கியத்துவம். கோழி நண்பன் (பிப்ரவரி)
- ரிச்சார்ட் சர்ச்சில் ஆர்., பி.எழில் பிரவீனா, பி.கனகராஜு, சி.பாண்டியன், சி.சங்கிலிமாடன், ஏ.வி.ஒம்பிராகாஷ் மற்றும் எம்.பாபு, 2013. கொல்லைப்புற வளர்ப்பிற்கேற்ற கலப்பின கோழியினங்கள். தமிழக விவசாயி உலகம் (மார்ச்)
- ரிச்சா்ட் ஜகதீசன் பி.என்., 2012. கறவை மாடுகளில் மலட்டுத் தன்மை. நம்ம ஊரு செய்தி (ஜுலை) 11 (13) : 12
- ரிச்சா்ட் ஜகதீசன் பி.என்., 2012. செம்மறியாடு மேலாண்மை. நம்ம ஊரு செய்தி (ஜுலை) 11 (13) : 14
- ரிச்சா்ட் ஜகதீசன் பி.என்., 2012. கன்று மேலாண்மை. நம்ம ஊரு செய்தி (ஜுன்) 11 (12) : 14
- ரிச்சா்ட் ஜகதீசன் பி.என்., 2012. கால்நடைகளில் நோய் மேலாண்மை. நம்ம ஊரு செய்தி (செப்டம்பா்) 1 (2) : 11
- ரிச்சர்ட் ஜகதீசன் பி.என்., 2012. கால்நடைகளுக்கான தீவன உற்பத்தி–கவனிக்க வேண்டியவை. நம்ம ஊரு செய்தி (செப்டம்பர்) 1 (2) : 12
- ரிச்சா்ட் ஜகதீசன் பி.என்., 2012. கறவை மாடுகளைக் கட்டுப்படுத்தும் வழிமுறைகள். நம்ம ஊரு செய்தி (செப்டம்பா்) 1 (2) : 18
- ரிச்சா்ட் ஜகதீசன் பி.என்., 2012. மாடு வாங்கும் போது கவனிக்க வேண்டிய உத்திகள். நம்ம ஊரு செய்தி (அக்டோபா்) 1 (4) : 23–24
- ரிச்சா்ட் ஜகதீசன் பி.என்., 2012. கால்நடைகளில் கோமாரி நோய். நம்ம ஊரு செய்தி (அக்டோபா்) 1 (4) : 19
- ரிச்சா்ட் ஜகதீசன் பி.என்., 2013. கன்றுகளுக்கு பால் அளித்தல். நம்ம ஊரு செய்தி (16.01.2013)

- ரிச்சா்ட் ஜகதீசன் பி.என்., 2013. கன்று கழிச்சல் தடுப்பு முறைகள் . நம்ம ஊரு செய்தி 1(13) : 14
- சக்தி எஸ்., என்.கார்த்திகேயன், என்.நர்மதா, கே.எம்.சக்திவேல் மற்றும் வி.உமா, 2012. கால்நடைகளைப் பாதிக்கும் தாவர நச்சுக்கள். வளரும் விவசாய தமிழகம் (ஏப்ரல்)
- சாலினி ஆர். மற்றும் பி.கிறிசோலைட், 2012. மீனில் மெத்தில் மெர்க்குரி. மீன்வளக் கதிர் (ஜனவரி – மார்ச்)
- சம்சுதீன் பி., பி.மோகன் மற்றும் ஏ.ஜகதீஸ்வரன், 2013. நாட்டுக் கோழிகளில் காணப்படும் தீய பழங்கங்களும் தடுப்பு முறைகளும். கோழி நண்பன் (மார்ச்)
- சங்கிலிமாடன் கே., ஏ.வி.ஒம்பிராகாஷ், கே.பிரேமவல்லி, சி.பாண்டியன் மற்றும் ஆர்.ரிச்சாட் சர்ச்சில், 2012. இறைச்சி மற்றும் முட்டைக் கோழிகளின் உணவியலை மாற்றுவதன் மூலம் ஏற்படும் உடல் சோர்வை நிவர்த்தி செய்தல். கோழி நண்பன் (அக்டோபர்)
- சங்கிலிமாடன் கே., ஏ.வி. ஒம்பிராகாஷ், கே.பிரேமவல்லி, சி.பாண்டியன் மற்றும் ஆர்.ரிச்சாட் சர்ச்சில், 2012. கறிக்கோழி மற்றும் முட்டைக் கோழிகளின் ஊட்டத்தை கோடை காலத்தில் மாற்றியமைப்பதால் ஏற்படும் நற்பயன். கோழி நண்பன் (டிசம்பர்)
- சரவணன் எஸ்., 2012. கறவை செல்வம். கால்நடைக் கதிர் (எப்ரல்–மே)
- சரவணன் எஸ்., கே.எம்.பழனிவேல், எஸ்.ராஜசொக்கப்பன், ஆர்.ரிஷிகேசவன் மற்றும் எஸ்.மால்மருகன், 2012. மாடுகளில் பொருளாதார முக்கியத்துவம் வாய்ந்த நோய்களும் அதனைத் தடுக்கும் முறைகளும். கோழி நண்பன் (ஜுலை) : 19–22
- சத்திய பாமா கே. மற்றும் பி.ஐ.கணேசன், 2012. சிறு மற்றும் அசையூண் பிராணிகளில் ஜோனீஸ் நோய் மற்றும் அதனைக் கட்டுப்படுத்தும் முறைகள். கால்நடைக் கதிர் (செப்டெம்பர்– அக்டோபர்)
- சத்தியமூர்த்தி டி., எஸ்.ரங்கசாமி, எஸ்.ராஜா மற்றும் எஸ்.ஏ.அசோகன், 2012. மாடுகளில் நஞ்சுக் கொடி தங்குதல். கால்நடைக் கதிர் (ஜனவரி) : 7–8
- சத்தியமூர்த்தி டி., எஸ்.ரங்கசாமி, கே.குலசேகர் மற்றும் எஸ்.ஏ.அசோகன், 2012. மாடுகளில் கருவூட்டல் செய்யும் போது கடைபிடிக்க வேண்டிய வழிமுறைகள். கோழி நண்பன் (மே) : 11–15
- சத்தியமூர்த்தி டி., எஸ்.ரங்கசாமி மற்றும் கே.குலசேகர், 2012. கன்று ஈன முடியாத மாட்டை கையாள்வது எப்படி ? கால்நடைக் கதிர் (நவம்பர்) : 15
- சத்தியமூர்த்தி டி., எஸ்.பாலசுப்பிரமணியன் மற்றும் எஸ்.ராஜா, 2013. நாய்களில் இப்பெருக்கக் கட்டுப்பாடு. கால்நடைக் கதிர் (பிப்ரவரி–மார்ச்) : 33–36
- சதீஷ் குமார் என்., கே.குமாரவேல், கே.பிரேமவள்ளி மற்றும் ஏ.சேர்ம சரவண பாண்டியன், 2012. நாட்டின கோழி உற்பத்தி – பாரம்பரிய முறைகள். கால்நடைக் கதிர் (அக்டோபர்– நவம்பர்) : 49
- சதீஷ் குமார் என்., கே.குமாரவேல், எஸ்.எழில்வளவன் மற்றும் ஏ.சேர்ம சரவண பாண்டியன், 2013. அதி தீவிர நாட்டின கோழி உற்பத்தி – கள அளவிலான அணுகு முறை. கால்நடைக் கதிர் (பிப்ரவரி–மார்ச்)
- செல்வகுமார் ஆர். மற்றும் எம்.முருகன், 2013. மாடுகளக்கான அடர் தீவனம். கோழி நண்பன் (ஏப்ரல்)

- செல்வராஜு ஜி., கே.எம்.பழனிவேல், கே.ஏ.துரைசாமி, எம்.கீதா, எஸ்.சரவணன் மற்றும் ஆர்.ரிஷிகேசவன், 2013. ஆடுகளைத் தாக்கும் நச்சுயிரி நோய்களும் அதன் தடுப்பு முறைகளும். கோழி நண்பன் : 15 – 17
- செந்தில் குமார் ஜி., எம்.பிரபு, ஏ.சேர்ம சரவண பாண்டியன், பி.ஜெய வரதன் மற்றும் கே.என்செல்வகுமார், 2012. இந்தியாவில் உணவு பதனிடும் தொழில்கள். கால்நடைக் கதிர் (அக்டோபர்– நவம்பர்)
- செந்தில்குமார் கே., பி.கதிரவன், எம்.ஜி.ஜெயதங்கராஜ் மற்றும் பி.மதியழகன், 2012. யானைகளுக்கு மதம். அறிக அறிவியல் (அக்டோபர்)
- செந்தில் குமார் கே., எம்.பழனிவேல்ராஜன், கே.தேவகி மற்றும் எம்.ஜி.ஜெயதங்கராஜ், 2013. பாம்புக்கடி பற்றி விவசாயிகள் அறிய வேண்டிய தகவல்கள். வேளாண் வணிக உலகம் (பிப்ரவரி): 46–47
- செந்தில்குமார் ஏ., டி.ஏ.விஜயலிங்கம் மற்றும் கே.சரவணகுமார், 2012. கறவை மாடு வளர்ப்பு–வெற்றிக் கதை. கால்நடைக் கதிர் (ஏப்ரல்–மே)
- செந்தில்குமார் ஏ., மற்றும் டி.ஏ.விஜயலிங்கம், 2012. செறிவூட்டப்பட்ட வைக்கோல் தயாரித்தல். நம்ம ஊர் செய்தி 11(14) : 25–26
- செந்தில்குமார் ஏ. மற்றும் பீர்முகமது, 2012. சினையுற்ற கறவைகளைப் பராமரிக்கும் முறைகள். தினமலா்–விவசாயமலா் (17.10.12)
- செந்தில்குமார் கே., பி.விக்ரம சக்கரவர்த்தி மற்றும் பி.மோகன், 2012. எருமை வளர்ப்பில் இலாபம் ஈட்ட வழிமுறைகள். நவீன வேளாண்மை (அக்டோபர்) : 10–12
- செந்தில்குமார் எஸ்., வி.தவகீலன், எம்.செல்லபாண்டியன், ஏ.மீனாட்சி சுந்தரம் மற்றும் எம்.சுந்தரவிநாயகி, 2012. வளர் நாட்டுக்கோழி வளர்ப்பு. நம்ம ஊரு செய்தி (16.05.12)
- செந்தில்குமார் டி. மற்றும் ஏ.ஷியாம்பாபு, 2012. பண்ணைகளுக்கு உகந்த வெள்ளாடுகளைத் தெரிவு செய்யும் வழிமுறைகள். கால்நடைக் கதிர் (ஜுன்–ஜுலை)
- செந்தில்குமார் டி. மற்றும் ஏ.ஷியாம்பாபு, 2012. பண்ணைகளுக்கு உகந்த செம்மறியாடுகளைத் தெரிவு செய்யும் வழிமுறைகள். கால்நடைக் கதிர் (ஆகஸ்ட்–செப்டம்பர்)
- செந்தமிழ் பாண்டியன் சி. மற்றும் வி.மீனலோச்சனி, 2013. மீன் பதப்படுத்தும் தொழில்நுட்பங்கள். நம்ம ஊரு செய்தி (பிப்ரவரி)
- செந்தமிழ் பாண்டியன் சி. மற்றும் என்.முரளி, 2013. கருவுற்ற மாடுகளைப் பராமரிக்கும் முறைகள். நம்ம ஊரு செய்தி (பிப்ரவரி)
- செந்தில்வேல் கே. மற்றும் என்.அகிலா, 2012. நாட்டுக்கோழிகளைத் தாக்கும் நோய்கள். கால்நடைக் கதிர் (அக்டோபர்–நவம்பர்): 53–55
- செந்தில்வேல் கே. மற்றும் என்.அகிலா, 2012. நாட்டுக்கோழிப் பண்ணையாளர்களின் வெற்றிக் கதைகள். கால்நடைக் கதிர் (ஜுன்–ஜுலை): 43–46
- செல்வம் ஆர்., 2012. கால்நடைக்கேற்ற பசுந்தீவன சாகுபடி முறைகள். நமது பண்ணை வளம் (அக்டோபர்)
- செல்வம் ஆர்., 2012. வான்கோழி வளர்ப்பு. தமிழக விவசாய உலகம் (டிசம்பர்)
- ஷிபி தாமஸ் கே. மற்றும் ஜி.ராஜராஜன், 2012. அதிக பொருளாதார இழப்பை ஏற்படுத்தும் மடிவீக்கம். தினகரன் (03.04.12)

ஷிபி தாமஸ் கே., ஜி.ராஜராஜன் மற்றும் பி.வசந்தகுமார், 2012. சிறந்த கறவைமாடு தேர்ந்தெடுத்து வாங்குவது எப்படி ? கோழி

ஷிபி தாமஸ் கே., டி.லூர்து ரீத்தா மற்றும் ஜி.ராஜராஜன், 2012. வாத்து முட்டைக்கு இரட்டிப்பு விலை. தினகரன் (17.01.13)

நண்பன் (மே)

- ஸ்டீபன் ஜெ. மற்றும் சம்பத் குமார், 2012. மீன் விந்தணுக்களை உறைபதனம் செய்தல் மற்றும் அதன் நன்மைகள். கால்நடை மற்றும் மீன்வளர்ப்பு (பிப்ரவரி)
- ஸ்டீபன் சம்பத் குமாா் ஜெ. மற்றும் ஜுடித் பெட்சி, 2012. மீன்குஞ்சு பொரிப்பகத்தில் கிருமிகளிடமிருந்து பாதுகாப்பு. கால்நடை மற்றும் மீன்வளா்ப்பு (ஏப்ரல்)
- ஸ்டீபன் சம்பத் குமார் ஜெ. மற்றும் ஜுடித் பெட்சி, 2012. தண்ணீரிலுள்ள உயிரின நோய்களை குணப்படுத்த இயற்கை மருத்துவம். கால்நடை மற்றும் மீன்வளர்ப்பு (ஜுன்)
- ஸ்டீபன் சம்பத் குமார் ஜெ. மற்றும் ஜுடித் பெட்சி, 2012. மீன் உணவில் ஈர்ப்பு பொருட்களின் பங்கு. கால்நடை மற்றும் மீன்வளர்ப்பு (செப்டம்பர்)
- ஸ்டீபன் சம்பத் குமார் ஜெ. மற்றும் ஜுடித் பெட்சி, 2012. மீன் உயிரணுக்களில் உறைபதனத்தின் பங்கு. மீன்வளக் கதிர் (ஏப்ரல்– ஜுன்)
- ஸ்டீபன் சம்பத் குமார் ஜெ. மற்றும் ஜுடித் பெட்சி, 2012. மீன்குங்சுகளை உற்பத்தி செய்வதில் உணவின் தேவை. மீன்வளக் கதிர் (அக்டோபர் – டிசம்பர்)
- ஸ்டீபன் சம்பத் குமார் ஜெ., பி.செந்தில்குமார் பி.ரம்யலட்சுமி மற்றும் எம்.ஜே.பிரின்ஸ் ஜெயசீலன், 2012. மீன்வளர்ப்பின் முக்கியத்துவம். மீன்வளக் கதிர் (அக்டோபர் – டிசம்பர்)
- ஸ்டீபன் சம்பத் குமார் ஜெ., பி.செந்தில்குமார் எஸ்.சுந்தரி மற்றும வி.பேபி ஷிமி, 2012. மீன்வளர்ப்புக் குளத்தில் உற்பத்தியை பெருக்குவதில் உணவு மற்றும் உணவு மேலாண்மை. நாம் உழவர் (செப்டம்பர்)
- சுதா கே., எஸ்.கே.மாதங்கி, கே.சுஜாதா மற்றும் டி.தியாகராஜன், 2012. முருங்கை தரும் ஆரோக்கியம். நவீன கிச்சன் (நவம்பர்) : 36–38
- சிவக்குமார் பி., வி.வி.குல்கர்னி மற்றும் எஸ்.சுரேஷ்குமார், 2012. இறைச்சிப் பதப்படுத்துதலில் நவீன தொழில்நுட்பங்கள். கோழி நண்பன் (அக்டோபர்)
- சிவக்குமார் பி., எஸ்.சுரேஷ்குமார், ஏ.கலைக்கண்ணன், டி.சாந்தி மற்றும் வி.வி.குல்கர்னி, 2012. கோடை காலங்களில் கோழிகளைப் பாராமரிக்கும் முறைள். கோழி நண்பன் (ஜுன்)
- சிவக்குமார் கே., 2012. பெரும்பாதி கிராமத்தில் கால்நடை வளாப்பு– ஒரு வெற்றிக் கதை. கால்நடைக் கதிர் (ஏப்ரல்–மே) : 21–22
- சிவக்குமார் கே., 2012. பால் கறவை இயந்திரம். பசுமை இந்தியா (செப்டம்பர்) : 23
- சிவக்குமார் கே., 2012. கால்நடை வளாப்பில் பசுந்தீவன உற்பத்தியின் முக்கியத்துவம் குறித்த ஒர் ஆய்வு . கால்நடைக் கதிர் (அக்டோபர்–நவம்பர்) : 39
- சிவக்குமார் கே., 2013. கறவை மாடுகளில் மடிநோய்–தடுப்பு முறைகள். இயற்கை நண்பன் (ஜனவரி) : 36–37
- சிவக்குமார் கே., 2013. வெள்ளாடுக்குட்டிகளின் இறப்பைத் தடுக்கும் வழிமுறைகள். இயற்கை நண்பன் (ஜனவரி) : 37–38
- சிவக்குமார் கே., 2013. பால் கறவை இயந்திரம். இயற்கை நண்பன் (ஜனவரி) : 57

- சிவக்குமார் கே., 2012. மாடுகளை வைத்துப் பால் பண்ணை ஆரம்பிக்க. பசுமை விகடன் (பிப்ரவரி) : 55–56
- சௌந்தரராஜன் சி. மற்றும் டி.சிவக்குமார், 2012. செம்மறியாட்டிற்கான சந்தை வாய்ப்பு. கால்நடைக் கதிர் (ஜுன்–ஜுலை) : 59–62
- சௌந்திரராஜன் சி., 2012. செம்மறியாடு வளர்ப்பில் பணம் ஈட்டுவதற்கான குறிப்புகள். வேளாண் வணிக உலகம் (அக்டோபர்): 50–52
- சௌந்திரராஜன் சி., பி.ஆர்.லதா, எஸ்.அப்துல் பாசித் மற்றும் கே.செந்தில் குமார், 2012. கோழியினங்களில் தொல்லை தரும் ஈக்கள். வேளாண் வணிக உலகம் (அக்டோபர்) : 53
- சௌந்திரராஜன் சி., கே.செந்தில்கமார், எஸ்.பாரதிதாசன், ஈ.பிரேம்ஷீலா மற்றும் எஸ்.கலைமாமணி, 2012. வெள்ளாட்டுப்பாலின் முக்கியத்துவம். வேளாண் வணிக உலகம் (நவம்பர்) : 32–33
- சௌந்திரராஜன் சி., 2012. போயா் இன செம்மறியாடுகள். நாம் உழவா் (அக்டோபா்) : 24–25
- சௌந்திரராஜன் சி., 2012. பன்னிரண்டு மாதங்களில் பக்ரீத் பண்டிகைக்காக வளர்க்கப்பட்ட செம்மறியாடு மூலம் இலட்சத்தில் வருவாய். வேளாண் வணிக உலகம் (நவம்பர்) : 48–50
- சௌந்திரராஜன் சி., 2012. அழகான கொடி ஆடு. வேளாண் வணிக உலகம் (டிசம்பர்) : 34–37
- சௌந்திரராஜன் சி., எம்.அருள்பிரகாஷ், ஐ.அபிராமி, எஸ்.டி.பினோசுந்தர் மற்றும் என்.ஜெயதிலகன், 2012. தண்ணீர்... கால்நடைகளுக்கான தண்ணீர். வேளாண் வணிக உலகம் (டிசம்பர்) : 45–47
- சௌந்திரராஜன் சி., எஸ்.டி.பினோசுந்தர், பாஸ்கரன் ரவி லதா, என்,ஜெயதிலகன், எம்.இராமன், எஸ்.அருண்குமார், கே.டி.கவிதா, பி.அழகியநம்பி மற்றும் எஸ்.அப்துல் பாசித், 2012. கோழியின வளர்ப்பில் மண்புழுக்கள் நண்பனா எதிரியா ? வேளாண் வணிக உலகம் (டிசம்பர்) : 66–67
- சௌந்திரராஜன் சி., எஸ்.டி.பினோசுந்தர், பாஸ்கரன் ரவி லதா, என்.ஜெயதிலகன், எம்.இராமன், எஸ்.அருண்குமார், கே.டி.கவிதா, பி.அழகியநம்பி மற்றும் எஸ்.அப்துல் பாசித், 2013. முட்டையின் தரத்தைக் குறைக்கும் ஈக்கள். வேளாண் வணிக உலகம் (ஜனவரி) : 66–67
- சௌந்திரராஜன் சி., எஸ்.டி.பினோசுந்தர் மற்றும் எம்.அருள் பிரகாஷ், 2013. சேலம் கருப்பு வெள்ளாடு – தமிழகத்தின் கருப்பு. வேளாண் வணிக உலகம் (ஜனவரி) : 45–47
- சௌந்திரராஜன் சி. மற்றும் எஸ்.அருள் குமார், 2013. கலப்பின வெள்ளாடுகள் வளர்ப்பு . வேளாண் வணிக உலகம் (ஜனவரி) : 56–58
- சௌந்திரராஜன் சி., 2013. தமிழ்நாட்டிற்கான தெல்லிச்சேரி வெள்ளாடு. நாம் உழவர் (ஜனவரி) : 46–49
- சௌந்திரராஜன் சி., எஸ்.அருண்குமார், எஸ்.டி.பினோசுந்தர், எம். அருள் பிரகாஷ், கே.செந்தில்குமார் மற்றும் என்.ஜெயதிலகன், 2013. வெள்ளாட்டின் விலை என்ன? வேளாண் வணிக உலகம் (பிப்ரவரி): 43
- சௌந்திரராஜன் சி., எஸ்.அருண்குமார், எஸ்.டி.பினோசுந்தர் மற்றும் எம்.அருள் பிரகாஷ், 2013. வெள்ளாட்டிற்கு வேலி மசால் சிறந்த தீவனம். வேளாண் வணிக உலகம் (பிப்ரவரி) : 60–61

சௌந்திரராஜன் சி., எஸ்.அருண்குமார், எஸ்.டி.பினோசுந்தர், எம்.இராமன் மற்றும் எஸ்.அப்துல் பாசித், 2013. மாடுகளில் புறஒட்டுண்ணிகள் மற்றும் குடற்புழு நீக்கம். வேளாண் வணிக உலகம் (பிப்ரவரி) : 66–67

- சௌந்திரராஜன் சி, 2013. வெள்ளாடு வளர்ப்பில் அகத்தியின் முக்கியத்துவம். நாம் உழவர் (பிப்ரவரி) : 35
- சுகுமாா் டி., 2012. மீன் வளம் மற்றும் மீன் வளா்ப்பில் வேலை வாய்ப்பு (ஆங்கிலம்) வேலைவாய்ப்புச் செய்திகள், புதுடில்லி (டிசம்பா்) : 8–14
- சுகுமார் டி. மற்றும் வி.கே.வெங்கடரமணி, 2012. கடல் தரும் கற்பக விருட்சம் – மீன் மாற்று உபபொருட்கள். மீன்வளக் கதிர் (ஜுலை – செப்டம்பர்)
- தங்கவேல் கே., எம்.அர்த்தநாரீஸ்வரன், கே.சுகுமார், ஆர்.ரமணி புஷ்பா, டி.லூர்து ரீட்டா, எஸ்.மால்மருகன், பி.சுரேஷ் மற்றும் ஜே.ஜான்சன் ராஜேஷ்வர், 2012. கால்நடை மற்றும் கோழி வளர்ப்பில் நுண்ம உயிரிக் கலவைகளின் பயன்பாடுகள். கோழி நண்பன் (ஜுலை)
- தங்கவேல் கே., எம்.அர்த்தநாரீஸ்வரன், பி.சுரேஷ், ஏ.பாலசுப்பிரமணியம் மற்றும் ஜே.ஜான்சன் ராஜேஷ்வர், 2012. கோழிகளில் சால்மோனெல்லா தாக்கத்தினை கட்டுப்படுத்துதல். கோழி நண்பன் (அக்டோபர்)
- தேன்மொழி வி., எஸ்.டி.பினோசுந்தர், வி.அழகியநம்பி, என்.ஜெயதிலகன், எஸ்.கோமதிநாயகம் மற்றும் எம்.இராமன், 2012. குளிர் மற்றும் கோடை காலங்களில் கோழிகளில் இரத்தக் கழிச்சல் நோயைத் தடுத்தல். வேளாண் வணிக உலகம் (ஆகஸ்ட்): 52–54
- திலகர் பி., எம்.எஸ்.கண்ணதாசன், பி.ஆர்.நிஷா, என்.விமல் ராஜ்குமார் மற்றும் பி.மதியழகன், 2012. ஒப்பந்த முறை பண்ணையம் : கால்நடை விவசாயிகளுக்கான புதிய பாதை. கால்நடைக் கதிர் 32 (5) : 49
- தியாகராஜன் ஆர்., 2012. முயல் வளர்ப்பு பற்றி பண்ணையாளரின் கேள்விகளுக்கு பதில்–ஓர் கண்ணோட்டம். கால்நடைக் கதிர் 32(2) : 19–26
- தியாகராஜன் டி., டி.ராமசாமி மற்றும் எஸ்.கே.மாதங்கி, 2012. உணவுத் தொழில்நுட்ப வல்லுநர்களின் எதிர்கால வாய்ப்புகள். உணவு உலகம் (ஜுன்) : 50–52
- தியாகராஜன் டி. மற்றும் என்.திவ்யா, 2012. உணவுத் தொழிலின் எதிர்கால வாய்ப்புகள். புதிய வணிகம் (ஜுன்–ஜுலை) : 14–16
- தியாகராஜன் டி. மற்றும் எஸ்.எழில்வளவன், 2013. அசைவ உணவில் உள்ள சத்துக்கள் என்ன ? சத்துணவு (பிப்ரவரி) : 48–49
- தியாகராஜன் டி., 2013. கால்நடை மற்றும் கோழிப்பண்ணைகளில் திறன் மேம்பாட்டு வேலைவாய்ப்புகள். வணிக கதிர் (பிப்ரவரி) : 14–16
- தியாகராஜன் டி., 2013. கால்நடை மற்றும் கோழிப்பண்ணைகளில் திறன் மேம்பாட்டு வேலைவாய்ப்புகள். மீன்வளக் கதிர் (பிப்ரவரி) : 18–20
- தியாகராஜன் டி., 2013. பண்ணைத் தொழிலின் எதிர்கால வாய்ப்பு. விவசாயி (மார்ச்) : 13–16
- தியாகராஜன் டி., 2013. கறவைப் பண்ண உதவியாளா். நிலவளம் (மாா்ச்) : 25–26
- உதயவேல் எஸ். மற்றும் என்.முரளி, 2013. சிறு மற்றும் அசையூண் பிராணிகளில் டெட்டனஸ். நம்ம ஊரு செய்தி (பிப்ரவரி)

- உமா வி., என்.நர்மதா மற்றும் கே.எம்.சக்திவேல், 2012. ஆடுகளைத் தாக்கும் நோய்களும் தடுப்பு முறைகளும். வளரும் விவசாய தமிழகம் (செப்டம்பர்) : 35–38
- உமா வி., என்.நர்மதா மற்றும் கே.எம்.சக்திவேல், 2012. சுயவேலைவாய்ப்பளிக்கும் மதிப்பூட்டிய பால் பொருட்கள். வளரும் விவசாய தமிழகம் (ஜுன்)
- உமாராணி ஆர்., பி.பூவராஜன் மற்றும் ஆர்.உமாராணி, 2012. கன்று முதல் கன்று வரை. கால்நடைக் கதிர் (ஜுன்–ஜுலை)
- வடிவு வி.எஸ்., ரீட்டா நாராயணன், ப்ரிதஸ் மற்றும் ஜி. சுஜாதா, 2012. ஸ்பைருலினாவின் நன்மைகள். உங்கள் உணவு உலகம் (நவம்பர்) : 46 – 47
- வடிவு வி.எஸ்., எஸ்.கீர்த்தனா, ரீட்டா நாராயணன் மற்றும் ம் ஜி. சுஜாதா, 2012. நோய் உண்டு பண்ணுகிற கிருமிகளில் இருந்து பழங்கள் மற்றும் காய்கறிகளைப் பாதுகாத்தல். உங்கள் உணவு உலகம் (டிசம்பர்) : 4–6
- வசந்தி சுரேஷ், ராபின்சன் ஜே.ஜே. ஆப்பிரஹாம் மற்றும் ரமணி, 2013. கால்நடை மற்றும் கோழிகளுக்கு ஒரு மாற்றுத் தீவனம்– அசோலா. கால்நடைக்கதிர் (டிசம்பர்–ஜனவரி)
- வாசன் பி., ஆர்.சுரேஷ் மற்றும் எம்.ராமச்சந்திரன், 2012. கோழி முட்டை மற்றும் காடை முட்டையின் ஊட்டச்சத்து ஒப்பீடும் அதன் முக்கியத்துவமும். கோழி நண்பன் : 5–7
- வசந்தகுமார் பி., ஆர்.கவிதா, எஸ்.செந்தில்குமார், சி.கதிர்வேலன், எம்.ஆர்.புருஷோத்தமன் மற்றும் டி.சந்திரசேகரன், 2012. கால்நடைகளுக்கு பசுந்தீவனம் தேவை. வேளாண் வணிக உலகம் (அக்டோபர்)
- வெண்ணிலா சி. மற்றும் வி.எம். சங்கரன், 2012. தீவனப் பயிர் உற்பத்தியில் விதை உற்பத்தி மேலாண்மை. கால்நடைக் கதிர் (ஆகஸ்ட்–செப்டெம்பர்) 31 (6) : 13–16
- வெங்கடேஷ்குமாா் ஈ., எஸ்.சிவராமன், கே.கே.பொன்னுசாபி மற்றும் ஜி.விஜயகுமாா், 2013. கால்நடைகளில் இரத்த மாற்று சிகிச்சை – ஒா் கண்ணோட்டம். கோழி நண்பன் (ஜனவாி)
- வெங்கடராமனன் ஆர்., எம்.ஐயூ, எஸ்.குணசேகரன் மற்றும் எம்.பாபு, 2013. கேரட் இலைகளின் பசுந்தீவன பயன்பாடு. கால்நடைக் கதிர் (பிப்ரவரி)
- வீரமணி பி., எஸ்.டி.செல்வன், ஏ.கோபிநாதன் மற்றும் எச்.கோபி, 2013. நாட்டுக் கோழிகளுக்கான இனப்பெருக்க மேலாண்மை வழிகள். நவீன வேளாண்மை (மார்ச்)
- வீரபத்ரன் க., இரா.சாந்தகுமார் மற்றும் முக.நாகூர்மீரான், 2012. மனிதநலத்தில் மீன்உணவின் பங்கு. மீன்வளக்கதிர் (ஜனவரி)
- விஜயராணி கே., கே. குமணன் மற்றும் ஏ.ஆர். விக்னேஷ், 2012. கால்நடை மருத்துவத்தில் உயிர்த்தொழில்நுட்பவியலின் பங்கு. கால்நடைக் கதிர் (ஆகஸ்ட்–செடெம்பர்) : 49
- விஜயராணி கே., கே. குமணன் மற்றம் ஏ.ஆர். விக்னேஷ், 2012. கால்நடை மற்றும் கோழியின உற்பத்தியில் உயிர்த் தொழில்நுட்பவியலின் பங்கு, கால்நடைக் கதிர் (ஆகஸ்ட்– செப்டெம்பர்): 64
- விஜயராஜன் ஏ. மற்றும் பி.பூவராஜன், 2012. ஆடுகளுக்கு இரத்தக் கழிச்சல் நோய்த் தாக்கம், தடுப்பு முறைகளும். தினத்தந்தி (02.08.12)
- விக்ரம சக்ரவர்த்தி பி., பி.மேகலா, ஏ.அறிவுச்செல்வன் மற்றும் ஏ.ஜகதீஸ்வரன், 2013. நாட்டுக்கோழி வளர்ப்பு. கோழி நண்பன் (மார்ச்) : 9–12

- விமலாராணி எம். மற்றும் பி.குமாரவேல், 2012. மதிப்பூட்டிய வாழைப் பழ பொருட்கள். வணிகமணி (ஜுன்)
- விமலாராணி எம். மற்றும் பி.குமாரவேல், 2012. வீட்டிலிருந்தே மதிப்பூட்டிய பால்பொருட்கள் தயாரித்தல் . வணிகமணி (செப்டம்பர்)
- விமலாராணி எம். மற்றும் பி.குமாரவேல், 2012. மதிப்பூட்டிய காளாண் பொருட்கள். விஞ்ஞான சுடர் (அக்டோபர்)
- யசோதை ஆர். மற்றும் என்.ராஜேந்தின், 2012. ஆடுகளைத் தேர்ந்தெடுத்து வாங்கும் வழிமுறைகள். கோழி நண்பன் (டிசம்பர்)

BOOKS

- Akila N and Mahesh Chander, 2012. A book on Farming through draught bullocks-the case of India. Published by Lambert Academic Publishing – International
- Chandrahasan C., N.Narmatha K.M.Sakthivel, V.Uma, A.Manivannan and T.Senthilkumar, 2013. A book on Question Bank- Veterinary and Animal Sciences
- Elango A., G.Kumaresan, C.Pandiyan, R.Ravimurugan, N.Karthikeyan and P. Ganapathi, R.Thiagarajan and K. Thilak Pon Jawahar 2012. A book on Principles of Animal Genetics and Population Genetics. Published by Satish Serial Publishing House, New Delhi
- Geetha Ramesh and T.A.Kannan , 2012. Text book on Veterinary Gross Anatomy (Oesteology, Arthrology and Biomechanics) Published by e-Science world.
- Gopi H., D.Balasubramanyam and M.Babu, 2013. A Farmers' handbook on Livestock farming for rural livelihood (Tamil)
- Gopi H., P.Kumarasamy, D.Balasubramanyam, P.Veeramani, S.Gunasekaran, P.George Stephenson and N.Gayathri, 2012. A handbook on Scientific techniques in fodder cultivation
- Jackie singh Y., R.Santhakumar and H.Bharati, 2012. A book on Hygienic fish handling practices by fisherman. A Case study from India. Published by Lambert Academic Publishing, Germany.
- Doraisamy K.A., 2012. A book on Clean milk production and value added dairy products.
- Kathiravan P., S.M.K Karthickeyan, R. Venkataramanan, M. Iyue, B.P. Mishra, R.S. Kataria and B.K. Joshi, 2012. Buffalo Genetic Resources of India: Toda: The unique hill buffalo of Tamil Nadu – A Monograph. Published by ICAR.
- Kathirvelan C., J.Ramesh, K.Viswanathan and M.Babu, 2013. A book on Use of jatropha oil cake as animal feed (ISBN 9789381102558)
- Kumaravelu N., 2012. A book on Duck and Goose rearing. Published by Gowra publishers, Triplicane
- Malmarugan S., 2013. A book on "Kalnadaiyiyal- nunma uyirkalavai matrum thaduppoosi moolam kozhikalil kudal thisu chithaivu noyinai kattupaduththuthal" (in Tamil). Published by Thannambikai, Coimbatore

- Manoharan S., E.T.Jayalakshmi and K.Kumanan, 2012. Chicken Anaemia Virus – A Monograph (ISBN No.978-81-926359-9-6)
- Meenakshisundaram A., 2013. A book on "semmari Adugalai thakkum kudarpulukalukku edithiraka thavara sarukalin kudarpulu neeka seyalpadu" (Tamil). Published by Thannambikai, Coimbatore
- Muthuramalingam T., K.Meeakshi Sundaram, P.Tensingh Gnanaraj and Thanga Tamilvanan, 2012. A book on Cattle and Buffalo production and management.
- Nanjappan K., T.Sathyabama, S.Jayachandran and P.Visha, 2012. A book on TNPSC/competitive Examination Guide- MCQs in Veterinary Physiology
- Narendra Babu R., T. Senthil Kumar, R.Ramani, and R. Kathiresan, 2012. A Book on "Erachi matrum erachi Porutkal" (Tamil)
- Narmatha N., K.M.Sakthivel and V.Uma, 2012. A handbook on Livestock Input Dealers Addresses of Tamil Nadu
- Palanivel K.M., D.Jayanthi and S.Selvasubramanian, 2012. A book on Viral, bacterial, parasitic diseases of goats and their prevention
- Pandian C. and N.Kumaravelu, 2012. A book on Vathu & Goose vathu valarpu (ISBN:978-93-80291-85-1). Published by Gowra Publication, Chennai-05
- Rajan S., Vivek Kulkarni, and V.Chandirasekaran, 2012. A book on Quality of Retort processed chettinad chicken. Published by LAP LAMBERT Academic Publishing, Germany.
- Rathinasabapathy G., L.Rajendran and A.K.Jain, 2012. A manual on KOHA. Sponsored by ICAR, New Delhi
- Saraswathi s. and B.Rajesh Kumar, 2013. A Manual on Slatted floor goat rearing (Tamil). Sponsored by ATMA
- Sarathchandra G., J.Ramesh and V.Sureshkumar, 2012. Veterinarians Desk Book - A Laboratory Desk Book on Fundamentals for Analytical Skill Development
- Saravanan M.S. and B. Muruganandan, 2012. A book on Diseaseless Goat Farm
- Senthilkumar T., C.Chandrahasan, S.Ezhilvalavan and A Shyam Babu, 2013. A Training Guide on Piggery farming. Sponsored by ICAR, New Delhi
- Senthilkumar T., C.Chandrahasan, S.Ezhilvalavan and A.Shyam Babu, 2013. A Training Guide on Desi chicken rearing. Sponsored by ICAR, New Delhi
- Sivakumar K., 2012. A book on "Sugatharamana Iraitchi Urpathi Matrum Iraitchi Porutkal Thayarippu" (Tamil)
- Sivakumar P. and Robinson J.J.Abraham, 2013. A Book on Qualities of Kanni Goat meat. Published by LAP LAMBERT Academic Publishing, Germany.
- Sivakumar T., N.Kumaravelu, S.Senthilkumar and M.Murugan, 2012. A book on "Kalnadai valarpil

theevana payirgal" (Tamil) [ISBN: 978-81-234-2019-6]

- Sivakumar T., Thanga Tamilvanan, P.Tensingh Ghanaraj, K.Meenakshi Sundaram, N.Kumaravelu, A.Thennarasu, A. Yasodha, S.Jeisankar and P.Rajeshkumar, 2012. A book on Livestock Production and Management-Part I
- Sujatha, P.L., 2012. Designing of an Information Retrieval System in Veterinary Scince: Controlled vocabulary Supported. Lambert Academic publishing, Germany. (ISBN : 978-3-659-22241-2)
- Sureshkumar S. and A.Kalaikannan, 2012. Development of shelf stable Buffalo meat Sausage: A hurdle technology approach. Published by LAP LAMBERT Publishing, Germany

- Sureshkumar S.and V.Chandirasekaran, 2012. Microbial quality of Buffalo meat: Effect of chilling and freezing. Published by LAP LAMBERT Publishing, Germany
- Thyagarajan D. and A.Ashok, 2012. A book on Scientific Turkey Farming. Published by Sathish Publishers, New Delhi
- Thyagarajan D., 2012. A book on Poultry production biotechnology. Published by Sathish Publishers, New Delhi

Abstract on number of articles

1.	Research articles	388
2.	Popular articles	385
3.	Books	36

---***