



TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY



VISION – 2030

[SHORT/MEDIUM-TERM (2020-25) AND
LONG-TERM (2020-2030) ACTION PLANS]

MADHAVARAM MILK COLONY, CHENNAI – 600 051

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TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY
MADHAVARAM MILK COLONY
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FOREWORD



Tamil Nadu Veterinary and Animal Sciences University (TANUVAS), Chennai is the first of its kind, established in South East Asia in the year 1989, to achieve excellence in teaching, research and extension in the fields of veterinary, animal and food sciences. India has all along been rich in livestock wealth with abundant genetic resources, and livestock and rural livelihood have been linked for the time immemorial. Till early 1970's, the contribution of livestock and poultry to sustainable rural livelihood and national income was not that appreciable due mainly to the relative low productivity.

Realizing the need to augment productivity in livestock and poultry sub-sectors, the Government and non-government agencies have taken concerted efforts to address the challenges in protein under / malnutrition, through very many ambitious development programmes. As a result of which, the country has achieved tremendous growth in food sector, especially in livestock and poultry sub-sectors, to ensure producers' wealth and consumers' health.

TANUVAS has accomplished many appreciable feats in the recent past - winning Sardar Patel ICAR Outstanding Institution Award (2011), the first Veterinary University ever bestowed with the award; ICAR- NAIP Project Best Performance award for Development of eCourses (2012); development and release of many new high productive livestock and poultry strains and varieties, vaccines and diagnostic kits; achieving international recognitions through MoUs / MoAs with institutions of excellence across the globe; and

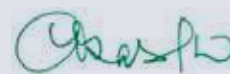
having established extension centres in almost all the districts of the State to promote the livelihood of the rural livestock and poultry farmers.

Despite these enviable accomplishments, Indian livestock sector appears to suffer from a few 'avoidable' slips-like indigenous livestock germplasm with relatively low / less optimum productivity, feed and fodder shortage, prevalence of preventable pests and diseases, poor postproduction technologies, etc. In this context, it is now imperative to review the existing status and prepare a road map for meeting the challenges in the sector and exploring the opportunities and potentials, to achieve excellence, in the existing context of changing economic scenario and trade requirements at national and global levels.

The above objectives would, of course, require vertical and horizontal shifts in many areas of our educational system, research agenda and extension methodologies, based on the lessons learnt in the past and the future needs anticipated.

This document prepared by the University is to highlight the vision, mission, goals and clear and precise objectives / activities that the University has planned to make its future dream a reality. Based on the overall vision and mission of the University, the future perspectives of the University on short and long term bases have been projected in the document in a focused manner. Prioritised programmes for education, research, and extension chalked out in this document are expected to provide required base material to the faculty to chalk out their action plans for different time periods, besides providing the administrators enough scope to monitor, evaluate and analyse the impacts made at periodic intervals, so as to keep promoting them to ensure prominence and excellence.

I, on behalf of the University, extend my great appreciation to the team engaged in the formidable task of this developing vision document, which, I believe, will take the University to greater heights in the future.



(C. BALACHANDRAN)
FORMER VICE-CHANCELLOR

PREFACE



It gave me immense pleasure to compile the information and prepare the VISION – 2030 document of one of the pioneering Universities in the Veterinary Education in India, the TANUVAS, as Chairman of the Committee. With the pragmatic guidance of the former Vice-Chancellor, it has been meticulously planned to envision the ideas in the form of aims, goals and plan of actions in various facets of Veterinary curriculum viz. teaching, research, extension, infrastructure, faculty development and internationalization. In addition, it has been conceived to give an overview of the University and its salient achievements, since inception, which the committee felt more pertinent to show-cause the path it has come across.

Besides having done the SWOC analysis, the task of self-appraisal of VISION-2020 helped us, to assess where we are now, and march forward with the new ideas to make the university into greater heights.

In this ever-changing global scenario, the focus of education, research and extension requires a paradigm shift. The challenges such as depleting Natural Resources, attaining of the Sustainable Development Goals, One-Health Concept, Globalisation, Climate change, updation of life skills, animal welfare etc., warrant a different outlook from veterinary and animal sciences. This Vision – 2030 document envisages to fulfill this expectation from TANUVAS and will show the path and act as a guidance to the faculty in all their endeavors.

At this juncture, I whole-heartedly thank the unstinted efforts of all the members of the committee and the faculty of TANUVAS who had been behind in the making of VISION-2030.

K.N. SELVAKUMAR
VICE-CHANCELLOR

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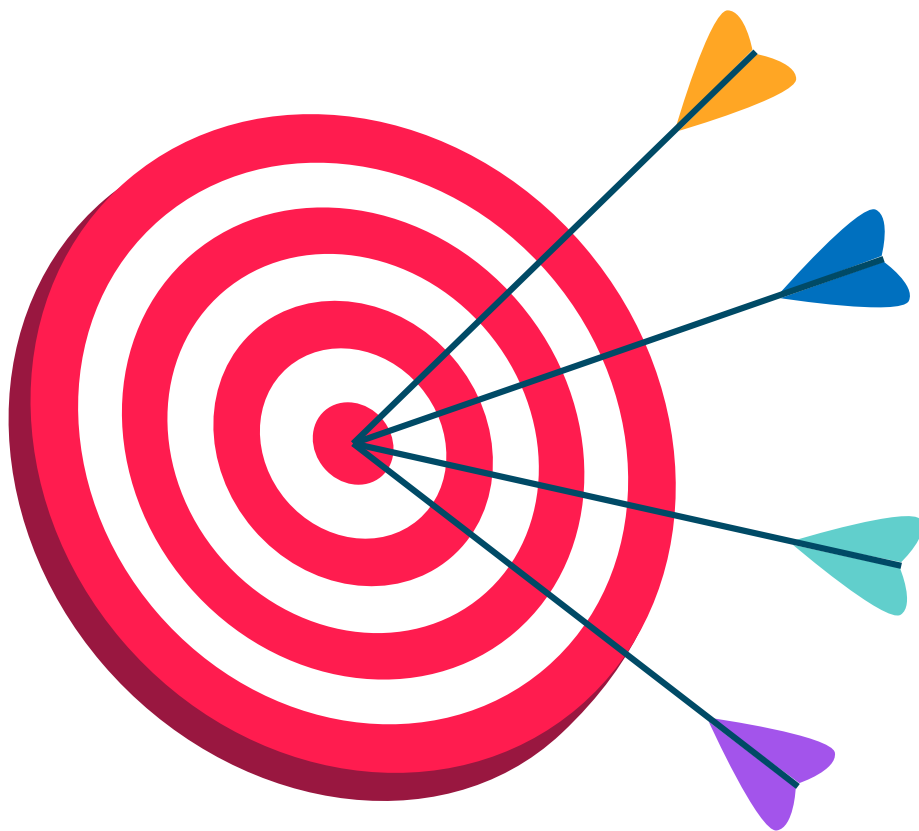


VISION - 2030

**SHORT / MEDIUM-TERM (2020 – 2025) &
LONG-TERM (2020 – 2030)
ACTION PLANS**

VISION

TANUVAS desires to be an institution of international excellence in providing education and pursuing research in the field of Veterinary, Animal and Food Sciences and to develop innovations, disseminate scientific knowledge and skill for enhanced livestock and poultry productivity through the use of technologies of social, economic and environmental relevance developed by adopting a team approach.



MISSION

TANUVAS was established on 20th September 1989 with a mandate to impart education, further the development of learning and prosecution of research and undertake extension to rural people in co-operation with the Government departments in different branches of veterinary, animal and food sciences.



VISION 2030

[SHORT/MEDIUM-TERM (2020-25) AND
LONG-TERM (2020-2030) ACTION PLANS]



THE HISTORICAL PERSPECTIVE

Veterinary education in the Indian subcontinent is as old as human civilization. Animal husbandry practices remained as an art until 18th century, when the first army school was established in 1827 at Pune. Severe outbreak of plague (Rinderpest) which greatly affected Indian cattle led to the establishment of Indian Plague Commission in 1869. Subsequently, the first Civil Veterinary Educational School was opened at Lahore (erstwhile united Punjab) in 1882. Later, three veterinary schools were started at Bombay (now Mumbai) in 1886, Calcutta (now Kolkatta) in 1893 and Madras (now Chennai) in 1903.

Madras Veterinary College (MVC) had a modest beginning as an Agricultural School at Saidapet, Chennai in the year 1878. The school was offering diploma and certificate courses in the field of veterinary science. Later, Madras Veterinary College was started on 01.10.1903 and got affiliated to Madras University in 1936. It was the only veterinary college in the erstwhile composite Madras State till mid 1950's.

A course leading to the degree of B.V.Sc. was introduced at Madras Veterinary College in 1936, which was followed by other institutions. Now, every veterinary college in the country offers the degree, B.V.Sc.&A.H. on the insistence of Veterinary Council of India (VCI). The Second Deans' Committee (1981-85) streamlined the academic regulations, credit course requirements under trimester / semester pattern and recommended increase in the course duration by making a mandatory requirement of six months of internship. While the first two Deans' committees revised and updated veterinary educational programme, this responsibility was subsequently entrusted to the VCI through the statutory authority granted to it by virtue of promulgation of IVC Act 1984. Now, with the new regulations introduced by the VCI from 2016, the duration of the B.V.Sc.&A.H. course is 5½ years, including one year internship programme.

Tamil Nadu Veterinary and Animal Sciences University (TANUVAS) blossomed on 20.09.1989 through the Tamil Nadu State Government Act 42 of 1989, from the roots of Madras Veterinary College, Chennai, an internationally acclaimed, century-old institution, taking together with it the Veterinary College and Research Institute, Namakkal and the Fisheries College and Research Institute, Thoothukudi and a number of Training and Research Centres, Research Farms, Farmers' Training Centres, and sophisticated laboratories. TANUVAS later started a College of Food and Dairy Technology at Koduvalli, two more veterinary colleges at Tirunelveli and Orathanadu, a College of Poultry Production and Management at Hosur, besides a number of Training and Research Centres (located in



most of the districts), and a Disease Diagnostic Laboratory, Madurai. Additionally, three more veterinary colleges have been started in the year 2020 at Salem, Theni and Udumalpet. At present, TANUVAS has a total of seven Veterinary Colleges, a College of Food and Dairy Technology, a College of Poultry Production and Management, 10 Research Farms, 15 Research Laboratories and Diagnostic Centres, 20 Veterinary University Training and Research Centres, three Farmers' Training Centres, and four *Krishi Vigyan Kendra*.

The undergraduate courses offered include B.V.Sc.&A.H., B.Tech. (Food Technology), B.Tech. (Dairy Technology) and B.Tech. (Poultry Technology). Besides, postgraduate courses viz. M.V.Sc. in 22 disciplines, M.Tech. in three disciplines, M.Sc. in Bioinformatics, M.Sc. in Biostatistics, and MBA in Food and Livestock Business Management, Ph.D. in 20 disciplines of





Veterinary and Animal Sciences, Ph.D. in Food Technology, five PG Diploma and a number of PG Diploma and Certificate courses in distance mode are also offered.

MANDATE / OBJECTIVES OF TANUVAS

1. To impart education in different branches of veterinary and animal sciences
2. To further the advancement of learning and prosecution of research in veterinary and animal sciences
3. To undertake the extension of such sciences to the rural people in co-operation with the government departments concerned

LIVESTOCK AND POULTRY – A SECTORAL ANALYSIS

In India, agriculture and livestock farming have been the sources of rural livelihood *inter alia* since time immemorial. Crop sector often depended for inputs from livestock in terms of manure and draught power, while livestock sector used grains and crop residues for their feed and

fodder and thus, they have been complementary to each other. Despite its low productivity, the livestock sector has been playing a crucial role in generating considerable quantum of income and employment to ensure sustenance for the landless, marginal and small farmers, including rural women, especially when crop sector fails due to vagaries of nature.

In the absence of fertile lands, assured irrigation and lack of employment in the industrial and service sectors, most of the rural families belonging to socio-economically weaker sections of the society maintained different species of livestock to supplement their income. While the land owners preferred cattle and buffaloes, the landless preferred to rear sheep, goat and poultry.

Livestock sector in the country has been growing constantly at an annual growth rate of 7.9 per cent in the last five years. The sector, marked by appreciable livestock population and impressive production growth in the recent past, has been showing significant impacts on the growth of the country's economy, through rapid growth of



output in the last five decades. The gross value of output from this sector grew from Rs. 59 billion in 1980-81 to Rs. 1703 billion in 2010-11 at 1980-81 prices and to Rs. 4937 billion in 2017-18 at 2011-12 prices. The contribution of agriculture to the total GDP of the country was 34.72% in 1980-81, which decreased to 15.77% in 2010-11 at 2004-05 prices. During the same period and at same prices, the contribution of livestock to the agriculture GDP of the country was 13.88% in 1980-81, which increased to 24.99% in 2010-11. Also, the contribution of agriculture to the total GDP of the country was 12.1% in 2010-11, which decreased to 8.7% in 2017-18 at 2011-12 prices. During the same period and at same prices, the contribution of livestock to the agriculture GDP of the country was 21.8% in 2011-12, which increased to 27.4% in 2017-18.



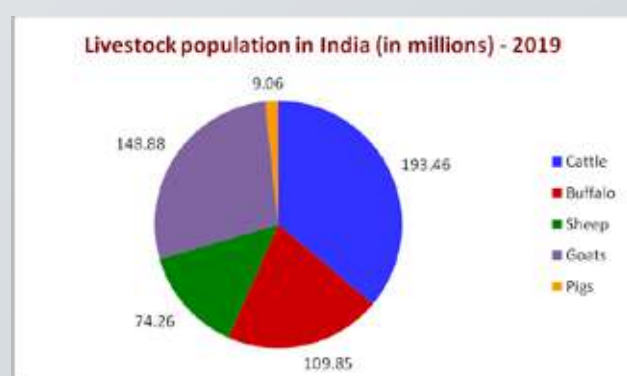
The following table presents a glimpse of increasing livestock and poultry populations in the country in the last seven decades:

Livestock and poultry populations (in million) in India

Species	1951	1961	1972	1982	1992	2003	2012	2019
Cattle	155.31	175.60	178.30	192.45	204.58	185.18	190.90	193.46
Buffalo	43.40	51.20	57.40	69.78	84.21	97.92	108.70	109.85
Sheep	39.10	40.20	40.00	48.76	50.78	61.47	65.07	74.26
Goats	47.20	60.90	67.50	95.25	115.28	124.36	135.17	148.88
Pigs	4.40	5.20	6.90	10.07	12.79	13.52	10.29	9.06
Total Livestock	292.80	335.40	353.60	419.59	470.86	485.00	512.06	536.76
Poultry	73.50	114.2	138.50	207.74	307.07	489.01	729.21	851.81

Source: Basic Animal Husbandry Statistics, 2019 and 20th Livestock Census – 2019 All India Report

India's livestock sector has been one of the largest in the world with a holding of 11 per cent of world livestock population.



India has the largest large and small ruminant population in the world - 57% of buffaloes, 16% of cattle and 20% of goats, ranking first in buffalo population, second in cattle and goat, third in sheep, fifth in ducks and chicken and tenth in camel.

Tamil Nadu possesses close to 5% of total livestock available in India, with 5% of cattle, 6% of sheep and nearly 7% of goats. However, the State has only less than 1% of buffaloes and pigs. It needs emphasis that the State has more than 14% of Indian poultry population.

Populations of livestock and poultry (in million) in Tamil Nadu - 2019

	Cattle	Buffalo	Sheep	Goat	Pig	Total Livestock	Poultry
Tamil Nadu	9.47 (4.90)	0.52 (0.47)	4.50 (6.06)	9.89 (6.64)	0.07 (0.77)	24.45 (4.56)	120.78 (14.18)
India	193.46	109.85	74.26	148.88	9.06	536.76	851.81

(Figures in parentheses indicate percentages to country's total)

Of the total milk production (187.7 million tons during 2018-19) of India, 49 per cent was contributed by buffaloes and 47 per cent by cattle. While the average daily yield of milk per crossbred / exotic cow has increased from 6.78 kg in 2013-14 to 7.95 kg in 2018-19, and that of non-descript / indigenous cow has risen from 2.50 to 3.01 kg during the same period. It needs emphasis that the annual growth rate of milk production in

the country from 2014-15 is tremendous at the rate of above 6% continuously.

Tamil Nadu State has registered an annual growth of 8% in milk production in 2018-19 over the previous year, which is more than the all India average (6.5%) and as a result, the State contributed 4.5% to the country's total milk production in that year. However, the per capita milk availability per day in the State is only 322 g, as against the all India average of 394 g.

Milk production and per capita availability of milk

Year	Milk Production (million tons)		Per Capita Availability (g/day)	
	India	Tamil Nadu	India	Tamil Nadu
2013-14	137.69	7.05	307	280
2014-15	146.31	7.13	322	282
2015-16	155.49	7.24	337	283
2016-17	165.40	7.56	355	294
2017-18	176.35	7.74	375	300
2018-19	187.77	8.36	394	322

Source: Basic Animal Husbandry Statistics, 2019

Meat production in the country has significantly increased from 2.3 million tons in 2005-06 to 8.1 million tons in 2018-19, of which nearly 50%

has been contributed by poultry, followed by buffaloes (19%), goat (14%), sheep (8%), pigs (5%) and cattle (4%). Tamil Nadu contributes 7.8% to the total meat production in the country. Poultry contributed about 50% (4.06 million tons) to total meat production. It also needs emphasis that poultry meat production has increased by 7.8% in 2018-19 over 2017-18.

Meat production

Year	Meat Production ('000 tons)	
	India	Tamil Nadu
2013-14	6235.48	464.51
2014-15	6691.08	491.93
2015-16	7019.96	544.47
2016-17	7385.61	572.84
2017-18	7655.63	603.35
2018-19	8114.45	633.80

Source: Basic Animal Husbandry Statistics, 2019



The total egg production in the country increased substantially from 46.2 billion in 2005-06 to 103.3 billion in 2018-19. As a result, the per capita availability of egg has increased from 42 in 2005-06 to 79 per annum in 2018-19. Tamil Nadu ranks second, next only to Andhra Pradesh, in egg production in the country by producing 18.2% of the country's total. Tamil Nadu State has registered an annual growth of 8.2% in egg production in 2018-19 over the previous year, which is almost similar to all India average (8.5%). However, the per capita egg availability per annum in the State is higher at 265, as against the all India average of 79.



Egg production and per capita availability of eggs

Year	Egg Production (million no.)		Per Capita Availability (no. / annum)	
	India	Tamil Nadu	India	Tamil Nadu
2013-14	74751.88	14123.54	61	205
2014-15	78483.87	15925.32	63	229
2015-16	82928.43	16125.20	66	231
2016-17	88136.96	16682.40	69	237
2017-18	95217.00	17416.11	74	246
2018-19	103317.63	18842.22	79	265

Source: Basic Animal Husbandry Statistics, 2019

The table below presents the predicted livestock and poultry populations in the next three decades in India, worked out based on time series analysis of past data. Although not much change is expected in cattle, significantly higher increases are expected in goats, sheep and

buffaloes. Also, an almost doubling of poultry population is expected in 2050-51. The stagnant cattle population might be due to the increasing productivity, less preference given to low productive cattle and inadequate green fodder availability in the future.

Predicted livestock and poultry population in India (in million)

Year	Cattle	Buffalo	Sheep	Goat	Pig	Poultry
2020-21	187.66	116.66	65.77	139.81	6.12	887.65
2030-31	188.18	127.79	72.67	153.16	9.31	1123.48
2040-41	188.19	138.91	79.57	166.40	8.73	1359.31
2050-51	188.19	148.92	85.78	178.32	5.41	1571.56

Time series analysis of past livestock and poultry production data also reveals that all the major products will keep increasing in the next three decades, as shown below:



**Predicted milk, meat and egg production
(in million) in India**

Year	Milk (tons)	Meat (tons)	Egg (nos.)
2020-21	207.57	5.18	103341.99
2030-31	311.86	7.63	144374.02
2040-41	416.16	10.07	185406.04
2050-51	520.45	12.52	222334.86

Projected demand (in million) of livestock products in India

Year	Demand for							
	Milk (tons)		Total meat (tons)		Chicken meat (tons)		Egg (nos.)	
	Economic	Nutritional	Economic	Nutritional	Economic	Nutritional	Economic	Nutritional
2020-21	132.88	157.26	8.10	1.52	6.87	1.50	64881	25254
2030-31	158.14	177.82	9.49	17.18	8.09	16.95	77327	28556
2040-41	182.20	194.67	10.76	18.81	9.22	18.55	89223	31261
2050-51	204.49	207.59	11.89	20.06	10.22	19.78	100285	33336

Both the economic and nutritional demands for milk in the country over the next three decades are likely to be similar with only slight variations, whereas the nutritional demands for meat is almost double the amount of economic demands during the periods. This means that the purchasing power of the people would not commensurate with the physiological requirements of human beings for meat in the next decades. However, the

Milk production forecast in Tamil Nadu for the next five years showed that milk production is expected to reach 9.20 million tons in the year 2023-24.

Forecast on milk production in Tamil Nadu

Year	Milk production (in '000 tons)
2019-20	8529
2020-21	8696
2021-22	8863
2022-23	9030
2023-24	9197

The demand for livestock products is income-elastic (meaning that the demand increases when per capita income keeps rising) in countries like India and the demand arising out of the increased per capita income is called as economic demand. The demand for livestock products also needs to be estimated based on the nutritional requirements of the people, irrespective of their levels of income. The forecasts on economic demand and the nutritional demand for the livestock products in the country for the years 2020-21, 2030-31, 2040-41 and 2050-51 are presented in the table below:

economic demands for eggs will be much higher than the nutritional demands over the years.

Considering the projected production of and the projected economic and nutritional demands for livestock products, the demand – supply gap for each product is presented in the table below. It indicates that India will be in a comfortable position with respect to all the livestock products in the years to come, meeting both economic and nutritional demands, except chicken meat.

Demand – supply gap in livestock products (in million) in India

Year	Milk (tons)		Total meat (tons)		Chicken meat (tons)		Egg (nos.)	
	Economic	Nutritional	Economic	Nutritional	Economic	Nutritional	Economic	Nutritional
2020-21	74.69	50.31	0.92	7.50	-1.69	3.68	38461	78088
2030-31	153.72	134.04	3.61	-4.08	-0.46	-9.32	67047	115818
2040-41	233.96	221.49	6.22	-1.83	0.86	-8.48	96183	154145
2050-51	305.54	302.43	8.68	0.51	2.30	-7.26	122049	188999

Despite all the optimistic projections above, livestock sector in the country suffers from a few constraints, which are to be addressed properly to ensure sustainable growth of the sector. The constraints are:

(1) Environment and public health - Livestock products processing especially of leather industry has been contributing to water pollution through their tannery effluents. Hence, any strategy aiming at livestock development should also ensure ecological safety and environmental sustainability. Expansion of animal agriculture has also fueled degradation of rural grazing areas and has led to a build-up of pesticides and antibiotics in the food chain. Livestock sector development must be balanced with measures to conserve the environment, as excessive livestock population is 'alleged' to cause overgrazing and land degradation.



(2) Rural poverty and nutrition - There is a concern that increased feed use to meet increased demand for animal products will push up prices for cereals, the staple food of poor people. There is a clear risk that rapid industrialization of animal husbandry could undermine the important income generation source for rural poor families.

(3) Vanishing Indian breeds - Among the 50 recognized Indian breeds of cattle, only four breeds, namely Sahiwal, Red Sindhi, Gir and Tharparkar are maintained for milk production. Among them, the populations of Red Sindhi and Sahiwal have become reduced significantly and the other two breeds are also under severe neglect. With the modernization of agriculture and sub-division of land holdings, bullock power in Indian agriculture is losing its importance. With less than 1.0 ha land holdings, small farmers cannot make optimum use of bullocks and hence, prefer to hire the services of tractors. Thus, with the diminishing demand for bullock power, the farmers are not adequately motivated to conserve the draft breeds. In the absence of a clear cut policy and programme for conservation, these breeds are subject to heavy genetic erosion.

(4) Livestock research - Livestock sector is not receiving its due share it deserves from the Government agencies. Only 12% of total public expenditure on agriculture and allied sectors, which is lesser than its contribution to agricultural GDP (31.25%), is allotted to the livestock sector currently. Further, the distribution of spending across livestock sub-sectors is not sufficiently consistent with their relative importance. In



fact, livestock research is skewed more towards cattle, with less attention being paid to buffaloes and small ruminants. Even minor increases in assistance for research in the sector could significantly accelerate food supplies.

(5) Need for greater stress on small ruminants, especially goats - Despite advantages of small ruminants rearing, which primarily arise from the lesser need for high quality feeds, not enough importance is being given for their development in the country. In fact, small ruminants offer greater scope in marginal land areas that cannot support production of large ruminants or even agriculture. Among the small ruminants, goats remain neglected by the livestock planners due to their 'alleged' role on environmental degradation. Generally, goats have peculiar feeding habits of "grazing on very short grass" and "browsing on foliage", which are not normally eaten by other domestic livestock. It is quite unfortunate that all the blame for ecological degradation has been put on goats, while men and scientific advancements are equally responsible for the crisis, if not more. However, evidences show that goats provide gainful employment and remunerative income to the rural downtrodden. Despite the governmental efforts on genetic

improvement of sheep, goats continue to manage a significant growth over these years. This points to the fact that rural poor farmers have a strong inclination towards goats for their astounding benefits/advantages – higher fertility and faster multiplicity, low capital needs, ability to thrive on a broader range of plant species and easier marketability. It is imperative to lay greater stress on this species, which supplies about 35 per cent of meat consumed in the country.

(6) Feed and fodder situation - Though the country possesses one-fifth of the world bovine population, it contributes only around 8 per cent of world milk production, due mainly to the low productivity of animals as influenced by the low genetic potential and poor plane of nutrition. It has been reported through nutritional studies that milk production could be increased by 20 to 30 per cent by improved feeding. Deficit status of livestock feed and fodder in 43 out of 55 resource development regions of the country has also been reported. It is not untrue that all the livestock production projections would become invalid, if some solutions for the shortages and regional disparities in livestock feed and fodder position anticipated are found.



(7) Disease losses - With the continuing intensification of livestock production systems, economic implications of animal diseases have become increasingly important at both farm and national levels, as they represent avoidable waste of scarce resources. Rough estimates put the annual loss on account of epidemic and endemic diseases and diseases of parasites and other pests at Rs.70 billion, a significant loss to the growing industry. Epidemic and endemic animal health problems seriously reduce production and work output of crossbred animals, as they stand more susceptible to diseases, hardships and contingencies peculiar to the Indian climate. Appropriate procedures for disease loss estimation are being infused into studies concerning livestock economics. A few studies have been conducted recently in Tamil Nadu by TANUVAS scientists to analyse the economic consequences of mastitis, post-partum reproductive disorders in bovines, conception failures, metabolic disorders in bovines, sheep pox and enterotoxaemia. However, much more such studies are to be carried out to provide information useful in determining research priorities and in drawing attention to the adverse effects of disease on the livestock and on socio-economic aspects of the society.

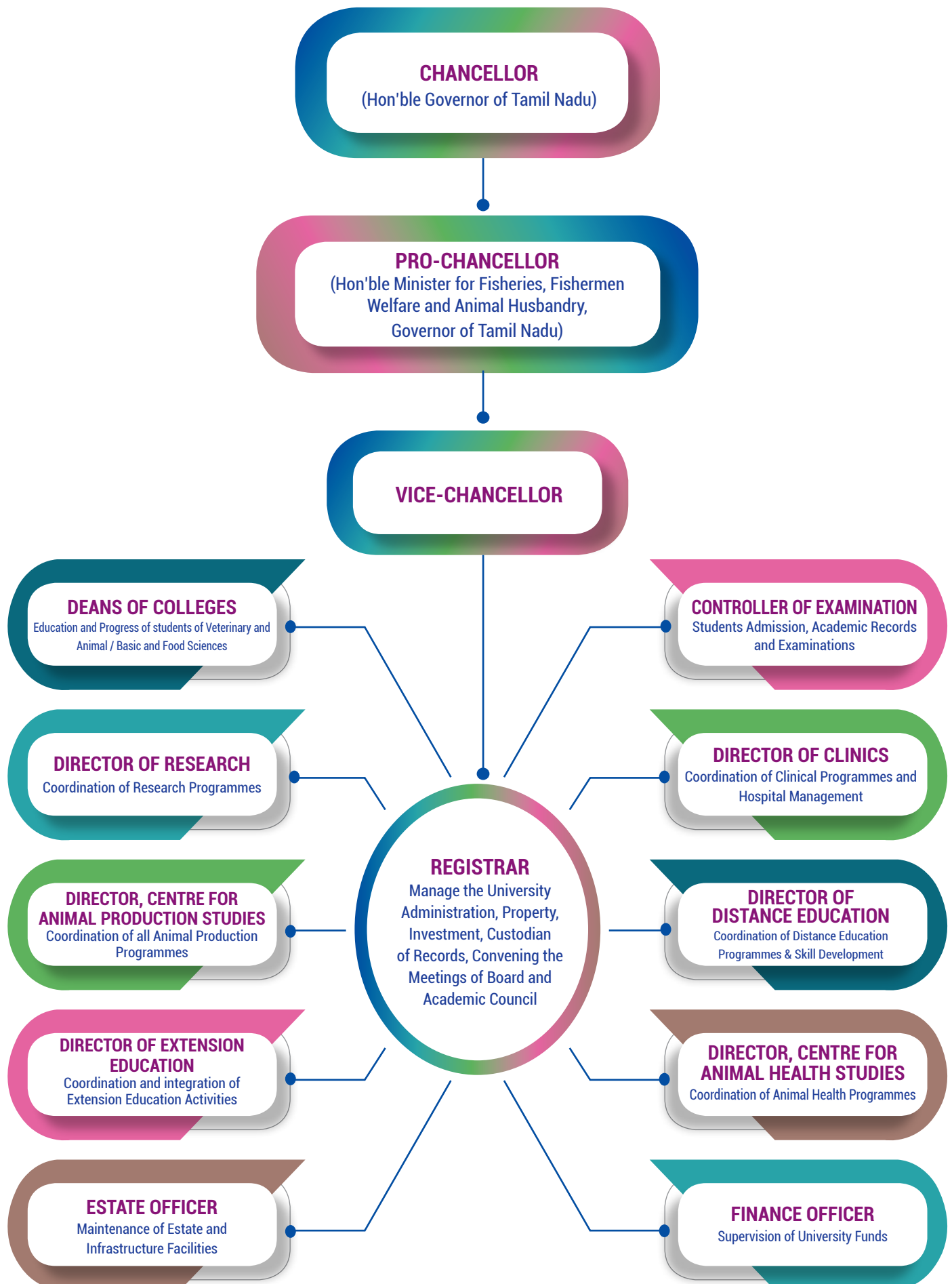
(8) Export promotion in the context of existing endemics and epidemics and OIE regulations - Though WTO has opened up new vistas for export of livestock products, existing bacterial, viral and parasitic diseases represent one of the most serious trade obstacles, as OIE regulations offer little scope for the countries where infectious diseases are prevalent, to internationally trade livestock products. While we can be proud of control and eradication of Rinderpest, much is still to be done with regard to foot and mouth disease, blue tongue and haemo-protozoan diseases if we are to remain competitive in world livestock trade.

To conclude, the ability of the Indian livestock sector needs to be tuned and strengthened to meet future challenges resulting from continuous demand growth. Following areas require special attention if growth in livestock productivity is to be achieved and sustained:

- ❖ Balancing livestock development with agro-eco-system preservation
- ❖ Laying greater stress on small ruminants
- ❖ Increasing livestock marketing efficiency
- ❖ Ensuring adequate supply of quality inputs
- ❖ Upgrading post-production technologies (processing, packaging, etc.) to meet the present day needs
- ❖ Conservation of vanishing Indian breeds of livestock
- ❖ Reorienting the livestock research priorities
- ❖ Evolving cost-effective disease control programmes based on studies in animal health economics
- ❖ Improving data base so as to ensure reliable results in productivity especially research productivity analysis.



ORGANIZATIONAL STRUCTURE OF TANUVAS



CONSTITUENT UNITS OF THE UNIVERSITY

CONSTITUENT COLLEGES (9)

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

INSTRUCTIONAL / RESEARCH FARMS (18)

- Post graduate Research Institute in Animal Sciences, Kattupakkam
- Sheep Breeding Research Station, Sandynallah
- Mecheri Sheep Research Station, Pottaneri
- Poultry Research Station, Madhavaram Milk Colony, Chennai
- Instructional Livestock Farms at 7 constituent Veterinary Colleges
- Regional Research and Education Centre, Pudukottai
- Institute of Animal Nutrition, Kattupakkam
- Central Feed Technology Unit, Kattupakkam
- Bargur Cattle Research Station, Bargur
- Kangayam Cattle Research Station, Erode
- Pulikulam Cattle Research Station, Manamadurai
- Alambadi Cattle Breed Research Centre, Dharmapuri

CLINICAL COMPLEX (10)

- Veterinary Clinical Complex at 7 Constituent Veterinary Colleges
- Resident Veterinary Services Section, Madras Veterinary College, Chennai
- Centralised Clinical Laboratory, Madras Veterinary College, Chennai
- Veterinary University Peripheral Hospital, Madhavaram, Chennai

CENTRES OF ADVANCED STUDIES (2)

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

CENTRE OF EXCELLENCE (1)

- Animal Biotechnology and Immunology, Madras Veterinary College, Chennai

LABORATORIES (16)

- Central University Laboratory, Madhavaram Milk Colony, Chennai
- Viral Vaccine Research Centre, Madhavaram Milk Colony, Chennai
- Bacterial Vaccine Research Centre, Madhavaram Milk Colony, Chennai
- Zoonoses Research Laboratory, Madhavaram Milk Colony, Chennai
- Centralised Clinical Laboratory, Madras Veterinary College, Chennai
- Pharmacovigilance Laboratory for Animal Feed and Food Safety, Madhavaram Milk Colony, Chennai
- Translational Research Platform for Veterinary Biologicals, Madhavaram Milk Colony, Chennai
- Laboratory Animal Medicine, Madhavaram, Chennai
- Poultry Disease Diagnostic and Surveillance Laboratory, Namakkal
- Animal Feed Analytical and Quality Assurance Laboratory, Namakkal
- Ethnoveterinary Herbal Research Centre for Poultry, Namakkal
- Avian Disease Laboratory, Thalaivasal
- Veterinary University Training and Diagnostic Centre, Madurai
- Centre for Stem Cell Research and Regenerative Medicine, Madras Veterinary College, Chennai
- Biosafety Level - III Laboratory, Madhavaram Milk Colony, Chennai
- Centralised Instrumentation Laboratory, Madras Veterinary College, Chennai

OUTREACH CENTRES

VETERINARY UNIVERSITY TRAINING AND RESEARCH CENTRES (20)

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

FARMERS TRAINING CENTRES (3)

- Kancheepuram, Theni and Tiruvarur

KRISHI VIGYAN KENDRAS (4)

- Kattupakkam, Kundrakudi, Namakkal and Villupuram

TECHNOLOGY INFORMATION CENTRE (1)

- Agricultural Technology Information Centre, Kattupakkam

SALIENT ACHIEVEMENTS OF THE UNIVERSITY

(i) Academic

- ❖ A total of 6,733 students completed their under-graduation, 2,265 post-graduation and 726 doctoral degrees, since 1989. In addition, 52 students have completed their PG Diploma and 387 students through distance education programmes on specialized areas to improve clinical skills and career opportunities.
- ❖ TANUVAS bestowed with the Sardar Patel ICAR Outstanding Institution Award for the year 2011.
- ❖ TANUVAS received the “NAIP Best Performance Award” from ICAR, New Delhi in 2012 for e-contents developed for B.V.Sc. & A.H.
- ❖ College of Food and Dairy Technology, Koduvalli has been recognized by All India Council for Technical Education (AICTE) for B.Tech and M.Tech in Food Technology



in 2008 and accredited to Indian Council of Agricultural Research (ICAR), for the Under graduate degrees offered by this institute . In addition, the College of Poultry Production and Management, Hosur has also been recognized by AICTE in 2017-18.



- ❖ TANUVAS commenced Polytechnic Courses in Animal Sciences, the first of its kind in Animal and Veterinary Sciences in India from 2012.
- ❖ First and second year subjects of B.V.Sc.&A.H. course were translated in Tamil language and the text books were published in 2012 and 2013 respectively in order to help the students hailing from rural areas.
- ❖ Established an Internet Kiosk at Madras Veterinary College in 2012.
- ❖ TANUVAS has bagged the prestigious Institutional Development Plan under National Agricultural Higher Education Programme to the tune of Rs. 28 crore in 2017-18.
- ❖ TANUVAS has established modern libraries in all its constituent colleges and automated with Koha Integrated Library Management System. State-of-the-Art technologies such



as RFID, CCTV Surveillance and Biometric Attendance System, implemented in all libraries. Digital library facility is available in all libraries with a rich collection of e-books and e-journals that are being subscribed by the University Library and accessed through the University Network.

- ❖ Digitisation of institutional publications is regularly done and they are available online through the university digital repository and also through *Krishi Kosh* Institutional Repository of ICAR. Among 73 SAUs, TANUVAS is the top contributor to the national digital repository with more than 20,000 documents.
- ❖ TANUVAS received the Masters Award from Indian Council of Agricultural Research, New Delhi for maximum number of JRF scholarships during the year 2020-21.
- ❖ TANUVAS has been ranked first among State Veterinary Universities and 12th among all Agricultural Universities as per ICAR ranking 2020.

(ii) Research

- ❖ Molecular characterization of south Indian breeds of cattle using microsatellite markers revealed closeness among Hallikar, Amritmahal and Krishna Valley and distinctness of Bargur, Pulikulam and Malaimadu cattle.
- ❖ Evolutionary relationship of sheep breeds of Tamil Nadu revealed two major clusters; one with the breeds of Western Ghats region



(Mecheri, Coimbatore and Nilagiri) and the other with breeds of rest of the region (Madras Red, Tiruchy Black, Kilakarsal and Vembur).

- ❖ *Ex-situ* conservation in the form of semen of Kangayam cattle and Toda buffaloes and embryos of Toda buffalo were cryopreserved. In addition, DNA repository of 1684 samples obtained from 10 cattle, 9 sheep and 4 goat breeds have been created.
- ❖ Established “Bargur Cattle Research Station” at Bargur, Erode district (2015), “Pulikulam Cattle Research Station” at Manamadurai, Sivaganga district (2018), “Kangayam Cattle Research Station” at Sathyamangalam, Erode district (2018) and “Alambadi Cattle Breed Research Centre” at Hanumanthapuram, Dharmapuri district (2019) to conserve native breeds of cattle.
- ❖ Established a “University Innovation and Instrumentation Centre (UIIC)” in 2015, and through this centre, hundreds of farm and utility equipment are designed and distributed.
- ❖ Established Veterinary Forensic Sciences Laboratory at Madhavaram Milk Colony in 2016-17 to assist in diagnosing emergency diseases and diagnosing vetero-legal cases of various poisoning.
- ❖ A mini slaughter unit approved by FSSAI for wholesome meat production and two small hatchery units at village level established in Tiruchirapalli district.





- ❖ Developed a safe and efficacious bluetongue multivalent inactivated adjuvanted vaccine using SEPPIC adjuvant.
- ❖ Developed molecular markers for specific and sensitive detection of toxigenic isolates of *A. flavus* by PCR and Real-time-PCR in quarantine inspections.
- ❖ Rumen fluid (a slaughter house waste) identified as a suitable and inexpensive medium for bioplastic production without any addition of substrates.
- ❖ Identified immunogenic proteins of *Mycobacterium avium* subsp. paratuberculosis by *in-silico* analysis and developed ELISA-based diagnostic assay using recombinant protein.
- ❖ An indigenous ABT Mini Encapsulator V500 developed for encapsulation of probiotic bacteria for laboratory scale up and the invention patented (2017).
- ❖ Bovine digesta at 1:3 ratio (Bovine digesta : soil) found useful for bioremediation of heavy metals - Cu, Cr, Zn and Pb present in the tannery effluent.

- ❖ A “Brucella Sera Panel Kit” (with sera samples calibrated to the OIE international reference sera standards) as national secondary sera standards developed to validate Brucella antibody diagnostic assays.
- ❖ Five full-length genome sequence of local isolates of PPRV from sheep and goats submitted to GenBank (KT270355, KT860063, KT860064, KT860065 and KX033350). Indigenous breeds of goats were found to possess higher levels of the pro-inflammatory cytokines and significantly higher levels of IL18 found both at basal and PPRV induced in Kanni breed of goats.
- ❖ BSL – III certification for the Biosafety lab of TANUVAS - 2022.
- ❖ The first female Kangayam calf “Vasumathi” was produced through embryo transfer on 07/01/2021.
- ❖ A “Zoonotic Disease Diagnostic Laboratory in the Cauvery Delta Region of Tamil Nadu is established for the diagnosis and management of zoonotically important diseases in the region during 2020-21.
- ❖ A resource centre is created during 2021-22 to conserve and propagate the indigenous Siruvidai chicken at Madhavaram, Chennai to supply genetically improved germplasm to farming community.
- ❖ An advanced Zoonoses Research Laboratory cum One Health Interface Platform (ZRL-OHIP) in the southern districts of Tamil Nadu is functioning since 2021-22 at VCRI, Tirunelveli for improving the public health.





- ❖ TANUVAS has, to its credit, many research projects being funded by nationally and internationally reputed organizations and agencies and at present (2021-22), a total of 179 projects with a total budget outlay of 50,585.46 lakh are in operation. Of which, 28 new schemes with a total financial outlay of 1470.22 lakh have been obtained during the last year.
- ❖ During the last year (2021-22), a total of 560 research articles, 422 popular articles, 18 books and manuals have been published by the faculty of TANUVAS.

(iii) Extension

- ❖ Best KVK award to *Krishi Vigyan Kendra* (KVK), Kattupakkam by the Indian Council of Agricultural Research in 2010.
- ❖ A “Grand Science Exhibition” conducted in commemoration of World Veterinary Year 2011 at Madras Veterinary College.
- ❖ With the pro-active support from Government of Tamil Nadu, TANUVAS conducted Regional Livestock Exhibitions in Seven regions of Tamil Nadu.
- ❖ Established a solar powered “Village Knowledge and Information Centre” (VKIC) by *Krishi Vigyan Kendra*, Kattupakkam in collaboration with Virginia Tech University, USA at Thalambedu village of Kancheepuram district during 2012.
- ❖ Established “Fodder Production Units” in *Meikkal Poromboke* lands in Villupuram and Vellore districts, in a total area of 65 acres and 80 acres, respectively.

- ❖ Introduced “Animal Mobile Medical Ambulance” (AMMA) services with toll free telephone number 1962 for rural veterinary care in Tamil Nadu.
- ❖ Offered free training through the University peripheral centres to all the beneficiaries of Tamil Nadu Government Scheme “Free Distribution of Milch Cows, Goat and Sheep” in rural areas, on scientific rearing.
- ❖ Twenty-five small scale food processing industries were created by entrepreneurs after undergoing training programme under iSTED project at CFDT, Koduvalli.
- ❖ *Pandit Deendayal Upadhyay Rashtriya Krishi Vigyan Protshahan Puraskar* award for the year 2018 conferred to *Krishi Vigyan Kendra* (KVK), Namakkal by the Indian Council of Agricultural Research.
- ❖ Indian Council of Agricultural Research identified *Krishi Vigyan Kendra* (KVK), Namakkal as the best NICRA-KVK of Zone X of ATARI for the year 2019.
- ❖ “*Jal shakti*” award - 2019-20 (Second prize) - first national water mission award from Ministry of *Jal shakti*, Government of India to KVK, Kundrakudi for increasing water use efficiency by 20 per cent through micro irrigation.
- ❖ Livestock and Poultry Exhibition in connection with the inauguration of Advanced Institute for Integrated Research on Livestock and Animal Sciences (AIIRLIVAS) and Veterinary College and Research Institute at Salem in 2020.
- ❖ “Mobile App for sheep and goat farmers” hosted in Google play store and TANUVAS website to disseminate the technology to the end-users during 2019-20.
- ❖ Farm Radio School programmes on “Profitable Goat Farming” and “Scientific Management Practices for Profitable Dairy Farming” were organised during 2020-21 and 2021-22 respectively, for the benefit of farmers.

DEVELOPMENT OF TECHNOLOGIES

PRODUCTS AND TECHNOLOGIES

1. Zona-free hamster egg penetration bioassay to assess the fertility of bovine spermatozoa (2002-03)
2. Packaging technologies for extending shelf life of meat and meat products (2003-04)
3. Electrical stimulator for spent chicken carcasses (2004-05)
4. Enriched paddy straw blocks (2004-05)
5. Custom egg hatching unit and modified egg candler (2005-06)
6. TANUVAS-RUSITEC (2005-06)
7. Synbiotic whey drink cultured with bifidobacteria (2006-07)
8. Disposal and utilisation of dead bird by aerobic composting (2007-08)
9. TANUVAS electrical Stunner (2007-08)
10. Pet food incorporating dry rendered spent hen meal (2008-09)
11. Software for formulating TANUVAS-SMART mineral mixture (2009-10)
12. TANUVAS mobile scalding tank (2010-11)
13. Anthelmintic Incorporated Mineral Block (AIM Block) for sheep and goats (2011-12)
14. Ethno-veterinary medicine using *Aloe vera* gel for the treatment of early mastitis in cows (2011-12)
15. n-3 fatty acids enriched chicken eggs and meat (2011-12)
16. SIS-LIVESTAN (Spatial Information System for Livestock Sector in Tamil Nadu) - (2011-12)
17. Fodder seed bank model for rain-fed conditions (2012-13)
18. Follicular wave synchronization for augmenting fertility in dairy cattle (2012-13)
19. Hind quarter elevator in a movable trolley for bovines (2012-13)
20. Low cost yoghurt making equipment (2012-13)
21. TANUVAS SMART mineral mixture for livestock (2012-13)
22. TANUVAS GRAND supplement (2012-13)



PRODUCTS AND TECHNOLOGIES



DIAGNOSTIC KITS



23. Plate Rod technique for the management of diaphyseal femur fracture (2013-14)
24. Progesterone impregnated intra-vaginal sponge (2013-14)
25. ICAR-TANUVAS mobile poultry processing unit (2014-15)
26. Quick Heal (Topical cream) – (2014-15)
27. Bovine Platelet Lysate (2015-16)
28. Dual type shed for goats and desi fowls to improve the productivity (2015-16)
29. EndoMetB - consortia of probiotic organism for intra-uterine applications in bovines (2015-16)
30. Photolyser – an instrument to nick DNA in dead cells to perform viability PCR (2015-16)
31. Portable static incubator (2015-16)
32. Mastiguard to monitor and maintain udder health (2017-18)
33. Nano-Iodine, Nano-Heal and Nano-Dermal cream for use in the teaching hospitals of Veterinary Colleges (2017-18)
34. Nano-IVMEC shampoo and Nano-IVMEC spot-on (2017-18)
35. Progesterone nano cream (2017-18)
36. Sure Heal – a collagen based wound healing spray (2017-18)
37. Teat protect spray for improving udder health (2017-18)
38. Teat spray, a value added product to reduce product wastage (2017-18)
39. Nano-Herbal Methicone lotion (2018-19)
40. Nano-Mediguaze (2018-19)
41. Probeads EC – a targeted delivery of probiotics in poultry (2018-19)
42. Solar tick trap with pheromones impregnated vapour patch as bait (2018-19)
43. Bovine Masti Cure Plus (2018-19)
44. Nano Sarcoid Cream (2018-19)
45. AMS Green Tea Beads for Coccidia (2018-19)
46. Pet bird cage (2019-20)
47. Milk replacer for early weaned piglet (2019-20)
48. Combined cream separator cum butter churn (2019-20)
49. Small backyard poultry cage (2019-20)
50. Cattle Body Weight Measuring Tape (2019-20)
51. Rapid intravenous fluid administration set (2019-20)
52. Oral infusion pump for cattle (2019-20)
53. Oestrus monitoring chart (2019-20)
54. TANUVAS Mobile App. for sheep and goat farmer (2019-20)
55. Tick shield - Ivermectin based “spot on” for the treatment of tick infestation in animals (2020-21)
56. Nano Methicon Lotion for external parasites ticks and fleas (2020-21)
57. Metero zinc gel to treat trichomoniasis, amoebiasis, inflammatory lesions of rosacea and bacterial infections (2020-21)
58. Oral gel for canine hygiene (2020-21)
59. Adoption of modified spacing in multicut fodder sorghum (CoFS-31) for mechanical harvesting (2020-21)
60. Active heal - specially formulated wound healing and fly repellent spray (2020-21)
61. Bud chip method: A potential in-vitro technology for Bajra-Napier hybrid (*Pennisetum glaucum* L.X *P. purpureum* Schum.) for sett multiplication (2020-21)
62. Thermo-reversible polymer for intra-mammary drug delivery (2021-22)
63. Oral hydrogel and chew formulations (2021-22)



VALUE-ADDED DAIRY AND MEAT PRODUCTS



VALUE-ADDED DAIRY AND MEAT PRODUCTS

1. Carotene-enriched milk beverage (2012-13)
2. TANUVAS pet feast and TANUVAS pet feast plus for adult dogs (2015-16)
3. Functional chicken patties with millets (2016-17)
4. Fruit pulp yoghurt (2017-18)
5. Omega-3 enriched chocolate (2017-18)
6. Millet ice cream (2017-18)
7. Vitamin D fortified ice cream (2017-18)
8. Gulab jamun mix preparation (2017-18)
9. Barbecued pork from low value head meat (2017-18)
10. Ghee residue candy with orange peel (2018-19)
11. Milk protein fortified fibre enriched noodles (2018-19)

12. Low cost whey concentrate enriched instant protein powder mix (2018-19)
13. Ghee residue chocolate (2018-19)
14. Papaya kalakhand (2018-19)
15. Paneer cookies (2019-20)
16. Turkey gizzard pickle (2019-20)
17. Turkey meat cutlet (2019-20)
18. Ready to eat meat pellets (2019-20)
19. Sweet paneer nuggets (2019-20)
20. Fibre enriched dairy products viz. milk lolly, yoghurt and mozzarella cheese using tamarind seed kernel powder (2020-21)
21. Functional probiotic chocobar incorporating fruit pulp and natural sweeteners (2020-21)
22. Ghee mysoorpa (2020-21)
23. Flavoured whey beverage (2020-21)
24. Channa poda (2020-21)
25. Meat Patties (2020-21)
26. Meat Nuggets (2020-21)
27. Meat balls (2020-21)
28. Meat samosa (2020-21)
29. Moist Pet food for adult dogs (2021-22)
30. Chicken meat pickle (2021-22)

DIAGNOSTIC KITS

1. Filter paper sampling technique for sero-monitoring of Newcastle disease virus vaccination in commercial chicken (1992-93)
2. Dipstick ELISA kit for Newcastle disease (1993-94)
3. PPRV Blocking ELISA kit (2001-02)
4. Infectious bursal disease agar gel immunodiffusion test kit (2003-04)
5. Ranikhet disease HI kit (2003-04)
6. Latex agglutination test kit for *Mycoplasma gallisepticum* antibody detection (2004-05)
7. EDS commercial flow through system (2005-06)
8. Shrimp disease diagnostic kit (2005-06)
9. Single dilution ELISA kit for Newcastle and Infectious Bronchitis antibodies (2005-06)
10. Diagnostic methods for PPR (2006-07)
11. Leptospira latex agglutination kit (2006-07)
12. Nipple aspirate fluid cytology in diagnosis of canine mammary cancer (2006-07)
13. AGID test kit for serological assessment of anthrax vaccine (2007-08)
14. CDV Check - Canine distemper virus antibody test kit (2008-09)
15. PPRV truncated recombinant nucleoprotein antigen (2008-09)

16. Flow through technique for diagnosis of hydatidosis (2009-10)
17. LipL41 recombinant antigen clone (2009-10)
18. Rapid latex agglutination test kit for chicken anaemia virus antibody screening (2009-10)
19. Nested PCR diagnostic kit for detection of hepatopancreatic parvovirus (HPV) (2010-11)
20. Detection of adulteration in fish meal (2011-12)
21. PCR kit for diagnosis of *Monodon baculovirus* (MBV) in shrimp (2011-12)
22. Lateral flow test for serodiagnosis of bovine brucellosis (2011-12)
23. ABT Choice – a nano-particle mediated kit (2012-13)
24. Antibacterial, antineoplastic pigment, prodigiosi from *Serratia marcescens* (2012-13)
25. Emu sexing kit (2012-13)
26. Multiplex PCR kit for detection of avian oncogenic viruses (2013-14)
27. Wild TB alert kit (2014-15)
28. Bovine ABT choice kit (2015-16)
29. LAMP device for performing isothermal PCR (2015-16)
30. TB alert kit (2015-16)
31. Bru alert kit – Monoclonal-based ELISA with high sensitivity for Brucella antibody detection (2016-17)
32. TANUVAS surgical scrub kit (2016-17)
33. A field based latex agglutination test for duck plague virus antigen as well as antibody detection (2017-18)
34. A kit for detection of A1/A2 casein in milk (2017-18)
35. Extraction method for detection of *Bacillus anthracis* DNA by triple-marker multiplex PCR (2017-18)
36. Rabies antibody detection kit for detection of Rabies and CPV antibodies simultaneously in dogs (2017-18)
37. TANUCHEK SCC count kit to determine the udder health (2017-18)
38. ABT Pan Detect Kit (2018-19)
39. Canine Dual Detect RAB-PAR (2018-19)
40. Evans Syndrome flow cytometry staining kit (2018-19)
41. Ketosis detection kit (2018-19)
42. Kilham rat virus ELISA kit (2019-20)
43. Minute virus of mice ELISA kit (2019-20)
44. Mouse hepatitis virus ELISA kit (2019-20)
45. Rat corona virus ELISA kit (2019-20)
46. PCR-based diagnosis panel for important haemoparasites of dogs (2019-20)
47. CRISPR/Cas12 assay-based detection for Ehrlichia canis and Babesia gibsoni genome in dog blood sample (2021-22)
48. CRISPR/Cas12 assay for the detection of ORF Virus genome from scab lesion (2021-22)
49. CRISPR/Cas12 assay for detection of Lumpy Skin Disease Virus in cattle (2021-22)
50. ELISA kit for sero-surveillance and diagnosis of Babesia gibsoni in dogs (2021-22)
51. Brucella Mab purification (AKTA Prime Plus (FPLC) for Bru Alert Kit Production (2021-22)

VACCINES DEVELOPED

1. Infectious bursal disease virus vaccine (Gumboro disease vaccine) – (1995-96)
2. Vaccine for hydropericardium syndrome in broilers (Leechi disease vaccine) – (1997-98)
3. Oral pellet vaccine for Newcastle disease (2002-03)
4. Homologous vaccine against PPR virus (2006-07)
5. Inactivated fowl cholera vaccine (2006-07)
6. Inactivated Newcastle disease vaccine for poultry (2006-07)
7. Goat pox vaccine (2015-16)
8. Vero cell rabies vaccine for animals (2006-07)
9. Anthrax vaccine for small ruminants (2007-08)
10. Bluetongue multivalent vaccine for sheep (2011-12)
11. Biofilm vaccine for pasteurellosis in sheep and goats (2012-13)
12. Live thermostable vaccine against Newcastle disease using D58 strain (2012-13)
13. TANUVAS infectious bronchitis vaccine (2013-14)
14. Collagen bead based delivery of Newcastle Disease vaccine (2015-16)
15. Nano particle based Newcastle disease vaccine (2015-16)
16. CPV-2b and CPV-VLP vaccines (2019-20)
17. Inactivated classical swine fever virus vaccine (2019-20)
18. Porcine circovirus type 2 (PCV2) capsid vaccine and viral vectored vaccines against animal pathogens (2021-22)
19. Macrophage enriched Theileria annulata schizont infected cell culture as potential anti-theileria vaccine candidate (2021-22)



VACCINES DEVELOPED



VARIETIES / STRAINS DEVELOPED



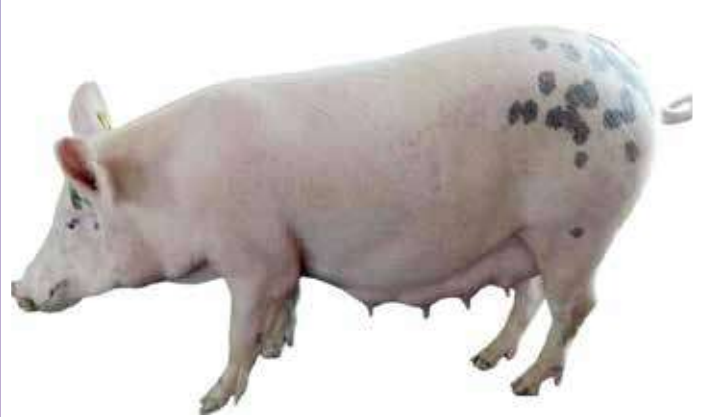
Sandyno sheep (1990)



Dorset x Nilagiri crossbred sheep (2012-13)



Low-fat crossbred pig (2012-13)



TANUVAS KPM Gold pig (2017-18)



Namakkal Chicken (2011-12)



TANUVAS Aseel Chicken (2017-18)



Nandanam Broiler III (2017-18)



Nandanam Chicken IV (2012-13)

VARIETIES / STRAINS DEVELOPED



Nandanam Quail III (2005)



Namakkal Quail 1 (2006-07)



Namakkal Gold Quail (2012-13)



Nandanam Breeder Quail (2012-13)



Nandanam Turkey I (2005)



Nandanam Turkey II (2011-12)



Nandanam Guinea Fowl I (2011-12)

MEMORANDA OF UNDERSTANDING / MEMORANDA OF AGREEMENT

(i) INTERNATIONAL RESEARCH INSTITUTES

2006	Michigan State University, Lansing, Michigan, USA
2007	Virginia Maryland Regional College of Veterinary Medicine, Virginia Tech University, USA
2008	University of Nebraska, Lincoln, USA
2011	- University of Arizona, Tucson, Arizona, USA - Virginia Polytechnic Institute and State University (Virginia Tech), Virginia, USA - Guangdong Ocean University, Guangdong, China - Bogor Agricultural University, Indonesia - University of Cantabria, Spain
2012	- Agri-Food and Biosciences Institute, Belfast, North Ireland - Ghent University, Belgium - Auburn University, USA
2013	- Wake Forest University, North Carolina, USA - Universitat Autònoma de Barcelona, Spain - Loma Linda University, California, USA - University of Glasgow, Scotland, UK
2014	University of Nottingham, UK
2017	- Chittagong Veterinary and Animal Sciences University, Chittagong, Bangladesh - Washington State University, Washington, USA - Oklahoma State University, Stillwater, USA
2020	Bangladesh Agricultural University, Mymensingh, Bangladesh
2022-2027	Oklahoma State University, Stillwater, USA



(ii) NATIONAL RESEARCH INSTITUTES

2011	• Remount Veterinary Services of Indian Army for skill development training for clinical subjects • Agricultural and Processed Food Products Export Development Authority (APEDA), New Delhi • National Meat & Poultry Processing Board, New Delhi
2012	• National Research and Development Corporation, New Delhi
2013	• Laboratory Animal Scientists Association (LASA) and National Institute of Animal Welfare/Committee (NIAW) to offer FELASA “C” type training to veterinarians • Commonwealth Veterinary Association, Bengaluru • Entrepreneurship Development Institute, Chennai • National Institute of Animal Welfare, Haryana • National Research Centre on Meats, Hyderabad
2016	• Central Council for Research in Siddha, Govt. of India
2018	• Central Institute of Brackishwater Aquaculture (CIBA), Chennai • Remount Veterinary Services, New Delhi • National Institute for Animal Nutrition and Physiology (NIANP), Bengaluru • Agriculture Skill Council of India (ASCI), Haryana • Indira Gandhi National Open University (IGNOU), Chennai
2019	• Umbrella MoU with ICAR, New Delhi • Sri Ramachandra Institute of Higher Education and Research (SRIHER), Chennai • GVK Emergency and Research Institute (GVK-EMRI), Secunderabad • KJ Research Foundation, Chennai • Government Stanley Hospital, Chennai • BAIF – Development and Research Foundation, Pune



2020	• Remount Veterinary Services, New Delhi • Tamil Nadu Dr. MGR Medical University, Chennai • Aeon Formulations Pvt. Ltd, Chennai
2021	• SRM Institute of Science and Technology, Kattankulathur • Indian College of Laboratory Animal Medicine, Salem • Pasteur Institute of India, Coonoor • BSA Crescent Institute of Science and Technology - Crescent Innovation and Incubation Council • Mecton Organic Farms Pvt. Ltd, Chennai • Thai Thirunaal Agro Foods Pvt. Ltd, Coimbatore • Laboratory Animal Scientist Association • Tirumala Milk Products Private Limited, Chennai and ASSIST Development Solutions, Chennai • ICAR-Central Island Agricultural Research Institute, Port Blair, Andaman and Nicobar • Tamil Nadu Agricultural University, Coimbatore • Central Council for Research in Siddha, Chennai
2022	• Tamil Nadu Agricultural University, Coimbatore • Tamil Nadu Rural Transformation Project (TNRTP), Chennai • Madras Crocodile Bank Trust, Chennai • TICEL Bio Park Ltd, Chennai



TANUVAS TECHNOLOGIES COMMERCIALIZED

YEAR	INDUSTRIES / R & D INSTITUTIONS	TECHNOLOGY
2009	Globion India Pvt. Ltd., Secunderabad	Commercialisation of Lentogeneic Newcastle disease virus strain TANUVAS – D 58 for vaccine production
2010	EgaTools and Instruments, Chennai	Commercialisation of TANUVAS – RUSITEC apparatus
2010	Biovet Pvt. Ltd., Bengaluru	Commercialisation of inactivated fowl cholera vaccine
2010	Fort Pharma, Chennai	Commercialisation of Lip L.32 recombinant antigen latex agglutination kit for detection of leptospiral antibody
2010	Medox Biotech India Pvt. Ltd., Chennai	Commercialisation of single radial immune- diffusion test kit
2011	Indian Immunologicals Ltd., Hyderabad and Biovet Pvt. Ltd., Bengaluru	Commercialisation of multivalent inactivated vaccine against blue tongue
2012	Royal Swine Genetics, Coimbatore	Commercialisation of TANUVAS anthelmintic incorporated mineral block
2012	Sanvita Biotechnologicals Pvt. Ltd., Hyderabad	Commercialisation of bluetongue inactivated vaccine with seed virus
2013	Medox Biotech Ltd., Chennai	Immunology teaching kits
2013	VR3 Emu farms and Hatchery Unit	Emu sexing kit
2016	Venkateswara Hatcheries Ltd., Pune	Commercialisation of rapid plate agglutination for <i>Mycoplasma gallisepticum</i>
2016	Brilliant Bio-Pharma Ltd., Hyderabad	TANUVAS live attenuated goat pox vaccine
2016	Endhiram Innovations LLP, Chennai	Photolyser, Portable static incubator and LAMP device
2016	Hester Biosciences Ltd., Gujarat	Nanoparticle-based Newcastle disease vaccine, collagen bead-based delivery and bovine platelet lysate
2016	Genomix Healthcare India Pvt. Ltd., Hyderabad	Bovine TB Alert kit, ABT Choice kit and EndoMet-B
2017	Brilliant Bio-Pharma Ltd., Hyderabad	TANUVAS multivalent bluetongue inactivated vaccine
2019	Palamur Biosciences Pvt. Ltd., Hyderabad	Canine Parvo Virus Like Particle based vaccine
2019	Illume Gene Pvt. Ltd, Bengaluru	PCR-based diagnosis panel for important haemoparasites of dogs
2020	Transcience Innovative Technologies Ltd., Chennai	Canine Parvo low passage high titre C2b vaccine strain
2021	Biovet Pvt. Ltd. (BPL), Bengaluru	Inactivated classical swine fever virus vaccine Live attenuated classical swine fever vaccine Inactivated porcine circovirus 2 vaccine
2022	Biovet Pvt. Ltd. (BPL), Bengaluru	Vero cell adapted Lumpy skin disease virus strain

LINKAGE WITH INDUSTRIES AND RESEARCH AND DEVELOPMENT INSTITUTIONS

YEAR	INDUSTRIES / R & D INSTITUTIONS	PURPOSE
2010	Mediclone Biotech Pvt. Ltd., Chennai	Production and characterisation of monoclonal antibodies against street rabies virus
2012	Orchid Research Laboratories, Chennai	Project implementation on effect of PDE4 inhibitors on osteoarthritis of the canine hip and stifle joint
2012	Carbon Neutrals Energy Pvt. Ltd., Andhra Pradesh	Providing technical expertise in the operation of meat and poultry mega food park at Andhra Pradesh
2012	Pfizers Pharmaceutical India Pvt. Ltd., Mumbai	Research work on study of prevalence of Mannheimia haemolytica in India
2012	Kemin Industries South Asia Pvt. Ltd., Chennai	Trials on Kemin products and organising training and seminars in nutrition and health
2014	Indian Immunologicals Ltd., Hyderabad	PPRV truncated nucleoprotein antigen and LipL41 leptospira clone
2014	Charoen Pokphand Foods India Pvt. Ltd., Chennai	To offer skill development programmes
2018	Indira Gandhi National Open University (IGNOU)	Programme Study Centre of IGNOU at MVC, Chennai under the control of Directorate of Distance Education to offer diploma and certificate courses
2019	GVK Emergency and Research Institute (GVK-EMRI), Secunderabad	To work for common interest including training, animal care and academic research
	BAIF Development Research Foundation, Pune	To develop joint research programmes with a focus on animal breeding, genomics, nutrition and health and also validate and adopt the technologies developed both by TANUVAS and BAIF in their research and development programmes
	EID Parry (India) Ltd, Chennai	To have joint research programmes focusing on animal nutrition, animal health and livestock breeding
2020	Aeon Formulations Pvt. Ltd, Chennai	Utilizing the facilities at Bioinformatics Centre, MVC, Chennai for collaborative research through different herbal products
2021	Mecton Organic Farms Pvt. Ltd, Chennai	To facilitate knowledge partnership for establishment of chevon processing unit, hygienic processing and better marketing and for academic purpose
	Thai Thirunaal Agro Foods Pvt. Ltd, Coimbatore	
	Tirumala Milk Products Private Limited, Chennai and ASSIST Development Solutions, Chennai	To promote and accelerate the education of dairy farmers in sustainable dairy management practices through trainings and awareness programmes
2022	Madras Crocodile Bank Trust, Chennai	For expanding and revitalizing the field of reptile medicine and management
	TICEL Bio Park Ltd, Chennai	To collaborate with VIF@TANUVAS activities in promoting entrepreneurship

PATENTS GRANTED

Patents have been granted for the following 20 inventions of TANUVAS for a period 20 years from the date of grant.

S. No.	Title of the Invention	Patent No.	Granted on
1	Polymerase Chain Reaction (PCR) primers for detection of white-spot syndrome virus (WSSV) in Shrimp	275441	02.09.2016
2	Development of primers for detection of hepato-pancreatic parvo virus (HPV) in shrimp by Polymerase Chain Reaction (PCR)	300445	29.08.2018
3	A test strip for qualitative detection of antibodies to <i>peste des petits ruminant virus</i>	243290	04.10.2010
4	Improved egg candler	305814	17.01.2019
5	An improved bird cage	316308	18.07.2019
6	RYZ cream composition and process for preparation thereof	319676	02.09.2019
7	A mobile scalding tank for scalding birds	342259	23.07.2020
8	A rapid field test kit for chicken anaemia virus antibody detection	347388	22.09.2020
9	ABT mini encapsulator	347623	24.09.2019
10	An <i>in vitro</i> molecular method for identifying gender in Emu	349823	22.10.2020



S. No.	Title of the Invention	Patent No.	Granted on
11	Nano-Biomarker coupled Newcastle Disease Vaccine	349908	22.10.2020
12	A novel method to diagnose small ruminants with potential resistance to blue tongue	353468	11.12.2020
13	Biodiesel production from rendered chicken oil	371344	07.07.2021
14	Multiplex PCR primers for detection of fowl oncogenic viruses	379484	20.10.2021
15	An Agar Gel Immunodiffusion (AGID) test kit for serological assessment of Anthrax vaccine	379854	25.10.2021
16	A process for preparing Montanide absorbed Anthrax spore vaccine	383240	30.11.2021
17	Development of anti-microbial paper egg trays using airless spray surface coating approach based with antimicrobial hybrid mixture (NANO EGG GUARD)	370354	25.06.2021
18	Genotype-specific cell culture vaccine for Newcastle Disease	391161	04.03.2022
19	Nutraceutical chocolate fortified with omega 3 fatty acid derived from Chia seed variants.	392041	15.03.2022
20	Least calorific and low fat pearl millet ice cream fortified with antioxidants derived from musk melon	393700	30.03.2022

INTELLECTUAL PROPERTY INDIA
GOVERNMENT OF INDIA
THE PATENT OFFICE
PATENT CERTIFICATE
(Form 1 as per the Patents Act, 1970)

SL No: 349908

Patent No.: 349908
Application No.: 774/CHE/2011
Date of Filing: 14/03/2011
Patentee: TAMILNADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY (TANUVAS)
Inventor(s): K. V. PURUSHOTHAMAN & PARIMAL ROY S.B. BALADANESAN

It is hereby certified that a patent has been granted to the patentee for an invention entitled "A PROCESS FOR PREPARING MONTANIDE ABSORBED ANTHRAX SPORE VACCINE" as disclosed in the above mentioned application for the term of 20 years from the 14th day of March 2011 in accordance with the provisions of the Patents Act, 1970.

INTELLECTUAL PROPERTY INDIA
DESIGNS, TRADE MARKS, GEOGRAPHICAL INDICATION

Office of Grant: 30/11/2021
Date of Grant: 30/11/2021

INTELLECTUAL PROPERTY INDIA
GOVERNMENT OF INDIA
THE PATENT OFFICE
PATENT CERTIFICATE
(Form 1 as per the Patents Act, 1970)

SL No: 392041

Patent No.: 392041
Application No.: 301441/1/2020
Date of Filing: 31/03/2018
Patentee: College of Food and Dairy Technology, Tamil Nadu Veterinary and Animal Sciences University
Inventor(s): Baskaran Chamar & Poornima Senguliam

It is hereby certified that a patent has been granted to the patentee for an invention entitled "NUTRACEUTICAL CHOCOLATE FORTIFIED WITH OMEGA 3 FATTY ACID DERIVED FROM CHIA SEED VARIANTS" as disclosed in the above mentioned application for the term of 20 years from the 31st day of March 2018 in accordance with the provisions of the Patents Act, 1970.

INTELLECTUAL PROPERTY INDIA
DESIGNS, TRADE MARKS, GEOGRAPHICAL INDICATION

Office of Grant: 15/03/2022
Date of Grant: 15/03/2022

ABSTRACT OF VISION 2020 – A SELF APPRAISAL

In Vision 2020 document of the University, vision and mission statements were conceptualized to offer direction to an organization and to increase organizational success. In the year 2005, TANUVAS put forth its VISION-2020 statements with monitorable indicators. The last ten years between 2010 and 2020 was the most transformative decade in the university's history. With its adoption of a new strategic plan - Vision 2020, the University set out on a path of unprecedented growth towards its achievement as the best State Agricultural University in the country and strived towards the pinnacle of veterinary education, research and extension.

The University has made great strides towards excellence in every sphere of veterinary, animal and food sciences against the monitorable targets set in the Vision-2020 document. TANUVAS also has the unique distinction of having developed e-Courses for B.V.Sc.&A.H. and B.F.Sc. degree programmes, the first of its kind in the country. The University established a separate Directorate of Distance Education in 2011 to offer various diploma and skill development programmes. The University has developed and released improved sheep, pig and avian varieties, vaccines and diagnostic kits for the prevalent, emerging and re-emerging economically important diseases affecting livestock, poultry and fisheries, 21 post-production technologies and more than 100 livestock, poultry and fish farm management technologies, besides receiving patents for 12 of its technologies.

The University has created and upgraded many state-of-the art laboratories, notably, Centre for Stem Cell Research and Regenerative Medicine (CSCRRM), Translational Research Platform for Veterinary Biologicals (TRPVB), Biosafety level-3 (BSL-3) laboratory with small animal experimentation facility, NABL accreditation for laboratories, University Innovation and Incubation Centre, Veterinary Incubation Foundation and Ethno-Veterinary Herbal Research Centre. TANUVAS has also established new farms to conserve indigenous breeds of cattle, sheep and goat. In order to execute extension programmes and field-based research, nine VUTRCs and one KVK were established under the ambit of TANUVAS, after the release of Vision-2020 document.

Quantitatively, the University has accomplished 70 per cent of targets set in the Vision-2020 document. Most of the target indicators were achieved, while some of them are still continuing and others are fine-tuned to suit to the present scenario. It is worth to mention that, responding to the emerging needs and technologies, the University has also established exclusive centres, unique courses and novel products, beyond the contemplations of Vision-2020 document. With this experience, TANUVAS has a well-set distinct road map in the form of VISION-2030, for furtherance in the fields of education, research and extension, through its well-sprung wings throughout the state to cater to the needs of stakeholders.



SWOC ANALYSIS

Strengths	Weaknesses	Opportunities	Challenges
❑ Apart from having nine constituent colleges, nationally and internationally recognized laboratories and research farms, TANUVAS also has at least one training and research centre in each district of the State to cater to the needs of livestock and poultry farmers ❑ Highly trained and experienced teaching faculty to offer excellent curriculum delivery and carry out high quality research ❑ Well equipped teaching infrastructure with ultra-model smart classrooms and pedagogical tools ❑ Availability of sophisticated lab equipment for carrying out need-based research ❑ Well established instructional farms ❑ Well developed extension facilities / infrastructure for propagation of technologies from lab to farms	❑ Shortage of qualified and trained support staff ❑ Less than required coordination with line departments mainly in control of epidemics and extension activities ❑ Difficulty in establishing closely-knit network with poor farmers through ICT tools like Mobile Apps, for dissemination of knowledge and skills to farmers and collection of field data ❑ Training on general educational and pedagogical technology, especially to newly recruited faculty ❑ Less adequate initiatives in tapping the financial sources for research grants	❑ Pro-farmer initiatives by both Central and State Governments ❑ TANUVAS having academic and research linkages with many premier institutions across the world and within the country ❑ Willingness of farmers and emerging livestock and poultry entrepreneurs to adopt new technologies for the sectoral growth ❑ Growing demand for livestock and poultry products, acting as incentives for increased livestock and poultry production ❑ Occasional failure of crop production due to drought and vagaries of nature resulting in increasing dependence of farmers on livestock and poultry for their livelihood ❑ Possibility of funding from public and private sectors from national and international agencies to promote veterinary education and research ❑ World trade regulations opening up new vistas for export of livestock and poultry products	❑ Less flexible veterinary curriculum ❑ Occasional outbreak of infectious diseases affecting production adversely ❑ Inadequate feed and fodder, deterioration of grazing lands, shrinking CPRs, seasonality of availability, in relation to their demand ❑ Unpredicted and uncontrollable climate change and drought deteriorating the wealth of the livestock ❑ Prices of a few livestock products not being fixed by producers and exploitation by middlemen during marketing ❑ Food safety concerns relating to antibiotic and toxic residues in livestock products affecting export possibilities ❑ Preference for non-farming avocations among rural youth, due to increasing urbanization ❑ Less adequate public funding for research in the sector



AIMS AND GOALS FOR SHORT / MEDIUM AND LONG-TERM PLANS

1. TEACHING



AIM

- To produce highly-skilled, industry-ready and employable graduates for promoting livestock, poultry and food sectors

Goals

1. Strengthening undergraduate and postgraduate teaching by integrating conventional classroom teaching with modern pedagogical approaches in veterinary, animal and food sciences
2. Development of essential clinical skills among students to protect the health of livestock and poultry
3. Imparting knowledge in the fields of bioinformatics, biotechnology, nano-technology, stem cell biology and veterinary regenerative medicine
4. Development of entrepreneurial skills among students to encourage them to seek employment outside the public sector too and to set up self-employment units
5. Ensuring international exposure to the students
6. Development of human resources in research and services related to one-health concept
7. Offering new courses in veterinary, animal, poultry and food sciences



SHORT / MEDIUM-TERM ACTION PLANS (2020-25)

Goal 1

Strengthening undergraduate and postgraduate teaching by integrating conventional classroom teaching with modern pedagogical approaches in veterinary, animal and food sciences

Tasks / Activities

- Delivering in-class and online lectures through blended teaching and learning using audio-visual aids, problem-based learning modules, high order thinking skills, online assignments and examination
- Development of eCourses for PG programmes and revamp eCourses for BVSc & AH already developed to suit the present needs to assure anytime – anywhere learning

- Establishment of ICT-enabled Smart Class Rooms for achieving excellence in UG and PG education initially in ICAR accredited colleges
- Creation of 'wifi-enabled' campus for students and faculty facilitating them to connect to college / hostel / university administration and global information resources for remote learning

- Encouraging students to participate in various technical forums, such as seminars, conferences, etc. organized at national and international levels to enable them to learn the latest technologies in the relevant subject area

- Implementation of teacher evaluation by the students at the end of every unit / semester / professional year

- Digital archiving of past clinical cases and enable students 24x7 accessibility for better clinical learning

- Implementation of experiential learning programmes to undergraduate students to develop entrepreneurial skills on livestock and poultry production, post-production technologies and marketing of livestock products

- Sustaining Industry-Institute collaboration for providing industrial exposure and hands-on training on different areas and enabling entrepreneurship development

Responsible person(s) by designation

Faculty members of all the constituent colleges

Deans of all the constituent colleges and ICAR Nodal Cell

Faculty members of all the constituent colleges

Course teachers and Faculty members of Education Cells of all the constituent colleges

Faculty members of the Clinical Departments of the University

Faculty members of husbandry and food science subjects

Faculty members of Livestock Business Management and other related departments

Updating curriculum periodically to the changing needs of the food and poultry industries	Deans and HoDs of Education Cells of College of Food and Dairy Technology and College of Poultry Production Management
Improvement of extra-curricular activities like NSS, NCC, sports and cultural programmes to inculcate the need for societal development and also to develop concerns for personality development among students	Deans of all the constituent colleges
Goal 2 Development of essential clinical skills among students to protect the health of livestock and poultry	
Tasks / Activities	
Establishment of Wet-lab for hands on clinical training, surgical simulators and virtual procedures, tele-examination of animals, and problem-based and inquiry-based learning on biochemical and physiological processes	Faculty members of Clinical Departments, Veterinary Physiology and Biochemistry, and Veterinary Pathology
Enhancement of experiential learning and entrepreneurial training on various domains of veterinary services	Faculty members of the Clinical Departments of the University
Goal 3 Imparting knowledge in the fields of bioinformatics, biotechnology, nano-technology, stem cell biology and veterinary regenerative medicine	
Tasks / Activities	
Development of problem-based learning in bioinformatics, biotechnology, nano-technology, stem cell biology and veterinary regenerative medicine	Faculty members of Bioinformatics, Biotechnology, Nano-Technology, Stem Cell Biology, Veterinary Regenerative Medicine and other related subjects

Goal 4

Development of entrepreneurial skills among students to encourage them to seek employment outside the public sector too and to set up self-employment units

Tasks / Activities

- Strengthening and revamping the existing PGDBM (Animal Sciences) and MBA courses through rigorous training on business and financial management and entrepreneurial skills and appraise them of the desired demands in terms of knowledge and skills for the industries to improve employability of the students

Faculty members of Animal Husbandry Economics, Livestock Business Management, Animal Husbandry Statistics and Computer Applications, University Students' Counselling and Placement Cell, and Entrepreneurial Development Cell

- Creation and support of start-up opportunities in livestock, poultry and food enterprises for students

Faculty members of Livestock Business Management, Animal Husbandry Extension and Students' Counselling and Placement Cell and Directorate of Centre for Animal Health Studies and Directorate of Extension Education

Goal 5

Ensuring international exposure to the students

Tasks / Activities

- Sustaining / strengthening the student and faculty exchange programmes and sabbatical leave for faculty with International and National Institutes of repute to expose both the students and the faculty to the latest and emerging techniques and technologies in animal production and protection

Deans of all the constituent colleges and Faculty members of the University

Goal 6

Development of human resources in research and services related to one-health concept

Tasks / Activities

- Offering specialised training programmes for advanced research in the fields of one health / epidemiology / infectious diseases for medical and veterinary health professionals

Faculty members of the health departments of the colleges and Directorate of Centre for Animal Health Studies

Goal 7

Offering new courses in veterinary, animal, poultry and food sciences

Tasks / Activities

- Starting a certificate course on health management of elephants in distance mode

Faculty members of the concerned departments of the University

- Starting new diploma courses (both on campus and off campus) in Dermatology, Gastroenterology, Orthopedics, Soft Tissue Surgery, Small Animal Reproduction, Emergency Medicine, Cancer Medicine, and Ultrasonography techniques

Faculty members of the Clinical Departments of the University

- Starting new diploma courses in Meat Processing and in Meat Inspection

Faculty members of the departments of LPT of veterinary colleges

- Commencing new specialized certificate programmes on (i) One Health and (ii) Biosafety to the graduates of veterinary science and medical science

Faculty members of Zoonosis Research Laboratory

- Starting a new certificate course on maintenance and operation of BSL-3 units

Faculty members of Zoonosis Research Laboratory and Biosafety Officer, BCADL

- Starting a new PG Diploma / Certificate course in Laboratory Animal House management

Faculty members of Lab Animal Medicine

LONG-TERM ACTION PLANS (2020-30)

Goal 1

Strengthening undergraduate and postgraduate teaching by integrating conventional classroom teaching with modern pedagogical approaches in veterinary, animal and food sciences

Tasks / Activities

- Transforming teaching – learning process into more of a blended one, coupling traditional chalk and talk methods, online lectures, interactive modules, mobile apps, webinars and online assignments and examinations
 - Development of eCourses for all the UG, PG, PG diploma and Certificate programmes and to assure anytime – anywhere learning
 - Establishment of ICT-enabled Smart Class / Virtual Rooms and use simulation models for achieving excellence in UG and PG education in all the constituent colleges
 - Support creation of websites / blog by the teachers to enhance students' learning
 - Ensuring a completely 'wifi-enabled' campus for students and faculty to facilitate them to connect to college / hostel / university administration and global learning resources
-
- Starting MOOC courses on different topics / concepts in animal, veterinary and food sciences to enable students to achieve learning
-
- Obtaining NBA accreditation for UG courses viz., BTech (FT), BTech (DT) and BTech (PT)

Responsible person(s) by designation

Deans and faculty members of all the constituent colleges

Faculty members of animal, veterinary and food sciences

Deans of the colleges concerned

Goal 2

Development of essential clinical skills among students to protect the health of livestock and poultry

Tasks / Activities

- Establishment of Wet-lab for hands on clinical training, surgical simulators and virtual procedures, tele-examination of animals and problem-based and inquiry-based learning on biochemical and physiological processes

Directorate of Clinics and Faculty members of Clinical Departments, Veterinary Physiology, Veterinary Biochemistry and Veterinary Pathology

- Development of Specific Clinical Skill Development Centre across all veterinary college hospitals for education and skill training
- Obtaining accreditation from reputed organizations for educational and skill development programmes
- Introducing Artificial Intelligence and Big Data for education of next generation graduates on disease and health monitoring

Directorate of Clinics and Faculty members of Clinical Departments

Goal 3

Imparting knowledge in the fields of bioinformatics, biotechnology, nano-technology, stem cell biology and veterinary regenerative medicine

Tasks / Activities

- Development of new generation approaches in bioinformatics, biotechnology, nano-technology, stem cell biology and veterinary regenerative medicine for development of vaccines and diagnostics and clinical management of ailing livestock and poultry

Faculty members of Bioinformatics, Biotechnology, Nano-Technology, Stem Cell Biology, Veterinary Regenerative Medicine and other related subjects

Goal 4

Development of entrepreneurial skills among students to encourage them to seek employment outside the public sector too and to set up self-employment units

Tasks / Activities

- Establishment of a Centre of Excellence in Livestock Economics, Statistics and Business Development
- Creation and support of start-up opportunities in livestock, poultry and food enterprises for students

Faculty members of Animal Husbandry Economics, Livestock Business Management, Animal Husbandry Statistics and Computer Applications, and Entrepreneurial Development Cell

Faculty members of Livestock Business Management, Animal Husbandry Extension and Students' Counselling and Placement Cell and Directorate of Centre for Animal Health Studies

Goal 5

Ensuring international exposure to the students

Tasks / Activities

- Sustaining / strengthening the student and faculty exchange programmes and sabbatical leave for faculty with International and National Institutes of repute to expose both the students and the faculty to the latest and emerging techniques and technologies in animal production and protection

Deans of all the constituent colleges and Faculty members of the University

Goal 6

Development of human resources in research and services related to one-health concept

Tasks / Activities

- Offering specialised training programmes for advanced research in the fields of one health / epidemiology / infectious diseases for medical and veterinary health professionals

Faculty members of the health departments of the colleges and Directorate of Centre for Animal Health Studies

Goal 7

Offering new courses in veterinary, animal, poultry and food sciences

Tasks / Activities

- Starting a new certificate course on health management of elephants, poultry health and laboratory techniques
- Starting new diploma courses in Cardiology, Nephrology, Radiology, Assisted Reproductive Technology, Transfusion Medicine and Ultrasonography
- Starting a new diploma course on Nutritional Novelties for Livestock and Poultry

Faculty members of the concerned departments

Faculty members of the Clinical Departments

Faculty members of the Animal Nutrition department of the veterinary colleges

- Starting a new PG course - MBA in Veterinary Hospital Management

Faculty members of the departments of clinical sciences, AH Economics, Livestock Business Management, and Animal Husbandry Statistics and Computer Applications of Madras Veterinary College

- Starting a new PhD programme in Biostatistics
- Starting a new PG Diploma programme in Applied Biostatistics

Faculty members of the department of AH Economics and AH Statistics and Computer Applications of Madras Veterinary College

- Starting a new Ph.D. programme in Poultry Technology

Faculty members of the College of Poultry Production and Management

- Starting a new PG Diploma programme in Food Processing

Faculty members of the College of Food and Dairy Technology

- Starting new Post-Doctoral Programmes and Fellowships in Dermatology, Cardiology, Gastroenterology, Nephrology, Orthopedics, Soft Tissue Surgery, Radiology, Small Animal Reproduction, Assisted Reproductive Technology, Emergency Medicine, Transfusion Medicine, Cancer Medicine, Ultrasonography and Advanced Imaging

Directorate of Clinics and Faculty members of Clinical Departments

2. RESEARCH



Kangayam Calf - Through Embryo Transfer



2.1. LIVESTOCK AND POULTRY PRODUCTION

AIM

- Evolving state-of-the-art approach or strategies for enhancing the livestock and poultry productivity through genomic, nutritional, environmentally-integrated and field-oriented research

Goals

1. Characterization, conservation and utilization of indigenous animal genetic resources of Tamil Nadu through modern genomic approaches
2. To undertake research on livestock farming, resilient to biotic and abiotic stressors, recent technologies to augment livestock and poultry production, efficient waste management and water quality assessment
3. Development of data-based nutritional information system, antibiotic-free feed additives, novel bio-available nutrient supplements, methane mitigation strategy, precision feeding system for livestock and poultry
4. Genetic characterization, performance evaluation, scientific feeding management and conservation of different poultry germplasm; and automation in commercial poultry farming
5. Breeding and performance evaluation of diversified poultry species
6. Developing programmes to improve and sustain health of natural resources
7. To undertake need based research to address regional challenges in livestock and poultry subsectors
8. To develop IT based solutions for livestock farm management



SHORT / MEDIUM-TERM ACTION PLANS (2020-25)

Goal 1

Characterization, conservation and utilization of indigenous animal genetic resources of Tamil Nadu through modern genomic approaches

Tasks / Activities

- Assessment of the population status and characterization of lesser known cattle germplasm - Malai madu
- Establishment of "Genome Resource Bank" for conservation of livestock genetic resources i.e. Ex-situ conservation of gametes, embryo and DNA from cattle, sheep and goat breeds of Tamil Nadu for posterity
- Identification of genetic diversity and establishment of breed signature for native cattle and sheep breeds of Tamil Nadu
- Assessment of draught potential and improvement of draught breeds of cattle in Tamil Nadu
- Prediction of semen production potential of dairy studs using machine-learning approaches
- Genetic upgradation of non-descript goats using recognized native breeds (Kanni, Kodi and Salem Black) through artificial insemination
- Selection of disease resistant crossbred cattle
- Conservation of small ruminant and canine germplasm of southern Tamil Nadu

Responsible person(s) by designation

Faculty members of Animal Genetics and Breeding, Veterinary Gynaecology and Obstetrics, and Centre for Animal Production Studies

Goal 2

To Undertake research on livestock farming, resilient to biotic and abiotic stressors, recent technologies to augment livestock and poultry production, efficient waste management and water quality assessment

Tasks / Activities

- Quality research on livestock management and adoption of recent technologies to augment livestock production
- Effect of climate change on physiological parameters of livestock and methods to mitigate
- Technological interventions in small ruminant husbandry for empowerment of rural community

Faculty members of Livestock Production Management, Veterinary Physiology and Biochemistry

- Quality assessment of drinking water for livestock production
- Characterization and value addition of livestock manure and poultry litter
- Studying the impact of physiology of dry period on fertility assessment and milk production

Goal 3

Development of data-based nutritional information system, antibiotic-free feed additives, novel bio-available nutrient supplements, methane mitigation strategy, precision feeding system for livestock and poultry

Tasks / Activities

- Development of nano-selenium as selenium supplement for lambs
- Development of silver nano-particles for poultry
- Preparation of novel balanced nutrient feed block by utilizing conserved fodder

Faculty members of
Animal Nutrition

- To strengthen non-destructive analysis using Near-Infrared (NIR) Spectroscopy
- Nutritional analysis and documentation of agro-industrial by-products

Faculty members of
Animal Nutrition and
Animal Feed Quality
Assessment Laboratory

- Identification of genetic and biochemical markers for animals with high feed efficiency
- Assessment of bioavailability of nutrients of feedstuffs and developing technologies for reclamation of low quality feeds
- Optimization of nutrient supply and its utilization for enhancing economic productivity with good health in livestock and poultry

Faculty members of
Animal Nutrition and
Animal Genetics and
Breeding

- Ration balancing as a tool to minimize methane emission in indigenous dairy cattle
- Herbal supplementation to mitigate methane emission in Indigenous dairy cattle

Faculty members of
Animal Nutrition

Goal 4

Genetic characterization, performance evaluation, scientific feeding management and conservation of different poultry germplasm; and automation in commercial poultry farming

Tasks / Activities

- Conservation of indigenous poultry genetic resources of Siruvidai and Peruvidai chicken and Arni ducks
- Molecular characterization of indigenous poultry germplasm
- Performance evaluation of indigenous germplasm and improved varieties / strains
- Research to ascertain nutrient losses and reduce processing costs during poultry feed processing
- Research on nano-nutrients, juvenile feeding and gut health for improved productivity
- Innovating new or improved housing and environment systems for poultry
- Strategies to improve shelf life of indigenous poultry meat products

Faculty members of Poultry Science, Animal Genetics and Breeding, Animal Nutrition and Livestock Product Technology in Veterinary Colleges, Centre for Animal Production Studies and College of Poultry Production Management

Goal 5

Breeding and performance evaluation of diversified poultry species

Tasks / Activities

- Productivity assessment of diversified poultry species such as ducks and Japanese quail
- Nutritional researches in different strains of Japanese quail

Faculty members of Poultry Science and Animal Nutrition in Veterinary Colleges and College of Poultry Production Management

Goal 6

Developing programmes to improve and sustain health of natural resources

Tasks / Activities

- Establishment of "Seed-hub" for production of quality fodder
- Promoting fodder production from unutilized Government lands
- Implementing multi-disciplinary and multi stakeholder research on post-harvest technology to harness wealth from waste
- Augmenting fodder production from agro-forestry and micro-irrigation methods

Faculty members of Centre for Animal Production Studies and Directorate of Extension Education

Goal 7

To undertake need based research to address regional challenges in livestock and poultry subsectors

Tasks / Activities

- Forecasting livestock population and production
- Modelling growth patterns in livestock
- Modelling bovine lactation pattern
- Identification of seasonal incidence of livestock and poultry diseases / disorders

Faculty members of
Animal Husbandry
Statistics and Computer
Applications

LONG-TERM ACTION PLANS (2020-30)

Goal 1

Characterization, conservation and utilization of indigenous animal genetic resources of Tamil Nadu through modern genomic approaches

Tasks / Activities

- Registration of lesser-known characterised genetic groups as new breeds with NBAGR
- Characterisation of the quantitative trait-specific genes in bovines for augmentation of overall productivity
- Conservation of native cattle, small ruminants (Tiruchy Black sheep, and Kanni and Kodi goats) and poultry (Siruvidai and Peruvidai chicken and Arni ducks)
- Establishment of "Genome Resource Bank" to preserve the indigenous livestock breeds
- Development of databases and computing methodologies for indigenous Animal Genetic Resources
- Genetic improvement of native breeds of cattle in Tamil Nadu
- Genetic improvement of livestock and poultry by integration of phenomics with genomics, transcriptomics, proteomics, metabolomics and bioinformatics tools

Responsible person(s) by designation

Faculty members of
Animal Genetics and
Breeding, Poultry
Science, College of
Poultry Production
Management, Centre
for Animal Production
Studies, Livestock
and Poultry Research
Stations

Goal 2

To undertake research on livestock farming, resilient to biotic and abiotic stressors, recent technologies to augment livestock and poultry production, efficient waste management and water quality assessment

Tasks / Activities

- Research on management of small ruminants in dry land farming condition
- Strategies to reduce cost of production in commercial dairy farms
- Monitoring the animal food chain to produce high quality produce
- Strategies to augment swine and broiler rabbit production
- Amelioration techniques to counter environmental stress due to climatic change and pollutants
- Green and sustainable energy from animal waste with bioremediation and biosensor applications

Faculty members of Livestock Production Management, Animal Nutrition and Centre for Animal Production Studies

Faculty members of Animal Biotechnology

Goal 3

Development of data-based nutritional information system, antibiotic-free feed additives, novel bio-available nutrient supplements, methane mitigation strategy, precision feeding system for livestock and poultry

Tasks / Activities

- Development of phytogenic feed additives to enhance productivity in poultry
- Development of nano-minerals to enhance productivity of livestock and poultry
- Generating data on antimicrobial resistance in animal products and ensuring animal products free from antimicrobials
- Application of nanotechnology tools to enhance feed quality, bioavailability of micronutrients and decontamination of toxins
- Mineral mapping of feed and fodder resources in Cauvery delta zone
- Evaluation of antibiotic growth promoter replacer on improving nutrient utilization and health performance
- Feed additives to mitigate methane emission in indigenous dairy cattle
- Mitigating emission of ammonia and other green house gases from livestock and poultry production

Faculty members of Animal Nutrition, Livestock Farm Complexes and Centre for Animal Production Studies

Goal 4

Genetic characterization, performance evaluation, scientific feeding management and conservation of different poultry germplasm; and automation in commercial poultry farming

Tasks / Activities

- Genetic differentiation of strains / varieties of poultry released by TANUVAS
- Conservation of indigenous poultry germplasm
- Performance evaluation of indigenous germplasm and improved varieties / strains
- Production and utilization of nano-minerals and in-ovo feeding of commercial broilers for improved growth rate
- Finding viable alternatives to antibiotic growth promoters for poultry
- Improvisation of equipment towards partial or complete automation in poultry farming

Faculty members of Poultry Science, Animal Genetics and Breeding, Animal Nutrition and College of Poultry Production Management

Goal 5

Breeding and performance evaluation of diversified poultry species

Tasks / Activities

- Productivity assessment of diversified poultry species

Faculty members of Poultry Science and Animal Genetics and Breeding

Goal 6

Developing programmes to improve and sustain health of natural resources

Tasks / Activities

- Application of geo-sensing and geo-informatics on livestock wealth, forecasting and disaster management
- Bioelectricity and biohydrogen production from slaughter house waste
- Adopting smart technologies like precision farming to enhance land productivity and efficient use of resources
- Monitoring of drug residues and environmental pollutants in livestock products

Faculty members of Centre for Animal Production Studies and Directorate of Extension Education

Goal 7

To undertake need based research to address regional challenges in livestock and poultry subsectors

Tasks / Activities

- Estimation of losses due to diseases in livestock and poultry
- Assessment of market infrastructure for small ruminants to improve marketing efficiency
- Clustering of districts of the State based on resources for optimizing livestock production
- Development of optimal farm plans for different livestock enterprises in different districts

Faculty members of
Animal Husbandry
Statistics and Computer
Applications, and Animal
Husbandry Economics

Goal 8

To develop IT based solutions for livestock farm management

Tasks / Activities

- Development of herd management system for dairy farms
- Resource mapping using geo-spatial approach for livestock development

Faculty members of
Animal Husbandry
Statistics and Computer
Applications, and Animal
Husbandry Economics

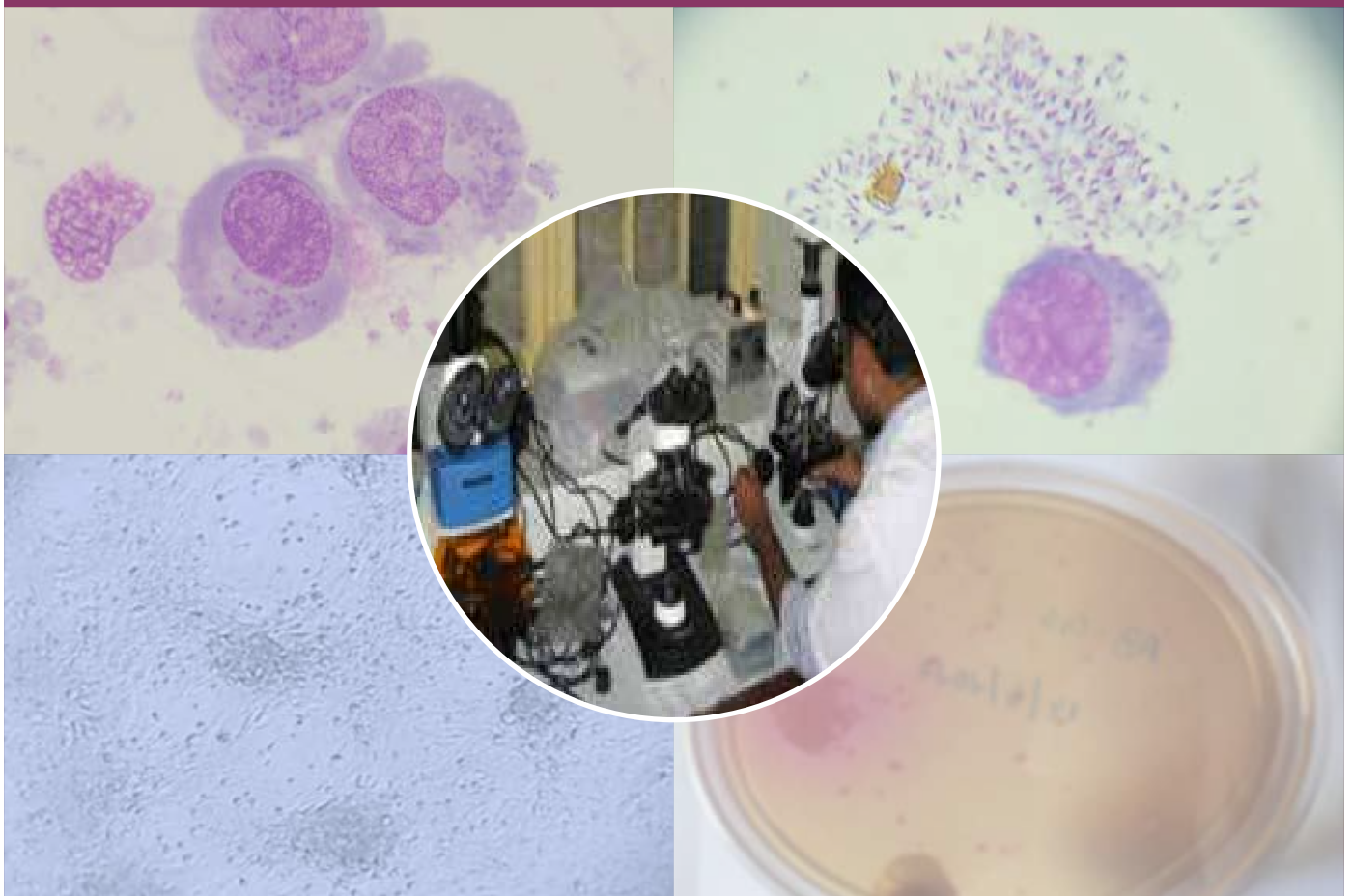
2.2. ANIMAL HEALTH

AIM

- To control important livestock and poultry diseases by the development of validated accurate diagnostic tools, generation of novel vaccines and attaining self sufficiency in the production of veterinary biologicals

Goals

1. Focusing on the emerging, re-emerging and persistent disease problems in the field
2. Development of new generation vaccines
3. Need-based basic and applied research on studying the molecular pathogenesis and diagnosis of diseases
4. Promoting studies on indigenous medicinal plants for valuable therapeutic properties
5. Studying the prevalence of infectious and parasitic diseases of livestock, poultry and wild animals and development of package of practices to control them
6. Assessment of drug and chemical residues in animal food products for ensuring safe human food
7. Facilitating product development, by strengthening infrastructure and encouraging innovation



SHORT / MEDIUM-TERM ACTION PLANS (2020-25)

Goal 1

Focusing on the emerging, re-emerging and persistent disease problems in the field

Tasks / Activities

- Epidemiological investigations of infectious diseases in small and large animals such as Brucellosis, Leptospirosis and PPR

Responsible person(s) by designation

Faculty members of Veterinary Medicine, Public Health and Pathology

- Studies on common food borne pathogens viz. *E. coli* and Salmonella and antimicrobial resistance

Faculty members of Veterinary Public Health, Livestock Products Technology

- Mapping of animal and zoonotic diseases

Faculty members of Veterinary Parasitology, Pathology and Public Health

- Evaluation of anthelmintic resistance in small ruminants

Faculty members of Veterinary Parasitology

Goal 2

Development of new generation vaccines

Tasks / Activities

- Development of inactivated NDV and IB vaccine

Faculty members of Veterinary Microbiology

- Increasing the efficiency of the available vaccines for bluetongue, sheep pox, goat pox, hemorrhagic septicemia, foot and mouth disease, black quarter, tick, theileriosis etc. for sustained immune responses by application of novel adjuvants and delivery systems

Faculty members of Veterinary Microbiology and Directorate of Animal Health Studies

- Increasing the efficacy of oral pellet ND vaccine and development of feed-based vaccines for other poultry diseases

Faculty members of Veterinary Microbiology

- Development of novel delivery systems for viral and bacterial vaccines.

Goal 3

Need-based basic and applied research on studying the molecular pathogenesis and diagnosis of diseases

Tasks / Activities

- Typing of virulent NDVs

Faculty members of
Veterinary Microbiology
and Pathology

- To establish an advanced facility for processing the tissues for immunohistochemistry and histochemistry-based diagnosis

Faculty members of
Veterinary Pathology

- Molecular and immunohistochemical analysis of tumours in animals

- Generate pharmacokinetic data and residue status of important veterinary drugs for dissemination to the field

Faculty members of
Veterinary Pharmacology
and Toxicology

- Designing novel and eco-friendly devices and biologicals for disease control

Faculty members
of Animal Health
departments

- Molecular approach for ante-mortem diagnosis of rabies in canines

Faculty members of
Animal Biotechnology

Goal 4

Promoting studies on indigenous medicinal plants for valuable therapeutic properties

Tasks / Activities

- Infrastructure for ethno-veterinary product research and development

Faculty members of
Ethno-Veterinary
Research Centre,
Veterinary Pharmacology
and Toxicology,
Veterinary Pathology
and related disciplines

- Identification, collection, documentation, cataloguing and conservation of indigenous medicinal plants

- Developing ethno-veterinary products for commercial use

- Clinical validation of safety and therapeutic efficacy of plant based medicaments

Faculty members of
Ethno-Veterinary
Research centre,
Veterinary Pharmacology
and Toxicology,
Veterinary Pathology and
Directorate of Clinics

Goal 5

Studying the prevalence of infectious and parasitic diseases of livestock, poultry and wild animals and development of package of practices to control them

Tasks / Activities

- Pheromone-based traps for control of flies and ticks
- Assessment of acaricide resistance and development of an acaricide detection kit
- Development of field level diagnostic assays like Loop-mediated Isothermal Amplification (LAMP), Lateral Flow Assay for important diseases of livestock like *Pesti des petits ruminants* (PPR), Pox, Brucellosis, Mycoplasma, Infectious Bursal Disease, Fowl Cholera, Leptospirosis
- Development of point of care diagnostic techniques for companion animal diseases like ehrlichiosis, babesiosis, parvo, canine distemper, canine corona, feline infectious peritonitis, feline panleukopenia using Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR platforms)

Faculty members of
Veterinary Parasitology

Faculty members
of Directorate of
Animal Health Studies,
Veterinary Microbiology
and Veterinary Pathology

Goal 6

Assessment of drug and chemical residues in animal food products for ensuring safe human food

Tasks / Activities

- Development of sensitive efficient analytical methods to detect antibiotics and pesticides in animal produce
- Screening of foods of animal origin to monitor food safety

Faculty members of
Veterinary Pharmacology
and Toxicology, Animal
Biotechnology and
Pharmacovigilance
Laboratory for Animal
Feed and Foodstuffs

Faculty members of
Veterinary Pharmacology
and Toxicology,
Livestock Products
Technology, College
of Poultry Production
and Management and
College of Dairy and
Food Technology

Goal 7

Facilitating product development, by strengthening infrastructure and encouraging innovation

Tasks / Activities

- Strengthening facilities to provide support to start up entrepreneurs
- Validation and upkeep of Class 3 biocontainment facility to encourage research on hazardous pathogens
- Establishing cGMP standard laboratory for veterinary vaccine development
- Facilitating start-up companies to develop vaccines and therapeutics of veterinary importance

Faculty members of Directorates of Animal Health Studies and Research

Faculty members of Directorate of Animal Health Studies

LONG-TERM ACTION PLANS (2020-30)

Goal 1

Focusing on the emerging, re-emerging and persistent disease problems in the field

Tasks / Activities

- Cross-sectional survey from the study area with specific focus on Mycobacterium and Brucella
- Screening of antimicrobial resistant genes for pathogens

Responsible person(s) by designation

Faculty members of Veterinary Medicine, Veterinary Public Health, Veterinary Pathology and Directorate of Animal Health Studies

Faculty members and Directorate of Animal Health

Goal 2

Development of new generation vaccines

Tasks / Activities

- Development of genetically engineered vaccines for control of sheep/goat pox, Orf, classical swine fever, porcine circo virus, *Peste des petits ruminants*, infectious laryngotracheitis, infectious bronchitis, Newcastle disease, etc.
- Development of genetically engineered vaccines for companion animal diseases
- Development of genetically engineered vaccines for control of Johne's disease, enterotoxaemia, brucellosis, black quarter, hemorrhagic septicaemia, fowl cholera and necrotic enteritis

Faculty members of Animal Health departments

Goal 3

Need-based basic and applied research on studying the molecular pathogenesis and diagnosis of diseases

Tasks / Activities

- Establishment of a repository for archival tissues of neoplasm and various diseases of livestock and poultry for retrospective studies and research

Faculty members of
Veterinary Pathology

- To study the molecular pathogenesis and diagnosis of diseases in ruminants, swine, canines and poultry

Faculty members of
Veterinary Microbiology
and Veterinary Pathology

- Collection of genomic and proteomic data for viruses affecting small ruminants

Directorate of Animal
Health Studies

Goal 4

Promoting studies on indigenous medicinal plants for valuable therapeutic properties

Tasks / Activities

- To engage in research areas including novel drug delivery combined with bioinformatics

Faculty members of
Veterinary Pharmacology
and Toxicology and
Bioinformatics

- To develop formulations suitable to veterinary applications for ease of application and better compliance

Faculty members of
Veterinary Pharmacology
and Toxicology

- Promoting nanotechnology for targeted nano-delivery of indigenous drugs

Faculty members of
Veterinary Pharmacology
and Toxicology, and
Animal Biotechnology

Goal 5

Studying the prevalence of infectious and parasitic diseases of livestock, poultry and wild animals and development of package of practices to control them

Tasks / Activities

- Pen-side diagnostic kits or immuno-chromatographic technique based diagnostic tests to specifically detect helminth and protozoan parasites at field level
- Recombinant antigen based diagnostic kit for hydatidosis
- Development of rapid diagnostic tests for detection of food borne pathogens from meat or milk

Directorate of Animal
Health Studies and
Faculty members
of Animal Health
departments

Goal 6

Assessment of effects of drug and chemical residues in animal food products for ensuring safe human food

Tasks / Activities

- Analysing the impact of antimicrobial resistance in pathogens of veterinary importance and methods to mitigate their effects

Faculty members of
Veterinary Microbiology
and Directorate of
Animal Health

- Development of multi-residue analysis methods for antibiotics and pesticides for rapid detection of residues

Faculty members of
Veterinary Pharmacology
and Toxicology

Goal 7

Facilitating product development, by strengthening infrastructure and encouraging innovation

Tasks / Activities

- Upscaling of biotechnological capability for research on genomics, proteomics, transcriptomics and metabolomics

Faculty members of
Animal Biotechnology
and Directorate of
Animal Health Studies

- Creation of GIS facilities to monitor and forecast diseases in small ruminants

- Establishment of cGMP facility for production of kits, therapeutics, etc.

Faculty members
of Animal Health
Departments

2.3. CLINICAL SCIENCES

AIM

- Need-based clinical, frontier and translational research in the specialities of veterinary clinical sciences and advancement of species-specific clinical care

Goals

1. Enhancing quality of life through research on early diagnostic and clinical interventions and advancing therapeutic practices in medical, surgical and gynaecological sciences
2. Advancing neurological, cognitive and behavioural disorders research, image-guided interventions and technologies for improving performance of sniffer and service dogs
3. Development of novel diagnostics, therapeutics, and image-guided interventions in the fields of cancer medicine and surgery, and palliative and geriatric medicine
4. Evolving early intervention practices in ophthalmology, soft tissue and orthopaedic surgery, trauma care and thoracic surgery and developing safer anaesthetic practices
5. Clinical research for survival enhancement in the fields of veterinary emergency and critical care, transfusion medicine, cell therapies and regenerative medicine
6. Advancing research in veterinary dermatology, endocrinology, immunology, imaging and interventional therapeutics for high morbid patient care
7. Advanced research in ruminant and equine medicine, surgery, gynaecology, critical care, toxic disorders management and rehabilitation practices
8. Clinical research in assisted-reproductive technologies, infertility care, obstetrics, transition cow care and production medicine practices for dairy and small ruminants
9. Clinical and translational research for quality improvements, interdisciplinary clinical care and disease monitoring using clinical informatics, big data and artificial intelligence



SHORT / MEDIUM-TERM ACTION PLANS (2020-25)

Goal 1

Enhancing quality of life through research on early diagnostic and clinical interventions and advancing therapeutic practices in medical, surgical and gynaecological sciences

Tasks / Activities

- Cardio-vascular and thoracic disease management with advanced imaging, therapeutic and interventional protocols
- Development of renal replacement therapies for renal ailments and acute care for digestive diseases

- Wound healing research, laser and physical therapy and surgical protocols for wound care
- Brachycephalic airway research and surgical care
- Oro-maxillary diseases research and surgical care

- Research on gestational diseases and development of their clinical care practices

- Clinical Research Centre for Companion Animals at MVC Hospital

Responsible person(s) by designation

Faculty members of
Veterinary Medicine

Faculty members of
Veterinary Surgery and
Radiology

Faculty members of
Veterinary Obstetrics
and Gynaecology

Directorate of Clinics
and Faculty members of
Clinical Departments

Goal 2

Advancing neurological, cognitive and behavioural disorders research, image-guided interventions and technologies for improving performance of sniffer and service dog

Tasks / Activities

- Early diagnostic and therapeutic protocols for neurological, cognitive and behavioral disorders
- Image guided interventions for better clinical outcome in neurological and vascular disorders
- Canine detection research for performance enhancement of sniffer and service dogs
- Development of clinical regenerative medicine practices for neurological disorders

Faculty members of
Veterinary Medicine

Goal 3

Development of novel diagnostics, therapeutics, and image-guided interventions in the fields of cancer medicine and surgery, and palliative and geriatric medicine

Tasks / Activities

- Development of novel, molecular and early diagnostic markers for detection of tumours

Faculty members of
Veterinary Medicine,
Veterinary Surgery and
Radiology and Veterinary
Pathology

- Multimodal imaging and diagnostic protocols for risk stratification and clinical care of malignancies

Faculty members of
Veterinary Medicine and
Veterinary Surgery and
Radiology

- Novel therapeutic and surgical practices in cancer patients, palliative and geriatric medicine practices

Faculty members of
Veterinary Medicine and
Veterinary Surgery and
Radiology

- Exploring nano diagnostic and therapeutic protocols, bone marrow transplants and extracorporeal therapies in cancer care and geriatric medicine

Faculty members of
Veterinary Medicine

Goal 4

Evolving early intervention practices in ophthalmology, soft tissue and orthopaedic surgery, trauma care and thoracic surgery and developing safer anaesthetic practices

Tasks / Activities

- Corneal stromal characterization studies through transmission electron microscopy
- Stem cell and biomaterial based approaches for corneal regeneration
- Developing newer technology and implants in the fields of soft tissue and orthopaedic surgery
- Laser and hydrotherapy based rehabilitation of animals with musculoskeletal affections
- Exploring safer practices in anaesthesiology, spinal surgery, thoracic surgery and trauma care

Faculty members of
Veterinary Surgery
and Radiology,
Veterinary Medicine,
Stem Cell Research
and Regenerative
Medicine, Centralized
Instrumentation Lab and
Veterinary Pathology

Goal 5

Clinical research for survival enhancement in the fields of veterinary emergency and critical care, transfusion medicine, cell therapies and regenerative medicine

Tasks / Activities

- Sepsis research and survival enhancement in patients under emergency and critical care
- Clinical haematology and coagulation disorders research and haemopoietic transplant practices

Faculty members of
Veterinary Medicine

- Evaluation of cell therapies and regenerative medicine practices for medical and surgical applications
- Transplant medicine and surgical practices

Faculty members of
Veterinary Medicine &
Veterinary Surgery and
Radiology

Goal 6

Advancing research in veterinary dermatology, endocrinology, immunology, imaging and interventional therapeutics for high morbid patient care

Tasks / Activities

- Immune mediated and infectious skin disease management research
- Advanced therapies and interventions in the management of endocrine and metabolic disorders

Faculty members of
Veterinary Medicine

- Clinical practices and protocol development for imaging and interventional therapeutics
- Veterinary Imaging Research and Referral Centre
- Interventional Therapeutics Research Centre in Madras Veterinary College

Directorate of
Clinics, Heads of the
Departments of Clinics
/ VCC, Veterinary
Medicine, and Veterinary
Surgery and Radiology

Goal 7

Advanced research in ruminant and equine medicine, surgery, gynaecology, critical care, toxic disorders management and rehabilitation practices

Tasks / Activities

- Critical care of gastro-intestinal, metabolic and toxic diseases and mastitis in ruminants and equines

Faculty members of
Veterinary Medicine

- Novel surgical procedures in farm animals
- Orthopedic care and laser therapy in large animals

Faculty members of
Veterinary Surgery and
Radiology

- Mortality reduction in obstetrical practices

Faculty members of
Veterinary Obstetrics
and Gynaecology

- Clinical Research Centre for Large Animal Medicine and Surgery at VC&RI, Namakkal
- Clinical Research Centre for Small Ruminants at VC&RI, Tirunelveli
- Clinical Research Centre for Dairy Animals, Jallikattu Bulls and Bullocks at VC&RI, Orathanadu
- Downer Cow Research and Referral Centre at VC&RI, Orathanadu

Directorate of Clinics
and Faculty members of
Clinical Departments

Goal 8

Clinical research in assisted reproductive technologies, infertility care, obstetrics, transition cow care and production medicine practices for dairy and small ruminants

Tasks / Activities

- Sexed semen and its impact in embryo transfer and Biomarkers for detecting estrus and pregnancy
- Production of superior germplasm of native breeds through embryo transfer and advanced obstetrics

Faculty members of
Veterinary Obstetrics
and Gynaecology

- Transition cow care and production medicine practices for dairy and small ruminants.

Faculty members of
Veterinary Obstetrics
and Gynaecology and
Medicine

- Infertility Research and Referral Centre at VC&RI, Namakkal
- Native dog conservation unit at VC&RI, Tirunelveli

Directorate of Clinics
and Faculty members of
Clinical Departments

- Improving reproductive efficiency in farm animals with special focus on early embryonic survival through 'omics' approach

Faculty members of
Animal Biotechnology,
Obstetrics &
Gynaecology and related
disciplines

Goal 9

Clinical and translational research for quality improvements, interdisciplinary clinical care and disease monitoring using clinical informatics, big data and artificial intelligence

Tasks / Activities

- Research into interdisciplinary clinical care approaches for veterinary patients
- Advancing quality of patient care through clinical research centres (CRCs) in fertility sciences, orthopedic & neuro sciences, cardio-thoracic & vascular sciences, cancer medicine, advanced clinical medicine & therapeutics, renal sciences, interventional medicine and clinical informatics
- Clinical quality enhancement through clinical policy research, use of big data, artificial intelligence, frontier sciences & technologies for monitoring.

Directorate of Clinics
and Faculty members of
Clinical Departments

LONG-TERM ACTION PLANS (2020-30)

Goal 1

Enhancing quality of life through research on early diagnostic and clinical interventions and advancing therapeutic practices in medical, surgical and gynaecological sciences

Tasks / Activities

- Advanced cardiovascular research with modern cath lab technology and developing interventional techniques for veterinary care and evaluation of stem cell therapies
- Translational research for cardiac and renal care using laser tools, transplants and extracorporeal therapies
- Laser-assisted surgical care, advanced oncologic and urologic and urogenital surgery
- Advancing cardiothoracic and vascular surgical techniques

**Responsible person(s)
by designation**

Faculty members of
Veterinary Medicine

Faculty members of
Veterinary Surgery and
Radiology & Veterinary
Obstetrics and
Gynaecology

- Skin banking for reconstructive surgery in small animals
- Tissue and organ banking and tissue engineering practices for survival enhancements
- Biomaterial-based therapeutic assists, minimally invasive devices, implants and artificial organs including 3D printed grafts and organs for medical and surgical care

Faculty members of
Veterinary Surgery and
Radiology, Veterinary
Medicine, Stem
Cell Research and
Regenerative Medicine,

Goal 2

Advancing neurological, cognitive and behavioural disorders research, image-guided interventions and technologies for improving performance of sniffer and service dog

Tasks / Activities

- Advancing neurological care with functional MRI based interventions and electro diagnostics and therapies
- Advancing critical care through image-guided interventions and novel approaches for cognitive and behavioural disorders
- Cutting edge research in canine performance sciences, detection enhancements and military veterinary medicine

Faculty members of
Veterinary Medicine

Goal 3

Development of novel diagnostics, therapeutics, and image-guided interventions in the fields of cancer medicine and surgery, and palliative and geriatric medicine

Tasks / Activities

- Multimodal therapy for cancer medicine and oncological critical care using radiation and laser ablation tools
- Advancing image-guided interventions in palliative care, paediatric and geriatric medicine

Faculty members of
Veterinary Medicine

- Advancing integrated imaging techniques for veterinary care and advanced image guided diagnostics using artificial intelligence tools

Faculty members of
Veterinary Surgery and
Radiology and Veterinary
Medicine

Goal 4

Evolving early intervention practices in ophthalmology, soft tissue and orthopaedic surgery, trauma care and thoracic surgery and developing safer anaesthetic practices

Tasks / Activities

- Advanced visual sciences research, ophthalmic and neurosurgical techniques
- 3 D printing tools for bone defects and development of low cost orthotics and prosthetics
- Trauma care surgical techniques, advanced thoracic surgery and developing anaesthetic practices for high risk patient care

Faculty members of
Veterinary Surgery and
Radiology

Goal 5

Clinical research for survival enhancement in the fields of veterinary emergency and critical care, transfusion medicine, cell therapies and regenerative medicine

Tasks / Activities

- Organ-specific critical care practices
- Advanced quality monitoring techniques in transfusion medicine & advanced practices for coagulation care
- Advancing cell therapies and regenerative medicine for high morbid disease management
- Development of neonatology and neonatal critical care units

Faculty members of
Veterinary Medicine

Director of Clinics and
Faculty members of
Clinical Departments

Goal 6

Advancing research in veterinary dermatology, endocrinology, immunology, imaging and interventional therapeutics for high morbid patient care

Tasks / Activities

- Advanced allergology and otological practices for veterinary applications and image-guided interventions for ear care
- Development of allergen-specific diagnostics, immunotherapy and laser tools for skin diseases care
- Early diagnostics for immunological and endocrine disorders
- Advanced interventional therapeutics for high morbid patient care

Faculty members of
Veterinary Medicine

Goal 7

Advanced research in ruminant and equine medicine, surgery, gynaecology, critical care, toxic disorders management and rehabilitation practices

Tasks / Activities

Advanced protocols for recumbent cattle care, mastitis therapy and large animal internal medicine	Faculty members of Veterinary Medicine
Laser therapy and Electro-chemotherapy in large animals and advanced anaesthetic practices for large animals	Faculty members of Veterinary Surgery and Radiology
Early pregnancy diagnostic tools and application of advanced techniques in obstetrics and post parturient care of farm animals	Faculty members of Veterinary Obstetrics and Gynaecology
Advanced critical care, toxic disorders management and rehabilitation practices in large animals	Faculty members of Veterinary Medicine

Goal 8

Clinical research in assisted reproductive technologies, infertility care, obstetrics, transition cow care and production medicine practices for dairy and small ruminants

Tasks / Activities

- Advanced embryo transfer and IVF techniques, and Production of calves of superior indigenous cow - Development of novel diagnostics, therapies and ethno-veterinary products for infertility care - Advanced transition cow care & production medicine practices for dairy and small ruminants.	Faculty members of Veterinary Obstetrics and Gynecology and Veterinary Medicine
Improving reproductive efficiency in farm animals with special focus on early embryonic survival through 'omics' approach	Faculty members of Animal Biotechnology, Veterinary Obstetrics and Gynecology and related departments

Goal 9

Clinical and translational research for quality improvements, interdisciplinary clinical care and disease monitoring using clinical informatics, big data and artificial intelligence

Tasks / Activities

- Evolving artificial intelligence based imaging diagnostics and image-guided disease surveillance
 - Species-specific interdisciplinary clinical care practices
 - Development of animal disease monitoring platforms using clinical informatics, big data and artificial intelligence
-
- Comparative research programmes in medical specialties, reproduction sciences, surgical sciences, neonatology and foetal medicine
 - Translational research in advanced imaging and guided interventions, rehabilitation and regenerative medicine, and IoT-based veterinary patient care

Faculty members of
Veterinary Medicine, and
Veterinary Surgery and
Radiology

Director of Clinics and
Faculty members of
Clinical Departments

2.4. BASIC VETERINARY SCIENCES

AIM

- Interdisciplinary field-oriented research strategies in augmenting health and production of livestock, poultry and wildlife through diagnostics and therapeutic interventions

Goals

1. Collaborative translational research with respective departments
2. Identification of biomarkers and its clinical applications
3. Effect of climate change and mitigation strategies
4. Evaluating the molecular mechanisms and efficacy of phytochemical / ayurvedic formulations on metabolic disorders like obesity, diabetes mellitus and renal disorders
5. Exploring biomedical applications of stem cells
6. *In-silico* analysis of drugs for veterinary applications
7. Application of advanced forensic technology for specific identification of animal parts to combat poaching and illegal trade
8. Standardization of advanced technology like drones and net guns for immobilization, restraint and monitoring of wild animals



SHORT / MEDIUM-TERM ACTION PLANS (2020-25)

Goal 1

Collaborative translational research with respective departments

Tasks / Activities

- Clinical anatomy of domestic animals
- Stem cell derivation from different animal sources and their characterization
- Large scale production of clinical grade mesenchymal stem cells for use in veterinary regenerative medicine

Responsible person(s) by designation

Faculty members of Veterinary Anatomy

Faculty members of Stem Cell Research and Regenerative Medicine

Goal 2

Identification of biomarkers and its clinical applications

Tasks / Activities

- Kallistatin as a potent biomarker for hepatic compromised dogs
- KIM 1 as novel biomarker for renal compromised dogs
- Hepicidin as prognostic marker in Canine Babesiosis
- Osteopontin as a biomarker in canine fertility
- Deciphering the gene expression pattern of the diagnostic biomarker, xanthine oxidase, in the early stage of dilated cardiomyopathy in dogs

Faculty members of Veterinary Physiology, Veterinary Parasitology and Veterinary Pathology

Faculty members of Veterinary Biochemistry

Goal 3

Effect of climate change and mitigation strategies

Tasks / Activities

- Exploring the expression pattern of heat stress related genes in innate immune cells of Kangayam cattle
- Exploring the differential expression of immune related genes during heat stress in Kangayam cattle
- Assessment of various biomarkers in stress condition

Faculty members of Veterinary Physiology

Goal 4

Evaluating the molecular mechanisms and efficacy of phytochemical / ayurvedic formulations on metabolic disorders like obesity, diabetes mellitus and renal disorders

Tasks / Activities

- Evaluation of ayurvedic preparation - *Ashtangahridaykota brihatyadigana* for its efficacy in preclinical models of acute renal failure in rats
- Understanding the molecular mechanisms underlying dietary vegetable oils induced beta cell regeneration and insulin secretion

Faculty members of
Veterinary Biochemistry

Goal 5

Exploring biomedical applications of stem cells

Tasks / Activities

- Isolation of chondrocytes from articular cartilage
- Use of nanotechnology in mesenchymal stem cell driven tissue engineering and regenerative medicine
- Modulatory effects of phytochemicals on mesenchymal stem cells: a cell and gene based therapy

Faculty members of
Stem Cell Research and
Regenerative Medicine

Goal 6

In-silico analysis of drugs for veterinary applications

Tasks / Activities

- Equipping the Bioinformatic Centre with latest software on drug design and next generation sequencing

Faculty members of
Bioinformatics

Goal 7

Application of advanced forensic technology for specific identification of animal parts to combat poaching and illegal trade

Tasks / Activities

- Development of specific markers to identify different wild animals susceptible to poaching

Faculty members
of Wildlife Science
and Animal Health
departments

LONG-TERM ACTION PLANS (2020-30)

Goal 1

Collaborative translational research with respective departments

Tasks / Activities

- Imaging anatomy in domestic animals
- Use of nanotechnology in mesenchymal stem cell driven tissue engineering and regenerative medicine

Responsible person(s) by designation

Faculty members of
Veterinary Anatomy

Faculty members of
Stem Cell Research and
Regenerative Medicine

Goal 2

Identification of biomarkers and its clinical applications

Tasks / Activities

- Study of mechanisms of disease resistance - physiological traits as alternative indicators
- Identification of reliable serum biomarkers for clinical conditions

Faculty members of
Veterinary Physiology

Goal 3

Effect of climate change and mitigation strategies

Tasks / Activities

- Exploring molecular mechanism of thermal tolerance in native breeds of cattle (Kangayam etc.)

Faculty members of
Veterinary Physiology

Goal 4

Evaluating the molecular mechanisms and efficacy of phytochemical / ayurvedic formulations on metabolic disorders like obesity, diabetes mellitus and renal disorders

Tasks / Activities

- Evaluating the effect of phytochemical extracts on obesity
- Deciphering the molecular mechanisms triggered by the phytochemicals used for treatment of metabolic disorders such as obesity
- Identification of molecular mechanism in renal failure and evaluation of ayurvedic formulation in renal disorders
- Evaluating the effect of vegetable oils on diabetes mellitus

Faculty members of
Veterinary Biochemistry

Goal 5

Exploring biomedical applications of stem cells

Tasks / Activities

- Large scale production of clinical grade mesenchymal stem cells for use in veterinary regenerative medicine

Faculty members of
Stem Cell Research and
Regenerative Medicine

Goal 6

In-silico analysis of drugs for veterinary applications

Tasks / Activities

- *In-silico* analysis of various drugs for veterinary applications

Faculty members of
Bioinformatics

Goal 8

Standardization of advanced technology like drones and net guns for immobilization, restraint and monitoring of wild animals

Tasks / Activities

- Use of advanced technology including drones, net guns and other novel scientific methods to monitor the aggressive activity of wild animals

Faculty members of
Wildlife Science

2.5. SOCIAL SCIENCES IN ANIMAL HUSBANDRY

AIM

- Action-oriented livestock farming system research for economic upliftment and identification of the needs of industries / entrepreneurs

Goals

1. Action-oriented farming system research on thrust areas of extension
2. Strengthening field research on animal production and health
3. Impact analysis of various schemes and animal husbandry practices
4. Technology assessment, refinement and transfer for innovative livestock farming
5. Developing price policy model for major livestock products of Tamil Nadu
6. Benefit-cost analysis of different livestock enterprises under different farming systems
7. Formulation of policy studies for development of livestock sector in Tamil Nadu
8. Addressing the gap in employability skill among the veterinary graduates
9. Assessment of manpower needs in livestock sector and carrying out market research for industrial products



SHORT / MEDIUM-TERM ACTION PLANS (2020-25)

Goal 1

Action-oriented farming system research on thrust areas of extension

Tasks / Activities

- A niche “Centre of Excellence in Climate Change” to perform action-oriented farming system research

Responsible person(s) by designation

Faculty members of
Veterinary and Animal
Husbandry Extension
Education and Livestock
Production Management

Goal 2

Strengthening field research on animal production and health

Tasks / Activities

- Natural resource management for improving fodder availability
- Technology mapping
- Panel survey on livestock farming

Directorates of Animal
Production Studies and
Extension Education;
and Faculty members of
Extension Centres

Goal 3

Impact analysis of various schemes and animal husbandry practices

Tasks / Activities

- Socio-economic impact analysis of various livestock / poultry schemes and programmes in Tamil Nadu implemented by the Animal Husbandry Department

Faculty members of
Veterinary and Animal
Husbandry Extension
Education and Animal
Husbandry Economics

- Standardizing in-built monitoring and evaluation system
- Integrating digital reporting system and developing database for efficient decision making

Directorate of Extension
Education and Faculty
members of Extension
Centres

Goal 4

Technology assessment, refinement and transfer for innovative livestock farming

Tasks / Activities

- Identification of field problems; validation and popularization of innovative technologies

Directorates of Extension Education, Animal Production Studies, Animal Health Studies and Research; Faculty members of Extension Centres

- Research on technological adoption, impact and constraint analysis in livestock farming enterprises

Faculty members of Animal Husbandry Economics

Goal 5

Developing price policy model for major livestock products of Tamil Nadu

Tasks / Activities

- Formulation of projects to develop price policy models for livestock products

Faculty members of Animal Husbandry Economics

Goal 6

Benefit-cost analysis of different livestock enterprises under different farming systems

Tasks / Activities

- Post-graduate research on benefit-cost analysis
- Formulation of specific projects with benefit cost analysis of Livestock enterprises

Faculty members of Animal Husbandry Economics

Goal 7

Formulation of policy studies for development of livestock sector in Tamil Nadu

Tasks / Activities

- Livestock development planning and policy research for multidimensional objectives

Faculty members of Animal Husbandry Economics

Goal 8

Addressing the gap in employability skill among the veterinary graduates

Tasks / Activities

- Conduct of workshop and collection of primary data from employers, alumni, entrepreneurs, academicians to identify gap in the skill among the graduates and to assess the status and impact of programmes in livestock sector

Deans, and Faculty members of Livestock Business Management and Education Cell

Goal 9

Assessment of manpower needs in livestock sector and carrying out market research for industrial products

Tasks / Activities

- Forecasting the human resource requirements in livestock and food sector and conducting market survey on industrial product demand and consumer satisfaction

Faculty members of Livestock Business Management

LONG-TERM ACTION PLANS (2020-30)

Goal 1

Action-oriented farming system research on thrust areas of extension

Tasks / Activities

- Analysis of the socio-economic impact of various livestock / poultry schemes and programmes of Tamil Nadu

Responsible person(s) by designation

Faculty members of Veterinary and Animal Husbandry Extension Education

Goal 2

Strengthening field research on animal production and health

Tasks / Activities

- Artificial Intelligence based market demand and supply forecasting
- Artificial Intelligence based livestock product pricing

Directorate of Extension Education; and Faculty members of Animal Husbandry Economics

Goal 3

Impact analysis of various schemes and animal husbandry practices

Tasks / Activities

- Research on technological adoption, impact and constrain analysis in livestock farming enterprises

Directorates of Research, and Extension Education; Deans of constituent colleges; Faculty members of Animal Husbandry Economics

Goal 4

Technology assessment, refinement and transfer for innovative livestock farming

Tasks / Activities

- Identification of field problems; validation and popularization of innovative technologies

Directors of Extension Education, Animal Production Studies, Animal Health Studies and Research; Faculty members of Extension Centres

Goal 5

Developing price policy model for major livestock products of Tamil Nadu

Tasks / Activities

- Establishing a Centre for Cost of Production of Livestock Products

Faculty members of Animal Husbandry Economics

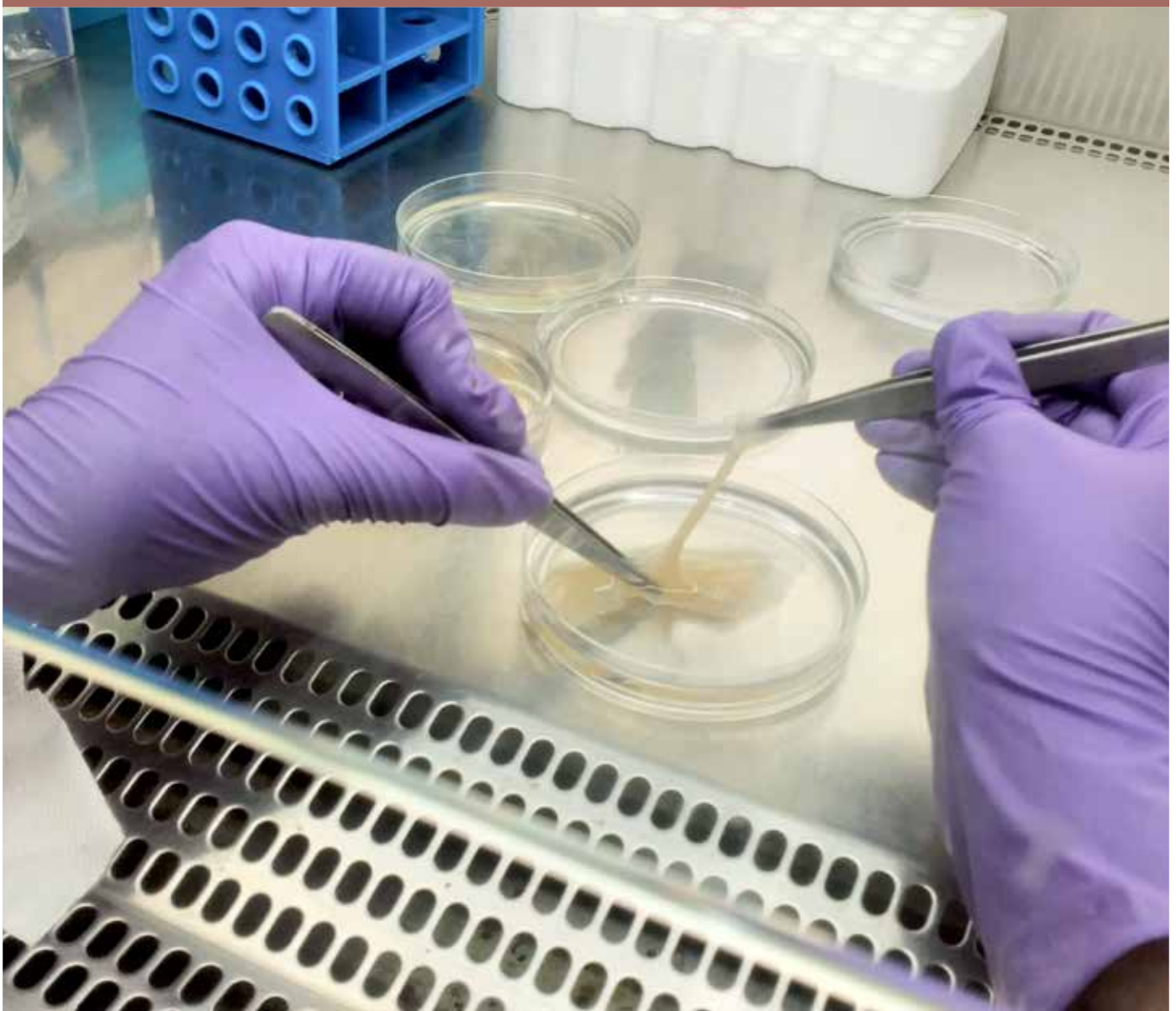
2.6. FOOD SCIENCES

AIM

- Evolving state-of-the-art approach or strategies for enhancing need-based innovations and post-harvest technology

Goals

1. Development of innovative dairy products and establishment of a R&D laboratory for quality assessment
2. Evolving standards on quality of meat and meat products, reduction in post-harvest loss and development of cutting edge technologies in novel and functional meat products, processing and preservation
3. Adoption of newer methods of food processing and addressing food safety issues
4. Facilitating product development, validation and patenting in the context of IPR regime



SHORT / MEDIUM-TERM ACTION PLANS (2020-25)

Goal 1

Development of innovative dairy products and establishment of a R&D laboratory for quality assessment

Tasks / Activities

- Microbiological analysis of dairy products
- Development of functional dairy products – fruit-pulp incorporated probiotic chocobar and fibre-enriched milk lollies and mozzarella cheese

Responsible person(s) by designation

Faculty members of Livestock Products Technology and College of Food and Dairy Technology

Goal 2

Evolving standards on quality of meat and meat products, reduction in post-harvest loss and development of cutting edge technologies in novel and functional meat products, processing and preservation

Tasks / Activities

- Study on nutritional and sensory qualities of meat
- Evolving grading systems for meat from indigenous breeds of sheep, goat and buffalo
- Development of poultry and egg products with extended shelf-life, in anticipation with emerging trends by utilizing natural antimicrobial compounds, organic acids, plant extracts
- Development of value-added products from spent animal and poultry meat
- Development of functional egg products

Faculty members of Livestock Products Technology, Livestock Production Management, Animal Nutrition, Poultry Science, Poultry Research Station, College of Food and Dairy Technology and College of Poultry Production Management

- Development of extraction techniques for various useful products from slaughter house by-products
- Evolving smart and intelligent packaging techniques for meat and meat products

Faculty members of Livestock Products Technology

Goal 3

Adoption of newer methods of food processing and addressing food safety issues

Tasks / Activities

- Development of suitable control strategies to prevent contamination in food
- Use of Pulsed Electric Field technique to extend the shelf life of food products
- Instrumentation and application of photovoltaic cells for effective utilization of sun light

Faculty members of Food Processing Technology, Food Safety and Quality Assurance, Food Processing Engineering and Livestock Products Technology

- Developing techniques to harvest health promoting animal products from livestock and poultry
- Promoting nanotechnology for targeted applications in post-harvest technology

Faculty members of Livestock Products Technology, Poultry Science and College of Food and Dairy Technology

Goal 4

Facilitating product development, validation and patenting in the context of IPR regime

Tasks / Activities

- Development of nutrient-enriched food products

Faculty members of Food Processing Technology

- Strengthening of facilities to provide support to startup entrepreneurs

Faculty members of Directorates of Research, and Animal Health Studies; College of Poultry Production Management; and College of Food and Dairy Technology

LONG-TERM ACTION PLANS (2020-30)

Goal 1

Development of innovative dairy products and establishment of a R&D laboratory for quality assessment

Tasks / Activities

- Creation of R&D facility and product development
- Development of functional dairy products
- Identification of novel agents for enhancement of keeping quality of dairy products

Responsible person(s)
by designation

Faculty members of
Livestock Products
Technology and College
of Food and Dairy
Technology

Goal 2

Evolving standards on quality of meat and meat products, reduction in post-harvest loss and development of cutting edge technologies in novel and functional meat products, processing and preservation

Tasks / Activities

- Study on physico-chemical and microbial qualities of meat
- Assessment of chemical residues including persistent organic pollutants, processing metabolites and veterinary drugs in meat
- Conducting research using emerging molecular techniques in meat species identification
- Establishing appropriate indices for various slaughter parameters of buffalo, sheep and goat
- Development of products involving new ingredient and processing systems
- Evolving different packaging materials and methods utilizing nano-technology
- Subjecting the developed extracted products of higher value from animal by-products to *in-vitro* studies
- Effective utilization of slaughter house by-products as edible food products

Faculty members of
Livestock Products
Technology

Goal 3

Adoption of newer methods of food processing and addressing food safety issues

Tasks / Activities

- Research on nutrigenomics based approach in association with human medicine and nutrition
- Incorporation of HACCP principles in food supply chain with creation of awareness on the importance of food safety
- Upgradation of domestic food processing industries into certified organizations for export market

Faculty members of Food Processing Technology, Food Safety and Quality Assurance, and College of Poultry Production Management

Goal 4

Facilitating product development, validation and patenting in the context of IPR regime

Tasks / Activities

- Establishment of linkage with food industries to convert collaborative research output as patents and commercialize the newly developed products
- Provide opportunities for new products development and facilitating IPR protection of discoveries/ inventions

Faculty members of Food Safety and Quality Assurance and College of Poultry Production Management

Faculty members of Directorate of Research, College of Food and Dairy Technology and College of Poultry Production Management

3. EXTENSION



AIM

- Augmenting livestock production and productivity for better livelihood opportunities through extension services

Goals

1. Capacity building of farmers in farm business management emphasizing better animal health and scientific production, disaster management and profit maximization
2. Entrepreneurial development of potential youth for self-sustainability in livestock and poultry production
3. Enhancing livestock value chain efficiency through better linkage among stakeholders
4. Enhancing transfer of technology through better utilization of digital transformation
5. Improving the knowledge management system and capacitating extension functionaries
6. Women empowerment through livestock-based livelihood strategies
7. Development of model villages
8. Capacity building of professionals on thrust areas of animal production and health
9. Providing state-of-the-art farming and clinical services
10. Interfacing between industries or entrepreneurs and academia and development of vetpreneurship



SHORT / MEDIUM-TERM ACTION PLANS (2020-25)

Goal 1

Capacity building of farmers in farm business management emphasizing better animal health and scientific production, disaster management and profit maximization

Tasks / Activities

- Conducting training, demonstration, exhibitions, farmer-scientist interactions and seminars on scientific rearing of livestock and poultry

Responsible person(s) by designation

Directorate of Extension Education, Faculty members in Extension Centres and Department of Veterinary and Animal Husbandry Extension Education

- Creating awareness on importance of indigenous breeds and conserving them
- Supply of quality livestock and poultry germplasm to the farmers

Faculty members of Animal Genetics and Breeding, Livestock Production Management, Directorate of Animal Production and College of Poultry Production and Management

- Development of "Online Advisory Cell" and "Agro-met Advisory Services" to the farming community

Faculty members of Livestock Production Management

Goal 2

Entrepreneurial development of potential youth for self-sustainability in livestock and poultry production

Tasks / Activities

- Conduct of skill development courses
- Conduct of self-employment courses
- Liaisoning investment opportunities

Directorate of Distance Education, Directorate of Extension Education and Faculty members in Extension Centres

Goal 3

Enhancing livestock value chain efficiency through better linkage among stakeholders

Tasks / Activities

- Developing market network at local, district and state levels
- Stakeholder need analysis
- Evolving problem-based intervention strategies

Directorate of Extension Education and Faculty members in Extension Centres and Animal Husbandry Economics

Goal 4

Enhancing transfer of technology through better utilization of digital transformation

Tasks / Activities

- Utilizing social media for farmer networking
- Short messages / video clip services for content delivery
- Creation of exclusive farmers portal with a link in TANUVAS website and cyber extension modules

Directorate of Extension Education and Faculty members in Extension Centres and Department of Veterinary and Animal Husbandry Extension

Goal 5

Improving the knowledge management system and capacitating extension functionaries

Tasks / Activities

- Creation of content repository

Directorates of Animal Production, Health and Extension Education, and Heads of departments in colleges

- Conducting Massive Open Online Courses (MOOCs)
- Facilitating on-line interactions
- Organizing Meeting/Seminar/Conference/Workshop

Heads of departments in colleges, Faculty members of Extension Centres, and Directorates of Extension Education and Distance Education

Goal 6

Women empowerment through livestock-based livelihood strategies

Tasks / Activities

- Gender-specific training programmes
- Women entrepreneur development
- Promoting group based livestock/poultry enterprises

Directorate of Distance Education and Faculty members in Extension Centres

Goal 7

Development of model villages

Tasks / Activities

- Intensive training with latest approach on livestock and poultry rearing

Faculty members in Extension Centres

Goal 8

Capacity building of professionals on thrust areas of animal production and health

Tasks / Activities

- Establishment of CAFT and CPD programmes in livestock breeding, conservation, management, post-harvest technology, livestock health, clinical interventions and information retrieval system

Faculty members of Animal Production, Health, Clinical and Basic Sciences

- Conduct of trainers training for veterinarians and food safety officers, livestock product processing for entrepreneurs and commercialization of developed technologies

Faculty members of Livestock Products Technology

- Creation of Mobile Apps for veterinarians and farmers

Faculty members of Animal Production and Animal Health departments

- Development of podcast on surgical interventions and development of educational videos in TANUVAS Youtube Channel

Faculty members of Veterinary Surgery and Radiology

Goal 9

Providing state-of-the-art farming and clinical services

Tasks / Activities

• Services on screening for chromosomal abnormality, inherited disorder and parentage verification • DNA sexing of pet birds • Molecular screening for diseases • Production and supply of frozen semen of goats to needy farmers	Faculty members of Animal Genetics and Breeding, Wildlife Science and Animal Health departments
• Quality assurance of feed ingredients through quality control laboratory, and production and supply of TANUVAS SMART Mineral Mixture and TANUVAS GRAND for augmenting production	Faculty members of Animal Nutrition
• Creation of interactive control alerts for parasites	Faculty members of Veterinary Parasitology
• Providing diagnostic and clinical services through basic and advanced techniques to the farmers and clients	Faculty members of Clinical Departments

Goal 10

Interfacing between industries or entrepreneurs and academia and development of vetpreneurship

Tasks / Activities

• Establishment of MoU with industries for industrial-farm internship training programme and placement activities	Faculty members of University Students' Counselling and Placement Cell
• Establishing youth clubs at village level to promote farming sector and disaster mitigation based on ARYA concept	Faculty members of Veterinary and Animal Husbandry Extension

LONG-TERM ACTION PLANS (2020-30)

Goal 1

Capacity building of farmers in farm business management emphasizing better animal health and scientific production, disaster management and profit maximization

Tasks / Activities

- Method demonstration, exhibitions, farmer-scientist interaction

Responsible person(s) by designation

Directorate of Extension Education, Faculty members in Extension Centres and Department of Veterinary and Animal Husbandry Extension

- Creating awareness about the uniqueness of indigenous breeds for sustainably utilizing them
- Conducting method demonstration on value-added milk products
- Agro-met services

Faculty members of Animal Production departments

Goal 2

Entrepreneurial development of potential youth for self-sustainability in livestock and poultry production

Tasks / Activities

- Conduct of skill development courses
- Conduct of self-employment courses
- Liaisoning investment opportunities

Directorates of Distance Education and Extension Education, and Faculty members in Extension Centres

Goal 3

Enhancing livestock value chain efficiency through better linkage among stakeholders

Tasks / Activities

- Promoting livestock based Farmers Producers Organizations (FPOs)
- Develop Public Private Partnership (PPP) models for effective marketing of farm produce

Faculty members in Extension Centres

Goal 4

Enhancing transfer of technology through better utilization of digital transformation

Tasks / Activities

- Internet of Things (IoT) for smart livestock farming
- Launching community radio stations in collaboration with NGOs to offer advisory services

Director of Extension Education and Faculty members in Extension Centres

Goal 5

Improving the knowledge management system and capacitating extension functionaries

Tasks / Activities

- Conduct of Training / Meeting / Seminar / Conference / Workshop

Heads of departments in colleges, Faculty members of Extension Centres and Directorate of Extension Education

Goal 7

Development of model villages

Tasks / Activities

- Focus on the post-harvest technology to the rural farming community
- To establish a sales outlet at suitable place in the respective village
- Overall development of village utilizing line departments

Faculty members in Extension Centres

Goal 8

Capacity building of professionals on thrust areas of animal production and health

Tasks / Activities

- Establishment of CAFT and CPD programmes in livestock breeding, conservation, management, post-harvest technology, livestock health, clinical interventions and information retrieval system

Faculty members of Animal Production, Health, Clinical and Basic Sciences

• Creation of Mobile Apps on toxicity, poisoning and antidotes; and PoP to minimise contamination of animal produce with drugs / heavy metals / pesticides	Faculty members of Veterinary Pharmacology and Toxicology
• Development of podcast on surgical interventions and educational videos in TANUVAS Youtube Channel	Faculty members of Veterinary Surgery and Radiology
• Offering MOOCs, blended learning programmes and self-paced learning courses in the field of Veterinary Sciences and Animal Husbandry	Directorate of Distance Education and Faculty members of Animal Husbandry Extension

Goal 9

Providing state-of-the-art farming and clinical services

Tasks / Activities

• Services on screening for chromosomal abnormality, inherited disorder and parentage verification • DNA sexing of pet birds • Molecular screening for diseases • Production and supply of frozen semen of goats to needy farmers • Veterinary dietetic service to pet owners	Faculty members of Animal Genetics and Breeding, Animal Nutrition, Animal Biotechnology, Wildlife Science and Animal Health departments
• Providing diagnostic and clinical services through basic and advanced techniques to the farmers and clients	Faculty members of Animal Health and Clinical Departments
• Lab on wheels for diseases diagnosis	Faculty members of Directorate of Animal Health
• Use of On-field sequencing platforms to understand evolution of pathogens	Project Director, TRPVB

Goal 10

Interfacing between industries or entrepreneurs and academia and development of vetpreneurship

Tasks / Activities

- Conduct of pre-feasibility studies and detailed project reports (DPR)
- Development of project or DPR for livestock products and different livestock business opportunities

Faculty members of Livestock Business Management and University Students Counselling and Placement Cell

- Establishment of Vetpreneurship Development Centre with Agri-business incubators

Directorate of Centre for Animal Health Studies and Faculty members of Veterinary and Animal Husbandry Extension

4. INFRASTRUCTURE



AIM

- Providing high quality learning and research environment for the undergraduate students and post-graduate research scholars with state-of-the-art infrastructure

Goals

1. Creation and modernization of the infrastructure for imparting quality education and research in line with the recent advancements in genomics, next-generation sequencing, nutritional, environmental, physiological, nano-biotechnological and molecular interaction studies, and livestock production technology
2. Establishing an advanced infrastructure and instrumentation facilities on par with international standards for research up to nano-molecular level, diagnostics and referral services
3. Establishing a facility for tissue registry and museum for formalin-free specimens
4. Establishment of referral centre for drug residue analysis, food testing laboratory, forensic laboratory etc.
5. Creation of molecular diagnostic lab for common infectious diseases and introducing geographic information system (GIS) in disease surveillance
6. Upgrading existing facilities as “Centre of Excellence” in the fields of diagnosis and management of zoonotic pathogens, avian respiratory diseases, wildlife health and management and veterinary surgery and radiology
7. Modernization of hospital infrastructure, clinical laboratories, and development of Veterinary medical informatics, artificial intelligence and big data service centre across all veterinary college hospitals
8. Automation in farming practices in instructional livestock farms and green initiatives of all campuses
9. Establishing e-studio for e-content development on farm management modules and world class virtual farm-cum-exhibition unit to facilitate better teaching – learning process
10. Strengthening and modernization of library facilities with up-to-date referencing materials
11. Developing a quality physical education infrastructure to help students to develop attitude, motor skills, social skills and confidence for an active lifestyle
12. Creation of Veterinary Business Incubation Centre to perform outreach activities and translate research outcomes to benefit stake holders and cyber extension facilities for distance communication

SHORT / MEDIUM-TERM ACTION PLANS (2020-25)

Goal 1

Creation and modernization of the infrastructure for imparting quality education and research in line with the recent advancements in genomics, next-generation sequencing, nutritional, environmental, physiological, nano-biotechnological and molecular interaction studies, and livestock production technology

Tasks / Activities

- Establishment of smart classrooms with video conferencing facility
- Modernisation of frozen semen bank with the state-of-the-art facility for cryo-conservation
- Development of “Big Data Work Station” for handling voluminous data related to genomics and biometrical genetics with software packages and data analysis tools
- Development of molecular and nano-biotechnological laboratory and bioinformatics – nextgen analysis
- Updating automatic mineral mixture packaging technology
- Creation of livestock-based environmental research centre and agro-met services
- Value addition of livestock and poultry farm waste
- Establishment of modern dairy processing and carcass utilization facility

Responsible person(s) by designation

Deans of all colleges

Faculty members of Animal Genetics and Breeding, Veterinary Biochemistry, Veterinary Physiology, Central Instrumentation Laboratory and Bioinformatics Centre

Faculty members of Animal Nutrition

Faculty members of Livestock Production Management

Faculty members of Livestock Production Management and Livestock Farm Complex

Faculty members of Livestock Products Technology

Goal 2

Establishing an advanced infrastructure and instrumentation facilities on par with international standards for research up to nano-molecular level, diagnostics and referral services

Tasks / Activities

- State-of-the-art central instrumentation facility for researchers to pursue cell biology, molecular biology and nano-technology

Faculty members of Centralised Instrumentation Laboratory

Establishment of Scanning Electron Microscopy facility	Faculty members of Veterinary Anatomy, Veterinary Pathology and Veterinary Parasitology
Updation of newer versions of diagnostic facilities like ultrasound, cardiology, endoscopy, pediatric and geriatric critical care, dialysis and sub-clinical mastitis units	Faculty members of Veterinary Medicine
Introduction of advancements in Critical Care Units / ICUs, Veterinary Blood Banks across all veterinary college hospitals	Faculty members of Clinics and Veterinary Medicine
Goal 3 Establishing a facility for tissue registry and museum for formalin-free specimens Tasks / Activities - Establishing a repository for archival tissues of neoplasm and various diseases of livestock and poultry for retrospective studies and research - Modern maceration and skeleton preparation laboratory, plastinarium, cold storage facility for wet specimens	Faculty members of Veterinary Pathology Faculty members of Veterinary Anatomy
Goal 4 Establishment of referral centre for drug residue analysis, food testing laboratory, forensic laboratory etc. Tasks / Activities - Reference testing centre for genotoxicity and immune-toxicity - Establishing veterinary forensic laboratory and accreditation - Establishment of laboratory animal units for birds	Faculty of Veterinary Pharmacology and Toxicology Faculty members of Pharmaco-vigilance Laboratory for Animal Feed and Food Safety Faculty of Laboratory Animal Medicine

Goal 5

Creation of molecular diagnostic lab for common infectious diseases and introducing geographic information system (GIS) in disease surveillance

Tasks / Activities

- Establishment of Centre of Excellence in GIS-based infectious modelling and Disease Forecasting and Outbreak Investigation Unit

Faculty members of
Veterinary Public Health

Goal 6

Upgrading existing facilities as “Centre of Excellence” in the fields of diagnosis and management of zoonotic pathogens, avian respiratory diseases, wildlife health and management and veterinary surgery and radiology

Tasks / Activities

- Establishment of “Centre of Excellence” for diagnosis and management of zoonotic pathogens

Faculty members of
Directorate of Animal
Health Studies and
Veterinary Public Health
and Epidemiology

- Establishment of cutting edge wet-lab with adequate facilities for teaching and learning and two-way audio-video communication between operation theatres and seminar halls
- Establishment of Anaesthesia Information and Management System (AIMS) with clinical decision support system
- Strengthening of diagnostic imaging viz. digital radiography, contrast CT scan, MRI and interventional imaging facilities
- Development of infrastructure for posterior segment surgery in ophthalmology with electro-retinography, retina-microscopy and endo-laser

Faculty members of
Veterinary Surgery and
Radiology

Goal 7

Modernization of hospital infrastructure, clinical laboratories, and development of veterinary medical informatics, artificial intelligence and big data service centre across all veterinary college hospitals

Tasks / Activities

- Establishment of state-of-the-art infertility diagnostic laboratory
- Modernisation of IVF laboratory

Faculty members of
Clinical Departments and
Directorate of Clinics

- Electronic Medical Records, Hospital Management
- Software systems, digital archiving for strengthening the client convenience and operational efficiency
- Establishment of Dept. of Veterinary Medical Informatics & TANUVAS Clinical Data Repository
- Strengthening of Centralised Clinical Laboratory, Resident Veterinary Services, across all veterinary college hospitals
- Modernization of infrastructure at Veterinary University Peripheral Hospital

Faculty members of
Clinical Departments and
Directorate of Clinics

Goal 8

Automation in farming practices in instructional livestock farms and green initiatives of all campuses

Tasks / Activities

- Mechanization of livestock and poultry farm units and creation of fodder technology unit in all instructional farms
- Creation of modern abattoir for small ruminants and poultry
- Designing farmer-friendly farm devices and bio-degradable packing for TANUVAS mineral mixture and accounting software for feed
- Provision of solar street lights, roof top solar units, rain water harvesting and other green initiatives in the campuses

Faculty members of
Research Farms and
Directorate of Animal
Production

Deans of colleges and
Directors

Goal 9

Establishing e-studio for e-content development on farm management modules and world class virtual farm-cum-exhibition unit to facilitate better teaching – learning process

Tasks / Activities

- Establishment of e-studio for content development in Veterinary and Animal Sciences

Faculty members of
Veterinary and Animal
Husbandry Extension

Goal 10

Strengthening and modernization of library facilities with up-to-date referencing materials

Tasks / Activities

- Procurement of latest reference books, periodicals and Electronic information display

Faculty members of
Library and Information
Science

- Digital resources such as e-books, e-journals, databases and institutional repositories, web Online Public Access Catalogue (OPAC) system, purchase of drop box and Kiosk for self check-in and check out of the books with the help of radio frequency identification (RFID) technology and RFID wand reader based stock

Faculty members of
Library and Information
Science

Goal 11

Developing a quality physical education infrastructure to help students to develop attitude, motor skills, social skills and confidence for an active lifestyle

Tasks / Activities

- Creation and improvement of indoor gym and stadium with advanced sports facilities at all constituent colleges

Faculty members of
Physical Education

Goal 12

Creation of Veterinary Business Incubation Centre to perform outreach activities and translate research outcomes to benefit stakeholders and cyber extension facilities for distance communication

Tasks / Activities

- Creation of "Veterinary Incubation Centre" to perform outreach activities and translate research outcomes to benefit stakeholders

Directorates of Animal
Health Studies and
Extension Education

- Developing need-based mobile applications

Directorate of Extension
Education

LONG-TERM ACTION PLANS (2020-30)

Goal 1

Creation and modernization of the infrastructure for imparting quality education and research in line with the recent advancements in genomics, next-generation sequencing, nutritional, environmental, physiological, nano-biotechnological and molecular interaction studies, and livestock production technology

Tasks / Activities

- Establishment of Multipurpose Educatorium as a leading learning centre, and a place to promote higher education

Responsible person(s)
by designation

Deans of all colleges

- Modernisation of infrastructure with upgraded versions for effective learning and research in genomics and data analysis

Faculty members of Animal Genetics and Breeding, Veterinary Biochemistry, Veterinary Physiology, Central Instrumentation Laboratory and Bioinformatics Centre

- Creation of small scale feed mill

Faculty members of Animal Nutrition

- Creation of research facility for animal welfare and livestock behaviour studies to enhance animal productivity

Faculty members of Livestock Production Management

- Quality control laboratory in poultry egg and meat

Faculty members of Poultry Science

- Establishment of nutrigenomics centre and bioconversion of poultry waste into nutritive biomass

- Establishment of healthy experimental sero-negative animal units for large and small ruminants, birds and companion animals for use in trials

Faculty members of Animal Nutrition

- Establishment of modern meat processing plant

Faculty members of Livestock Products Technology

Goal 2

Establishing an advanced infrastructure and instrumentation facilities on par with international standards for research up to nano-molecular level, diagnostics and referral services

Tasks / Activities

- Research on tissue interaction analysis of bio-nano molecules

Faculty members of Centralised Instrumentation Laboratory

- Establishment of referral clinical centre with high end diagnostic facilities

Faculty members of Clinical Departments

- Establishment of full-fledged engineering laboratory for machinery development

Faculty members of Food Process Engineering

- Pilot scale production of food products for market launch and to assess the level of acceptance of technology

Faculty members of Food Processing Technology

- Establishment of a Biosafety level 4 facility for handling emerging/exotic pathogens

Directorate of Animal Health Studies

Goal 3

Establishing a facility for tissue registry and museum for formalin-free specimens

Tasks / Activities

- Establishing a repository for archival tissues of neoplasm and various diseases of livestock and poultry for retrospective studies and research

Faculty members of
Veterinary Pathology

Goal 4

Establishment of referral centre for drug residue analysis, food testing laboratory, forensic laboratory etc.

Tasks / Activities

- Creation of facilities for *in-silico* pharmacology and molecular modelling studies for active ingredients of natural products and *in-vitro* facilities for drug discovery / delivery; and upgradation to NABL accredited laboratory
- Creation of laboratory for research and development of herbal products
- Establishment of herbarium for medicinal plants

Faculty members of
Veterinary Pharmacology
and Toxicology

Goal 5

Creation of molecular diagnostic lab for common infectious diseases and introducing geographic information system (GIS) in disease surveillance

Tasks / Activities

- State-of-the-art infrastructural facilities for molecular diagnosis of most common infectious diseases of pet and large animals

Faculty of Veterinary
Public Health and
Epidemiology

Goal 6

Upgrading existing facilities as “Centre of Excellence” in the fields of diagnosis and management of zoonotic pathogens, avian respiratory diseases, wildlife health and management and veterinary surgery and radiology

Tasks / Activities

- Centre of Excellence for poultry respiratory diseases
- Establishment of rescue centre for maintenance of rescued/ailing wild animals in collaboration with the Dept. of Forests

Faculty of Veterinary
Microbiology

Faculty of Wildlife
Science, Animal Health
and Clinical Departments

Goal 7

Modernization of hospital infrastructure, clinical laboratories, and development of veterinary medical informatics, artificial intelligence and big data service centre across all veterinary college hospitals

Tasks / Activities

- Establishing state-of-the-art “Centre for Bovine Fertility” and Referral Centre for Obstetrical Management with Tele-medicine Facility
- Development / Strengthening of clinical and molecular diagnostics and laboratory services across all veterinary college hospitals and addition of units like (i) Advanced Clinical Chemistry Laboratory, (ii) Clinical Immunology Laboratory, (iii) Prenatal & Perinatal Diagnostics Laboratory and (iv) Coagulation & Transfusion Medicine Laboratory
- Establishing modernized sensor-based livestock and poultry production system with automated feeding, watering and milking systems

Faculty of Veterinary Obstetrics and Gynaecology

Faculty members of Clinical Departments, Veterinary Pathology, Veterinary Biochemistry and Veterinary Microbiology

Directorate of Animal Production

Goal 8

Automation in farming practices in instructional livestock farms and green initiatives of all campuses

Tasks / Activities

- Organic certification for organic farming, establishment of automatic weather station and large environmental control chambers for livestock research and zero-budget farming
- Introducing cost efficient integrated farming system (IFS) model

Faculty members of Livestock Farm Complex and Directorate of Animal Production

Goal 9

Establishing e-studio for e-content development on farm management modules and world class virtual farm-cum-exhibition unit to facilitate better teaching – learning process

Tasks / Activities

- Setting up of virtual theatre-cum-digital exhibition unit for viewing virtual farm management modules and digital displays on livestock and poultry management
- Establishment of cloud based content delivery system

Faculty of Veterinary and Animal Husbandry Extension

Networking Officer / Dean

Goal 10

Strengthening and modernization of library facilities with up-to-date referencing materials

Tasks / Activities

- Expansion of library facilities

Faculty members of
Library and Information
Science

Goal 11

Developing a quality physical education infrastructure to help students to develop attitude, motor skills, social skills and confidence for an active lifestyle

Tasks / Activities

- Improvement of outdoor and indoor sports and games facilities inside the campuses of colleges

Deans, Sport Secretaries
and Faculty members of
Physical Education

Goal 12

Creation of Veterinary Business Incubation Centre to perform outreach activities and translate research outcomes to benefit stakeholders and cyber extension facilities for distance communication

Tasks / Activities

- Creation of start-ups for innovative farm product development

Faculty members of
Livestock Production
Management, Livestock
Business Management,
and Directorates of
Animal Health Studies
and Extension Education

- Establishment of transit scientist home

Deans of colleges

- Creation of community radio and electronic medium centre

Faculty members of
Veterinary and Animal
Husbandry Extension

- Using cloud services for hosting web portals and websites
- Utilizing 'eduroam' like platforms to provide a single wireless solution to all the connectivity requirements of the University

Faculty members of
Animal Husbandry
Statistics and Computer
Applications

5. FACULTY DEVELOPMENT



AIM

- Creating a community of teachers and scholars empowered for excellence through mentorship, leadership and faculty development programmes

Goals

1. Facilitating short-term, post-doctoral, non-degree opportunities to learn new educational tools, apply new technologies and creating link with their academic peers of national / international academia
2. Improving teaching skills of faculty with modern pedagogic tools and techniques
3. Updating knowledge on the newer technologies and creating a pool of experts for sustained increase in research output
4. Developing planning and organizing skills among teaching faculty and supporting staff
5. Providing platform for multidisciplinary approach in research and education
6. Advancing quality of clinical human resources for emerging clinical practices, services and specialty practices
7. Promoting interpersonal relationship of faculty
8. Recognising achievements of faculty



SHORT / MEDIUM-TERM ACTION PLANS (2020-25)

Goal 1

Facilitating short-term, post-doctoral, non-degree opportunities to learn new educational tools, apply new technologies and creating link with their academic peers of national / international academia

Tasks / Activities

- Organising national and international events such as seminars, workshops, symposia and conferences on the recent trends and advancements in veterinary and animal sciences
- Providing adequate opportunities to faculty members for participation in National / International events
- Enrolling and completing online courses in 'management education' and in 'interdisciplinary' areas
- Post-doctoral programmes in selected disciplines in Madras Veterinary College, and Veterinary College and Research Institute, Namakkal

Responsible person(s)
by designation

Faculty members of all
the constituent Units and
University Officers

University Officers

Faculty members of all
the constituent Units and
University Officers

Goal 2

Improving teaching skills of faculty with modern pedagogic tools and techniques

Tasks / Activities

- Training the faculty for using smart teaching aids and to handle teaching in online mode
- Training the faculty in the usage of Information and Communication Technology (ICT) tools to enhance the teaching-learning process

Faculty members of all
the constituent Colleges
and University Officers

Goal 3

Updating knowledge on the newer technologies and creating a pool of experts for sustained increase in research output

Tasks / Activities

- Encouraging the faculty to take up multi-institutional projects with interdisciplinary collaboration
- Proposing research projects and winning extramural grants for research and development
- Publishing research outcomes in peer-reviewed journals with high NAAS scores or impact factor

Faculty members of all
the constituent Units and
University Officers

Goal 4

Developing planning and organizing skills among teaching faculty and supporting staff

Tasks / Activities

- Encouraging faculty to organise outreach programmes such as mass contact programmes, health camps, etc.

Heads of Departments, Deans and Directors

- Organising trainers training programmes

Heads of Department of Veterinary and Animal Husbandry Extension, Deans and Directors

- Refresher trainings to laboratory technicians and laboratory assistants

Heads of Departments, Deans and Directors

Goal 5

Providing platform for multidisciplinary approach in research and education

Tasks / Activities

- Developing on campus faculty clubs as knowledge sharing medium for effective interaction and dialogue among faculty and research scholars
- Organising special lectures and motivational programmes to faculty and research scholars

Faculty members, Heads of Departments, Deans and Directors

Goal 6

Advancing quality of clinical human resources for emerging clinical practices, services and specialty practices

Tasks / Activities

- Imparting national clinical training and skill development programmes to the faculty

Heads of Clinical Departments and Directorate of Clinics

- Promoting faculty exchange programmes

Heads of Clinical Departments, Directorate of Clinics and Deans

- National and international clinical webinars and promotion of online knowledge exchange programmes

Faculty members of Clinical Departments and Directorate of Clinics

Goal 7

Promoting interpersonal relationship of faculty

Tasks / Activities

- Brainstorming programmes on improving interpersonal skills and communication, compliance and risk management and leadership training for faculty
- Motivational and stress management programmes

Heads of Departments
and University Officers

Goal 8

Recognising achievements of faculty

Tasks / Activities

- Performance appraisal of faculty on achievements
- Rewarding outstanding faculty based on continuous faculty performance assessment

University Officers

LONG-TERM ACTION PLANS (2020-30)

Goal 1

Facilitating short-term, post-doctoral, non-degree opportunities to learn new educational tools, apply new technologies and creating link with their academic peers of national / international academia

Tasks / Activities

- Continuing professional development through post-doctoral programmes, faculty scholarship / faculty enrichment programmes to strengthen the competencies of faculty
- Organising and participating in national and international events such as seminars, workshops, symposia and conferences on the recent trends and advancements in veterinary and animal sciences
- Nurturing faculty throughout the career through mentorship and leadership development programmes
- Faculty exchange programmes with International Universities excelling in newer technologies for augmenting research attributes and outputs
- Post-doctoral programmes in selected disciplines in Madras Veterinary College and Veterinary College and Research Institute, Namakkal

Responsible person(s) by designation

Faculty members of all
the constituent Units and
University Officers

University Officers

Faculty members and
University Officers

Faculty members of all
the constituent Units and
University Officers

Goal 2

Improving teaching skills of faculty with modern pedagogic tools and techniques

Tasks / Activities

- Guiding faculty to programmes and resources for innovative teaching strategies and technologies with a focus on student success
- Training the faculty in the usage of Information and Communication Technology (ICT) tools to enhance the teaching-learning process

Faculty members of all the constituent Units and University Officers

Goal 3

Updating knowledge on the newer technologies and creating a pool of experts for sustained increase in research output

Tasks / Activities

- Training faculty in accredited laboratories and institutions in different disciplines and subject matters
- Encouraging the faculty to take up multi-institutional projects with interdisciplinary collaboration
- Proposing research projects and winning extramural grants for research and development
- Publishing research outcomes in peer reviewed journals with high NAAS scores or impact factor

Faculty members of all the constituent Units and University Officers

Goal 4

Developing planning and organizing skills among teaching faculty and supporting staff

Tasks / Activities

- Encouraging faculty to organise outreach programmes such as mass contact programmes, health camps, etc. in association with line departments
- Organising orientation and refresher programmes
- Refresher trainings to laboratory technicians and laboratory assistants

Heads of Departments, Deans and Directors of the University

Goal 5

Providing platform for multidisciplinary approach in research and education

Tasks / Activities

- Developing on campus faculty clubs as knowledge sharing medium for effective interaction and dialogue among faculty and research scholars
- Providing a physical space that enables faculty collaboration, offers access to supportive resources and fosters a sense of belonging

Faculty members, Heads of Departments, Deans, Directors and Registrar of the University

Goal 6

Advancing quality of clinical human resources for emerging clinical practices, services and specialty practices

Tasks / Activities

- Imparting advanced national and international clinical training and skill development programmes
- Promoting faculty exchange programmes
- National and international clinical webinars and promotion of online knowledge exchange programmes
- Establishing collaboration with human medical hospitals, colleges, universities and other agencies

Faculty members, Heads of Departments of Clinical Departments, Director of Clinics and Deans

Goal 7

Promoting interpersonal relationship of faculty

Tasks / Activities

- Brainstorming programmes on improving interpersonal skills and communication, compliance and risk management and leadership training for faculty
- Motivational and stress management programmes

Heads of Departments and University Officers

Goal 8

Recognising achievements of faculty

Tasks / Activities

- Cultivating a culture that supports, honours, and rewards the achievements and creativity of a diverse faculty

University Officers

6. INTERNATIONALIZATION



AIM

- Collaboration with foreign Institutes / Universities / Organizations for achieving excellence in

Goals

Education

1. Global competitive centre for education in Veterinary and Animal Sciences / Livestock Economics and Business Management and offer Post-graduate / Doctoral / Post-doctoral programmes for foreign students
2. Facilitating student exchange/exposure programmes with foreign universities and international business entrepreneurs excelling in technology
3. Promoting international outreach, collaborations and knowledge sharing in various domains and be the International Centre for Clinical Excellence

Research

1. Developing collaborative research projects / sandwich programmes on recent trends in veterinary and animal sciences, food processing, nutrition and food safety and farm animal management with foreign universities; development of linkages with the liaison agencies and industry for synchronised growth in the animal husbandry sector. Upgrading departments for international research competence
2. Entering into MoU with foreign universities or foreign funding agencies for research

Training / HRD programmes

1. Offering collaborative, international training programmes
2. Regular faculty exchange and up-gradation by effective linkage with international Institutes to sharpen their research acumen



SHORT / MEDIUM-TERM ACTION PLANS (2020-25)

Education

Goal 1

Global competitive centre for education in Veterinary and Animal Sciences / Livestock Economics and Business Management and offer Post-graduate / Doctoral / Post-doctoral programmes for foreign students

Tasks / Activities

- To have tie-up with international institutes for post-graduate and doctoral students exchange programmes
- Facilitating overseas students to carryout research programmes / post-doctoral fellowship

Responsible person(s) by designation

Faculty members of all departments

Deans / Heads of Departments

Goal 2

Facilitating student exchange/exposure programmes with foreign universities and International business entrepreneurs excelling in technology

Tasks / Activities

- International exposure to student through student exchange programmes with reputed universities on recent technological development

Controller of Examinations, Deans of colleges and Director of Extension Education

Goal 3

Promoting international outreach, collaborations and knowledge sharing in various domains and be the International Centre for Clinical Excellence

Tasks / Activities

- Steps to introduce NRI students and students of foreign countries to undergo the academic programme in food production

Deans of College of Food and Dairy Technology and College of Poultry Production and Management

- Establishment of International Centres of Clinical Excellence in Veterinary Medical / Surgical Sciences in MVC

Director of Clinics and Faculty members of Clinical Departments

Establishment of Veterinary Theriogenological Sciences in MVC	Director of Clinics and Faculty members of Veterinary Obstetrics and Gynaecology
- International Accreditation of Hospital Units, Labs and Programmes - Establishment of Centre for Continuing Clinical Veterinary Education for Developing Countries	Director and Faculty members of Clinics
Research Goal 1 Developing collaborative research projects / sandwich programmes on recent trends in veterinary and animal sciences, food processing, nutrition and food safety and farm animal management with foreign universities; development of linkages with the liaison agencies and industry for synchronised growth in the animal husbandry sector. Upgrading departments for international research competence Tasks / Activities - Collaborative research on animal production and health problems of pandemic nature with foreign universities - Engaging foreign students for the research activities in various state and central Government funded programmes - Work in collaboration with International Development Research Centre (IDRC), Canada for alleviating nutritional deficiencies - International collaboration for research in farm animals and extension	Faculty members of Animal Health and Production departments Faculty members of all departments Deans and Faculty members of Animal Nutrition department Directors of Animal Production, Research and Extension Education
Goal 2 Entering into MoU with foreign universities or foreign funding agencies for research Tasks / Activities - Execution of Memorandum of Agreements (MoA) with International Institutes of academic excellence - Ensuring MoU with various poultry business entrepreneurs	Director of Research and Deans Dean of College of Poultry Production Management and USPCP

Training/HRD programmes

Goal 1

Offering collaborative, international training programmes

Tasks / Activities

- Organizing international conferences / seminars / symposia / workshop / webinars for widening the horizon of knowledge

University Officers and Faculty members of all Departments

Goal 2

Regular faculty up-gradation by effective linkage with international Institutes to sharpen their research acumen

Tasks / Activities

- Faculty exchange programmes with universities / institutes within and outside the country
- Training of Faculty members abroad in the selected area of food processing
- Staff with better academic and research acumen to act as adjunct faculty in international institutes

University Officers

Director of Research and Dean of College of Food and Dairy Technology

Faculty members of all Departments

LONG-TERM ACTION PLANS (2020-30)

Education

Goal 1

Global competitive centre for education in Veterinary and Animal Sciences / Livestock Economics and Business Management and offer Post-graduate / Doctoral / Post-doctoral programmes for foreign students

Tasks / Activities

- Strengthening the research and infrastructure facilities available in the host institution to attract foreign students
- Foreign collaborative projects as well as student exchange programmes to facilitate swapping of more educational and cultural activities
- Collaboration with foreign universities and organisations for development of MOOC courses

Responsible person(s) by designation

Deans of Colleges

Deans and Faculty members

Directorates of Extension Education and Distance Education

Establishment of International Centre in the subject of Livestock Economics and Business Management	Faculty members of Animal Husbandry Economics and Livestock Business Management
Conducting training programmes to the overseas students	Deans and Faculty members of veterinary colleges
Goal 2 Facilitating student exchange/exposure programmes with foreign universities and international business entrepreneurs excelling in technology Tasks / Activities Student externship programmes for the clinical training with the International Universities and engaging the students of other foreign universities for clinical training	Director and Faculty members of Clinics
Encouraging faculty to undergo Post-Doctoral programmes in foreign universities	Deans of Veterinary Colleges, College of Food and Dairy Technology and College of Poultry Production and Management
Global networking of institutions and organizations in the field of poultry technology	Dean and Faculty members of College of Poultry Production and Management
Student exchange/ exposure programmes with foreign universities and international poultry business entrepreneurs excelling in poultry production technology	Dean of College of Poultry Production and Management
Facilitating overseas students to carryout research programmes / Post-doctoral fellowship	Deans / Heads of Departments
Goal 3 Promoting international outreach, collaborations and knowledge sharing in various domains and be the International Centre for Clinical Excellence Tasks / Activities - Training to faculty on wild animal health in international institutes - Externship training and collaborative research to PG students of wildlife science in wildlife research centres abroad	Dean of Faculty of Basic Sciences and Faculty members of Wildlife Science Department

- Establishment of International Centres of Clinical Excellence in (i) Bovine Medicine & Surgery, (ii) Small Ruminant Medicine and Surgery, (iii) Tropical Veterinary Medicine & Herd Health, (iv) Comparative Reproductive Biology & Theriogenology, and (v) Small Animal Tropical Medicine
- MoUs for development of clinics and hospital
- Accreditation of Hospital Units and Laboratories
- Strengthening of International Clinical Education & Training Centres and activities
- International Centre for Disaster Veterinary Medicine

Directorate of Clinics and Faculty members of clinical departments

Research

Goal 1

Developing collaborative research projects / sandwich programmes on recent trends in veterinary and animal sciences, food processing, nutrition and food safety and farm animal management with foreign universities; development of linkages with the liaison agencies and industry for synchronised growth in the animal husbandry sector. Upgrading departments for international research competence

Tasks / Activities

- Initiation of Collaborative Research and Training Experience Programme (CREATE) on problem-based learning with foreign universities
- International collaboration for research in farm animals
- Increasing the number of foreign funded and multi-institutional research projects
- To undertake collaborative research on animal production and health problems of pandemic nature with foreign universities
- To propose sandwich programmes for student research with foreign universities

Deans of Veterinary Colleges

Directorate of Animal Production

Directors of Animal Production, Animal Health Studies and Research, and Faculty members of Animal Production and Health Departments

Deans / Heads of Departments

Goal 2

Entering into MoU with foreign universities or foreign funding agencies for research

Tasks / Activities

- Establishing linkage with foreign universities through MoUs for cross culture exchange of teaching faculty

All Faculty members

Training/ HRD programme

Goal 1

Offering collaborative, international training programmes

Tasks / Activities

- Organizing international conferences / symposia / webinars and workshops for widening the horizon of knowledge

All Faculty members

- Faculty exchange programmes for teaching and research purpose

Deans / Heads of Departments

- Propagation of knowledge on the latest food quality assurance followed in developed countries for adoption

Dean and Heads of departments of College of Food and Dairy Technology

- Facilitation of faculties to become resource persons in seminar, conference and workshop conducted in premier foreign universities for further research collaboration

University Officers

- Conducting training programmes to the overseas students

Deans / Heads of Departments

- Awareness on international livestock / products export and import regulations

Heads of Centres

- Training on international quality standards

Directorate of Extension Education

Goal 2

Regular faculty exchange and up-gradation by effective linkage with international institutes to sharpen their research acumen

Tasks / Activities

- Staff with better academic and research acumen to act as adjunct faculty in international institutes

All Faculty members

- Inviting the adjunct faculty from abroad for knowledge sharing

All Faculty members

- Facilitating individual departments to develop tie up with eminent institutions abroad for sabbatical positions

University Officers and Heads of Departments