

Animal Husbandry, Dairying and Fisheries Department

Policy Note 2008-09

Animal Husbandry Department

Demand No. 6

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INTRODUCTION

Animal Husbandry occupies an important place in Indian economy and livestock plays a vital role in the life of rural people. With the improved production potentials of our livestock and poultry, livestock farming has become economically viable and remunerative. Due to this, Animal Husbandry, which was all along a subsidiary occupation, has now become a main source of income for many rural poor farmers. The Department of Animal Husbandry is carrying out various programmes for livestock development like genetic improvement through well defined breeding policies, supply of improved and nutritive fodder and health care both preventive as well as treatment of diseases.

In order to improve the quality of Veterinary Services, the Department has taken steps to fill up all existing vacancies. The Department has appointed 245 Veterinary Assistant Surgeons during 2007-08, thereby ensuring that the availability of Veterinarians to provide better services to livestock and farmers. 55 Mobile Units are rendering services to the livestock of farmers residing in remote areas. In addition, 20 Animal Diseases Intelligence Units spread over the State to systematically monitor the prevalence of diseases, identify them, take immediate steps to control and contain them.

The improvement in animal husbandry sector is reflected in the impressive contribution it has made to the national economy and in augmenting household food security. The gross value of output of livestock in the State is Rs.9,654.33 crores. The contribution of livestock sector to the Gross State Domestic Product is 2.62 % and that to the agriculture and allied activities is 23.50 %. The livestock and poultry sectors contributed significantly to this growth. The estimated milk and egg production in the State is 55.60 lakhs MT and 8,044 millions respectively. Likewise, the per capita availability of milk/day and eggs/annum is 234 gms and 123 nos. respectively. Tamil Nadu contributes 5.5 % of milk and 16% of egg production and stands 8th in milk production and 2nd in egg production in the country.

GENERAL ADMINISTRATION

The Animal Husbandry Department is functioning under the overall control of the Commissioner of Animal Husbandry and Veterinary Services. The Commissioner is assisted by 3 Additional Directors and one Joint Director with allocation of different technical subjects. The State is divided into 25 regions each headed by a Regional Joint Director and 65 administrative divisions each headed by an Assistant Director. They are responsible for all the activities of the Department in their area of jurisdiction.

During 2007-08, to improve the administration in the Department the following measures have been taken:

- To strengthen the functioning of the Animal Husbandry Department, 245 Veterinary Assistant Surgeons have been newly appointed.
- A total of 45 technical staff including, 4 Research Assistants to Assistant Research Officers, 4 Assistant Research Officers to Research Officers, 14 Assistant Directors to Deputy Directors, 19 Deputy Directors to Joint Director, 3 Joint Directors to Additional Directors and 1 Senior Research Officer to Director (IVPM) have been promoted. 5 Managers to Administrative Officers and 1 Administrative officer to Deputy Director (Personnel), have also been promoted. In addition, 66 para technical staff and 86 ministerial staff have been promoted.
- A total of 69 personnel including, 7 Typists, 37 Animal Husbandry Assistants, 15 Junior Assistants, 2 Record clerks, 7 Laboratory Attenders and 1 Electrician have been newly appointed.
- Government have permitted to recruit and train 425 individuals and post them as Livestock Inspectors. Training for 110 individuals who were selected on compassionate grounds, is under progress at District Livestock Farm, Hosur.
- A new Regional Joint Director's office exclusively for Namakkal district has been established at a cost of Rs.3.42 lakhs for better administration.
- 79 officials have been provided capacity building training at various institutions in the country.
- 385 cell phones have been provided to the field veterinarians at a cost of Rs.18.10 lakhs.

FEED AND FODDER

Feed and fodder are the major limiting factors in enhancing farm animal productivity. In fact, the economic viability of livestock husbandry depends on the availability and sources of feed and fodder, as feeding cost constitutes about 65-70 % of the total cost of livestock farming. Also, adequate supply of feed and fodder is a critical factor affecting performance of animals. The total estimated requirement of dry fodder and green fodder for the bovine population of the State for a year is 166.80 lakh MT and 500.52 lakh MT respectively. Only 1.103 lakh hectares permanent pasture and other grazing lands are available which constitute 0.8% of the total geographical area of the State.

FODDER STATUS IN THE STATE DURING 2007- 08

	Dry fodder (Lakh MT)	Green fodder (lakh MT)
Requirement	166.80	500.52
Availability	171.628	385.823
Short fall	Sufficient during normal season	114.697
%age Shortfall	Nil	22.92

Though forage production is a crucial link in the food chain, it is still deemed ancillary to agriculture production. Livestock production is almost dependent on crop residues like straws, stalks, tops and crop by products like bran, husk, expeller cakes, cotton seed, etc., Crop residues, mainly sorghum and paddy straw, which are poor in nutritive value constitute the major fodder for cattle and buffalo. The green fodder resources for livestock are mainly derived from grazing in grasslands and pastures, fodder crops from cropped lands, weeds, bund grasses, tree leaves and mixed forages. The availability of green fodder is restricted to selected areas and seasons.

To avoid degradation and depletion of grazing land by using it indiscriminately for other purposes, the Government have ordered not to transfer the grazing land for other purposes unless alternate land of the same extent is developed as grazing land in the same district. To enable the landless families and poor farmers to take up animal husbandry activities, establishment of community feed and fodder banks with the help of self-help groups is being encouraged. Cultivation of perennial high yielding fodder grass varieties like napier, hybrid Co1, Co3, para grass and guinea grass is being encouraged. Cultivation of cowpea, stylosanthus, Co3 grass in coconut and mango grooves as inter crop is being encouraged. Distribution of fodder seed minikits at free of cost is also undertaken. During Kharif and Rabi 2007-08, 8,546 and 10,500 Minikits of Fodder seeds of different crops respectively have been distributed to farmers.

The department has fodder seed and slips production in Padappai seed Farm and at District Livestock Farms, Hosur, Chettinadu, Abishekapatti, Eachenkottai, Orathanad and Udthagamandalam. Fodder slips are supplied to interested farmers from these Departmental farms for augmenting fodder production. During 2007-08, 71.98 lakhs of fodder slips were distributed to farmers.

In order to increase the green fodder availability, 1,224 acres of land has been brought under fodder cultivation in 8 districts under Western Ghat Development Scheme. Apart from this 1,925 acres of land under Tamil Nadu Irrigated Agricultural Modernisation and Water-bodies Restoration and Management project have been developed in the first phase in 9 sub-basins.

Apart from this, it is proposed to bring under fodder cultivation, 4,261 acres of District Livestock Farms' land, 3,275 acres of farmers' land under various Government schemes, 1,450 acres of private land under Tamil Nadu Irrigated Agricultural Modernisation and Water-bodies Restoration and Management project in 14 sub-basins and 400 acres of land under Western Ghat Development scheme. By this, 1.50 lakh MT of fodder is expected to be produced additionally during 2008-09.

LIVESTOCK DEVELOPMENT

LIVESTOCK AND POULTRY POPULATION

The census on livestock, poultry, agriculture implements and fisheries is conducted once in 5 years since 1951 considering the shorter life span of livestock. The 18th Quinquennial Livestock and Poultry Census has been completed and the data being compiled. It will be published with the concurrence of Government of India shortly. The 17th Census was carried out by the Department of Animal Husbandry in 2003-04. According to the 17th Livestock and Poultry Census, the species wise distribution of livestock and poultry, their percentage of increase / decrease over previous census and density in the State are as follows:

Species	Population	Density (Per sq.km)	Increase / decrease over previous census
Cattle	91,41,043	70	1.04 %
Buffalo	16,58,415	13	-39.51 %
Sheep	55,93,485	43	6.35 %
Goats	81,77,420	63	27.45%
Pigs	3,20,868	2	-47.29%
Others	50,798	1	-5.56 %
Total Livestock	2,49,42,029	192	3.38%
Total Poultry	8,65,91,273	666	137.16%

Some of the salient features of Census 2004 are:

- Livestock population has marginally increased by 3.38%, from 241.26 lakhs in 1997 to 249.42 lakhs in 2004
- Poultry population has substantially increased by 137.16%, from 365.11 lakhs in 1997 to 865.91 lakhs in 2004.
- The share of crossbred milch cattle in total milch cattle population has increased from 28.67% in 1997 to 63.15% in 2004.
- Sheep population has increased by 6.35 %, from 52.59 lakhs in 1997 to 55.93 lakhs in 2004.
- Goat population has increased by 27.45%, from 64.16 lakhs in 1997 to 81.77 lakhs in 2004.
- Buffalo population has decreased from 27.41 lakhs in 1997 to 16.58 lakhs in 2004.
- Pig population has decreased by 47.29%, from 6.09 lakhs in 1997 to 3.21 lakhs in 2004.

LIVESTOCK FARMS

Livestock Farms are maintained for selective scientific breeding of specific species of livestock. They serve as demonstration farms and training centre for needy farmers. Moreover, it acts as a source for quality livestock to the farmers. There are 11 Livestock Farms, out of which 3 are Sheep Farms. In addition, there is one farm exclusively for breeding poultry.

NEW FARM POLICY

The Government of Tamil Nadu is evolving a new farm policy of maintaining breeds of livestock at the 11 Livestock Farms and land development and fodder cultivation on wider areas in 11 farms. For this, it is proposed to propagate the livestock breeds at their native tracts restricting the number of breeds to one or maximum of two in each farm depending on its location so as to avoid genetic mismatch and to maintain the purity of the germplasm.

The local and growing demand in the livestock market will be considered for the purpose and emphasis will be given to produce and sell as many animals as possible for breeding especially the males to the farmers through the State Livestock Farms. It is also proposed to take up land development by utilizing the area available in the farms for fodder cultivation to demonstrate the technology, convince farmers on such alternate crop patterns for their land to augment profitability, supply the required slips and seeds to improve the quality and quantity of fodder supply in the State.

Every effort is being made to utilize all the available resources in the farm to the maximum by expanding the size of the livestock units, developing the farm infrastructure and by bringing in as much area as possible under fodder cultivation / fodder seed production. Thereby all the Farms will be put to optimal use.

The following are the livestock breeds that will be maintained in the department farms:

Sl. No	Name of the Farm	Species to be maintained
1	Exotic Cattle Breeding Farm, Eachenkottai (Thanjavur district)	Cattle - Jersey, Crossbred Jersey, Umbalachery, Murrah
2	District Livestock Farm, Hosur (Krishnagiri district)	Cattle - Crossbred Jersey, Crossbred Holstein Friesian, Jersey, Red Sindhi, Kangeyam Sheep - Mecheri, Trichy Black Goat - Kodi aadu, Tellicheri Pig - Large White Yorkshire Poultry -Giriraja, Aseel, White leghorn, Turkey Horse - Kathiawar, Thorough bred
3	District Livestock Farm, Abishekapatti (Tirunelveli district)	Cattle - Crossbred Jersey, Sahiwal Sheep - Kilakaraisal Pig - Large White Yorkshire, Landrace, Landrace Cross

Sl. No	Name of the Farm	Species to be maintained
		Poultry -Nandanam Colour broiler
4	District Livestock Farm, Udhagamandalam (The Nilgiris district)	Cattle - Jersey, Crossbred Jersey, Holstein Friesian, Holstein Friesian Cross
5	District Livestock Farm, Pudukottai (Pudukottai district)	Cattle - Jersey Cross Sheep - Ramnad White Goat - Jamunapari Pig - Landrace
6	District Livestock Farm, Orathanad (Thanjavur district)	Buffalo -Murrah Pig - Large White Yorkshire
7	District Livestock Farm, Chettinad (Sivagangai district)	Cattle - Jersey Cross, Tharparkar Sheep - Ramnad White Goat - Jamunapari Pig - Large White Yorkshire
8	Livestock Farm, Korukkai (Thiruvavur district)	Cattle - Umbalachery
9	Sheep Farm, Chinnasalem (Villupuram district)	Sheep - Mecheri, Madras Red Goat - Tellicheri, Salem Black
10	Sheep Farm, Mukundarayapuram (Vellore district)	Sheep - Madras Red
11	Sheep Farm, Sathur (Virudhunagar district)	Sheep - Vembur Goat - Kanni
12	Poultry Farm, Kattupakkam, (Kancheepuram district)	Poultry -Nandanam colour chicken / CARI Nirbheek, Nandanam Turkey - I

CATTLE DEVELOPMENT

Cattle comprise 84.64% of the total bovines reared in the State, in which exotic, crossbred, indigenous and native pure accounts for 0.44%, 55.79%, 6.01% and 37.76% respectively. The categorywise breedable age female cattle population and their percentage increase/ decrease are as follows:

Sl. No	Category	Breedable age female population		
		16th Livestock Census 1997 (In lakhs)	17th Livestock Census 2004 (In lakhs)	Increase or decrease percentage
1	Exotic	0.16	0.23	43.75
2	Crossbred	9.91	25.66	158.93
3	Native pure	5.05	1.80	-64.36
4	Indigenous	20.17	13.48	-33.17
	TOTAL	35.29	41.17	16.66

Non-descript animals have a higher age at first calving, low lactation period, low milk yield, lengthy dry and inter-calving periods, but they are highly disease resistant and heat tolerant. The exotic breeds have early maturity, lengthy lactation period, high milk yield, short dry and inter-calving periods but they are less disease resistant and heat tolerant. To

improve the economic traits of the local animals and also to preserve the desirable traits like disease resistance and heat tolerance of indigenous animals in a short time at an affordable cost, cross breeding is an effective solution. Native pure breeds like, Kangeyam and Umbalachery germplasm have inherent capacity to withstand tropical environmental stress and diseases, have genes for better feed conversion efficiency and are well adapted to local environment.

The crossbred breedable cattle population has remarkably increased from 9.91 lakhs as per 1997 Census to 25.66 lakhs as per 2004 Census registering an increase of 159 %. During the same period, the number of indigenous cattle has decreased from 20.17 lakhs to 13.48 lakhs, a decrease by 33 %. Though there is a decrease in the indigenous population, there is a significant growth in crossbred population. In fact, the growth in population per year in the last decade has been 18.79%. This is mainly attributed to the successful implementation of the artificial insemination programme.

The Government have evolved a new breeding policy for cattle to enhance the milk production traits in livestock and to sustain growth in the dairy sector:

- ❖ Selective breeding of native breeds is to be followed in Erode, Coimbatore, Karur and Dindigul districts for Kangeyam and in Nagapattinam, Thiruvarur and Thanjavur for Umbalachery.
- ❖ Selective breeding of Pulikulam, Bargur, Alambadi and Malaimadu in their respective breeding tracts.
- ❖ Crossing of low yielding non descript cows with Jersey or Holstein Friesian depending on the agro-climatic conditions. In addition to the use of purebred Jersey, high pedigreed Indian milch breeds Red Sindhi and Tharparkar may also be used. Likewise Sahiwal breeds may be used in place of Holstein Friesian.
- ❖ Jersey crosses are to be bred with bulls of 50% Jersey inheritance and Holstein Friesian crosses are to be bred with bulls of 50% Holstein Friesian inheritance by *inter se* mating.

BUFFALO DEVELOPMENT

Buffalo comprises 15.36% of the total bovine population and 7% of the total livestock reared in the State. The categorywise breedable age female buffalo population and their percentage increase / decrease are as follows.

Sl. No	Category	Breedable age female population		
		16th Livestock Census 1997 (In lakhs)	17th Livestock Census 2004 (In lakhs)	Increase or decrease percentage
1	Murrah	0.24	0.62	158.33
2	Graded	2.75	2.27	-17.45

3	Indigenous	10.90	6.12	-43.85
	TOTAL	13.89	9.01	-35.13

For the buffalo development, 62 Murrah bull calves have been purchased so far in the Livestock Farms.

To improve the buffalo development, special prices for the buffalo milk have been fixed by Tamil Nadu Co-operative Milk Producers' Federation. Also through the federation, 810 buffalo heifer calves will be selected and on 100% grant, they will be provided with concentrated feed till they attain 32 months of age or till first calving. On an average of 4,740 Kg. of concentrate feed will be provided.

Government have evolved a new breeding policy for buffalo with the following recommendations:

- Upgrading of Non-descript and Graded buffaloes with Murrah.
- Pure breeding of Toda buffaloes in the high ranges of the Nilgiris.

Artificial Insemination

Superior genetic resources play a pivotal role in productivity enhancement of the dairy animal. Moreover, a proven technology for faster multiplication of genetically superior milk production traits is artificial insemination as this horizontally disseminates superior genetic resources in a population within a short period and at low cost. With this in mind and to improve the production traits of cattle and buffalo, the Department introduced artificial insemination with liquid semen of exotic and graded breeds since 1948. Further with the introduction of frozen semen during 1975, liquid semen was gradually phased out and all the artificial insemination centres started using frozen semen from 1993.

Animal Husbandry Department is now procuring high quality Frozen Semen straws with high yielding germplasm through Tamil Nadu Livestock Development Agency (TNLDA) to improve the milk production potential of breedable animals and for faster multiplication of genetically superior milk production traits in the State.

Artificial insemination work is being carried out at 3,258 Artificial Insemination centres functioning in the State. Apart from the above institutions, this work is also being carried out in infertility camps, Kalnadai Padhukappu Thittam camps and in remote villages, through Mobile Veterinary Units and by private Artificial Insemination Workers trained by Tamil Nadu Livestock Development Agency.

During 2007-08, 34.79 lakhs of Artificial Inseminations were done and it is proposed to carry out 36.69 lakh artificial insemination during 2008-09.

Frozen Semen Production

Three Frozen Semen Production Stations are functioning in the State to cater to the needs of the 3,258 Artificial Insemination Centres located throughout the State. They are at:

- Exotic Cattle Breeding Farm, Eachenkottai in Thanjavur District;
- District Livestock Farm, Hosur in Krishnagiri District;
- District Livestock Farm, Udagamandalam in The Nilgiris District.

A total number of 197 breeding bulls of Jersey, Holstein Friesian, Crossbred, Kangeyam and Murrah are located in these stations. Mini straws are produced in all the Frozen Semen Production Stations. During 2007-08, 27 breeding bulls which were not up to the minimum standard protocol were culled to improve the quality of the Frozen semen straws produced in the above farms. Action is being taken to upgrade these farms to ISO standards.

Breeding Bulls maintained in the Frozen Semen Stations:

Sl. No.	Name of the Farm	Jersey	HF	Sindhi	Jersey Cross	HF Cross	Kangeyam	Red sindhi cross	Murrah	Umbalachery	Total
1	Exotic Cattle Breeding Farm, Eachenkottai	31	-	-	32	-	-	-	48	-	111
2	District Livestock Farm, Hosur	-	-	12	5	9	10	11	-	-	47
3	District Livestock Farm, Udagamandalam	14	12	-	3	10	-	-	-	-	39
	Total	45	12	12	40	19	10	11	48	-	197

During 2007-08, 19.85 lakhs frozen semen straws were produced in the above frozen semen production stations. During 2008-09, the Department will produce 25.32 lakhs frozen semen straws of various breeds like Holstein Friesian Pure, Holstein Friesian Crossbred, Jersey Pure, Jersey Crossbred, Murrah, Kangeyam etc.,

FROZEN SEMEN PRODUCTION CENTREWISE SEMEN PRODUCED DURING 2007-08 AND TARGET FOR 2008-09

Sl. No	Frozen Semen Station	Production 2007-08 (in lakhs)	Target 2008-09 (in lakhs)
1	Exotic Cattle Breeding Farm, Eachenkottai	6.76	10.08
2	District Livestock Farm, Hosur	7.75	8.80
3	District Livestock Farm, Udagamandalam	5.34	6.44
	Total	19.85	25.32

Liquid Nitrogen Production and Supply

Six Liquid Nitrogen Plants are functioning in the State with 2 nos. at Eachenkottai, 1 each at Hosur, Udagamandalam, Saidapet (Chennai) and Thiruparankundram (Madurai) producing Liquid Nitrogen for freezing and storing frozen semen straws.

In the State, 12 Frozen Semen Banks are functioning one each at Vellore, Coimbatore, Madurai, Tiruchirapalli, Dharmapuri, Tirunelveli, Thanjavur, Cuddalore, Sivagangai, Chennai, Dindigul and Salem. The main function of these banks is to store and distribute the liquid nitrogen and frozen semen straws to various veterinary institutions and sub centres that carry out Artificial insemination.

During 2007-08, to regulate the Artificial Insemination work in Animal Husbandry Department, 10 numbers of Silo Tanks (3,000 to 3,500 Lit. capacity) and 3,880 numbers of Liquid Nitrogen containers of various capacities were purchased through TNLDA

During 2007-08, 1.87 lakh litres of liquid nitrogen was produced in the above plants.

**PLANTWISE LIQUID NITROGEN PRODUCTION
DURING 2007-08 AND TARGET FOR 2008-09**

Sl. No	Liquid Nitrogen Plants	No.of Plants	Production 2007-08 (in lakhs)	Target 2008-09 (in lakhs)
1	Exotic Cattle Breeding Farm, Eachenkottai	2	0.62	0.85
2	District Livestock Farm, Hosur	1	0.70	0.85
3	District Livestock Farm, Udhamandalam	1	0.21	0.30
4	Saidapet	1	0.27	0.30
5	Thiruparankundram	1	0.07	0.30
	Total	6	1.87	2.60

CONSERVATION OF NATIVE BREEDS

Cattle comprise 36.65 % of the total livestock and 84.64 % of the total bovine population in the State. The exotic and crossbred account for 56.23 %, native pure breed accounts for 6.01 % and indigenous breed accounts for 37.76 % of the total cattle population. Native animals have a higher age at first calving, low lactation period, low milk yield, lengthy dry and inter-calving periods, but they are highly disease resistant and heat tolerant. To improve these economic traits and also to preserve the desirable traits like disease resistance and heat tolerance of indigenous animals, native breeds are preserved in their home tracts under preservation of indigenous germplasm. The two native breeds of Tamil Nadu preserved are Kangeyam and Umbalachery, which are well known draught breeds.

The department is maintaining 286 Kangeyam and 302 Umbalachery breeds of cattle in Hosur and Korukkai District Livestock Farms respectively. During 2007-08, 3.19 lakh Frozen semen straws were produced from the breeding bulls of native breeds in the Departmental farms.

For the conservation of Bargur, Alambadi and Pulikulam native breeds, the enumeration and characterization of these breeds is being initiated by the TNLDA with the

co-ordination of Department of Animal Breeding and Genetics, Tamil Nadu Veterinary and Animal Sciences University at a cost of Rs.9.50 lakhs.

SHEEP DEVELOPMENT

Sheep rearing acts as a major source of livelihood for majority of landless agricultural labourers and supplements their meagre income. Besides meat and skin, a small income is also derived through penning which is a very common practice followed to fertilise the fields.

Sheep comprises 41% of the total ovine population in which crossbred and native pure account for 14% and 86% respectively. The sheep breeds maintained in the Departmental farms are as follows:

Sl. No	Farms	Breed
1	District Livestock Farm, Chettinad	Kilakaraisal
2	District Livestock Farm, Pudukottai	Ramnad White
3	District Livestock Farm, Hosur	Mandya, Corridale Cross
4	Sheep Farm, Sathur	Vembur, Kilakaraisal
5	Sheep Farm, Chinnasalem	Mecheri, Chennai Red

Quality rams and ewes produced in these farms are sold to local farmers to improve the progeny of local sheep and also for breeding purposes. The Animal Husbandry Department is helping sheep breeders to augment meat production through scientific breeding, feeding and management and to generate additional income to the farmers.

It is proposed to provide sheep units to Dindigul, Madurai, Theni, Tirunelveli, Virudhunagar, Coimbatore and Erode districts under Western Ghat Development Scheme.

GOAT DEVELOPMENT

Goat is a versatile animal and comprises 59% of total sheep and goat population reared in the State. This may mainly be attributed to their quick proliferation intervals, higher growth rates and the ease with which they can be marketed. Moreover it has the most profitable cost: benefit ratio among the different animal farming practices.

Goats can be profitably raised with low investment under intensive as well as most extensive forms of grazing. Goats have good production potential even under hostile physical environment and sparse browsing resources. Unlike sheep, goat can be reared in small units and demand less managerial amenities and have higher prolificacy, which complements their population growth. The most preferred meat for consumption in the State is goat meat and is the costliest in the market.

The goat breeds found in the State are Kanni adu, Kodi adu, Salem black and Molai adu. The goat breeds maintained in the Departmental farms are as follows:

Sl. No.	Farms	Breed
1	District Livestock Farm, Chettinad	Jamunapari
2	District Livestock Farm, Pudukottai	Tellicherry, Jamunapari
3	District Livestock Farm, Hosur	Kodivalli, Jamunapari
4	Sheep Farm, Chinnasalem	Jamunapari
5	Sheep Farm, Sathur	Kanni Velladu, Jamunapari, Kodivalli

The progeny of these goats are supplied to local farmers to improve the local goats. As on 31.03.2008, a stock of 74 bucks, 332 does, 92 buck doe kids are maintained in the above Farms. A total of 329 goat kids were sold to the farmers.

It is proposed to provide goat units to Dindigul, Madurai, Theni, Tirunelveli, Virudhunagar, Coimbatore and Erode districts under Western Ghat Development Scheme.

Intensive Health Cover

Sheep and Goat are reared mainly by grazing, thus making them highly vulnerable to parasitic infestations. These infestations cause many health problems in them like weight loss, delayed maturity, high mortality rate, low fertility rate, etc. apart from making them susceptible to other infections. This also affects the quality of meat, skin and carcass yield.

To overcome all the problems due to parasites, Sheep and Goat have to be dewormed periodically. For this purpose, the Department is implementing an Intensive Health Cover Programme since 1982-83. Under this programme, the Sheep and Goat maintained by poor farmers in all the districts except Chennai, Nilgiris and Kanyakumari are dewormed periodically at free of cost. During 2007-08, a sum of Rs.40.00 lakh was sanctioned for undertaking deworming of Sheep and Goat.

OTHER LIVESTOCK DEVELOPMENT

Piggery Development: To generate gainful self-employment, improve nutrition and to satisfy the considerable urban demand that exist for pork and pork products, this department is encouraging pig rearing among the rural poor. Large White Yorkshire pigs are bred at District Livestock Farms, Orathanad, Hosur, Abishekapatti, Chettinad and Pudukottai. As on 31.03.2008, 77 boars, 122 sows, and 304 piglets are maintained in the above farms. During 2007-08, 1,406 pigs were sold for breeding purposes. The piggery unit at District Livestock Farm, Tirunelveli is being strengthened at a cost of Rs.33.92 lakhs

Horse Breeding: One horse-breeding unit is functioning at District Livestock Farm, Hosur. To revive breeding and to conserve the equine species, Kathiawar and Thorough bred

horses are bred in this unit. The stallions of Thorough bred and Kathiawar are allowed for natural service. At present, there are 5 stallions, 5 mares and 12 young ones in this unit.

Dog Breeding: Our State is home to some well-known dog breeds like Rajapalayam, Kombai and Chippiparai. To preserve these native breeds a dog-breeding unit was started during 1980-81 at Saidapet, Chennai. As there is a demand for other breeds like Labrador and Doberman, these breeds were added to this unit during the year 1997-98. Puppies are sold to the public who desire to rear them. To create awareness and encourage the dog lovers to rear native breeds, the Department participates in the dog shows. At present there are 7 males, 8 females and 2 pups in this unit.

POULTRY DEVELOPMENT

Poultry farming has undergone a transformation from being mere backyard unit to the present vibrant and dynamic commercial enterprise. Poultry farming took a step ahead with the introduction of deep litter system during the late 1960's. The introduction of new scientific techniques, new strains of poultry, California cage system have revolutionized the industry.

The process was speeded up with the help of Poultry Extension Centres, which acted as demonstration farms and extension centers providing training to farmers to take up poultry farming. Moreover, widespread immunization against Ranikhet disease and easy availability of quality feeds, all contributed to development of poultry rearing as an industry. Poultry rearing which had been a cottage industry all along has now become a big industry by itself in many places in the districts of Namakkal, Salem, Erode and Coimbatore.

There is a good potential for export of eggs, egg products and frozen chicken meat from our State to Gulf countries, Russia etc. Hence, as per the suggestions and format prescribed by Export Inspection Council of India, the Department has issued a number of health certificates to commercial poultry farms thereby facilitating export of eggs.

ESTABLISHMENT OF COLD STORAGE UNIT FACILITY FOR STORAGE OF EGGS

It is a long felt need of the Tamil Nadu poultry industry to have a cold storage unit to store excess quantity of eggs produced in flush season and to avoid losses in times of disturbances in transport and Ban on export of eggs in time of out breaks of Avian Influenza in India, which leads to stagnation of large quantities of eggs. To fulfill the long-standing demand, it is proposed to construct a Cold Storage Unit for storage of eggs at Namakkal at a cost of Rs.10.00 crores as a Joint Venture project under public-private partnership. For this the Government have released Rs.1.00 crore as Government's equity to TIDCO and the work has been initiated by TIDCO.

BACKYARD POULTRY DEVELOPMENT

In Tamilnadu, poultry rearing is practiced since time immemorial as a profitable traditional backyard enterprise. It still continues to be the livelihood preposition of several poor farmers in the rural areas and contributes to 5% of the total egg production in the State. Backyard poultry rearing has distinct advantages over other vocations, as the land requirement is small; returns are faster with little initial capital investment. Though the initial investment is minimum, the landless agricultural labourers find it very difficult even to invest this little amount. Hence, for the economic upliftment of this category of people and to improve the household nutrition, Giriraja birds were provided to be reared as backyard units under Western Ghat and Hill Area Development programmes (HADP). This backyard poultry development is being taken up in the districts where poultry rearing is not practiced on commercial basis.

During 2007-08, 200 farmers in the Nilgiris district were supplied with Giriraja birds under HADP at 25% subsidy. It is proposed to provide Giriraja birds and training on poultry keeping to farmers in Dindigul, Madurai, Theni, Tirunelveli and Virudhunagar districts under Western Ghat Development Programme.

Since these birds are on free range, they are very susceptible to the highly fatal Ranikhet disease. To protect the poultry from this disease, the department is providing vaccination against this disease on specified days at the veterinary institutions and subcentres every week. The department is also conducting a statewide vaccination programme against Ranikhet disease during the month of February every year and also in the camps conducted under 'Kalnadai Padukappu Thittam'. During 2007-08, 38.40 lakhs of poultry have been benefited by this Special bi-weekly vaccination camp.

Assistance to State Poultry Farms

To improve the economic conditions and living standards of rural people by encouraging them in poultry rearing, to create additional avocations, employment opportunities and supplement the income of marginal farmers, landless labourers, self help groups and other socially backward sector of the society, the Department is implementing a Centrally shared scheme (80:20) at Poultry Farm, Kattupakkam with a total outlay of Rs.74.69 lakhs and at District Livestock Farm, Hosur with a total outlay of Rs.85.00 lakhs.

Under this programme, poultry sheds are being constructed, besides strengthening the farms' infrastructure. In addition, Vanaraja / Giriraja parent stock have been added to these farms. Apart from this, the beneficiaries are selected and given one day training on poultry rearing. The beneficiaries will be given poultry units consisting of ten females and one male. For 2007-08, the above programme is extended in District Livestock Farms, Orathanad and Chettinad at a total cost of Rs.85.00 lakhs in each farm.

Turkey rearing

With the aim of creating awareness on Turkey rearing as one of the profitable backyard business, to popularize it as rural farming and to create self-employment, the Department is maintaining turkey units at Poultry Farm, Kattupakkam and District Livestock Farm, Hosur. During 2007-08, 207 turkeys are maintained in the above units.

AVIAN INFLUENZA

From 2003 onwards, Avian Influenza, the deadly disease caused by the virus H5N1 has spread to 45 countries in Africa, Asia and Europe and besides killing more than 250 million birds, has also killed more than 220 persons in 14 countries. The disease has caused five outbreaks in India - the **first 2 outbreaks** in Maharashtra, Gujarat & Madhya Pradesh in Feb-Apr 2006, the **third outbreak** in Manipur in July 2007, the **fourth outbreak** in West Bengal in Jan-Feb 2008 and the **fifth outbreak** in Tirupura. The Department of Animal Husbandry is undertaking intensive surveillance in all poultry farms, backyard poultry and also in bird sanctuaries to look for any unusual sickness or death in poultry or in migratory birds. The State is also fully prepared to face any emergency of an outbreak and swing into immediate action to prevent spread of the disease. The following actions have been taken by the Government:

- A State Level Task Force, headed by Chief Secretary to Government of Tamil Nadu is monitoring the surveillance and preparedness of the State for Avian Influenza. Besides Animal Husbandry, the Committee is represented by Departments of Home, Public Health, Forests, Rural Development and Tamil Nadu Veterinary and Animal Sciences University. A State Level Co-ordination Committee formulates strategies and Action Plans whenever an emergency arises.
- In all the districts a District Level Task Force headed by District Collector and represented by District Level officers, monitor the surveillance and preparedness for Avian Influenza in the districts.
- Government Veterinary Assistant Surgeons visit all poultry farms to check for any unusual sickness or death in birds as part of the surveillance work.
- All the birds' sanctuaries in the State are constantly monitored by wildlife officials and Veterinary Assistant Surgeons to check the health of migratory birds.
- Every month serum samples are collected from 800 birds randomly selected from all over the State and sent to Government of India laboratory at Bangalore to test for Avian Influenza.
- Two hundred Rapid Response Teams have been formed in the State and adequately trained to combat any outbreak of Avian Influenza and prevent spread of the disease by culling of birds and disinfection.

- All veterinarians in the State also have been imparted training in control and containment of Avian Influenza. Action Plan books of Government of India for control and containment of Avian Influenza have been distributed to all veterinarians.
- Awareness campaigns are conducted for the poultry farmers and public about Avian Influenza. Wide publicity has been given by means of pamphlets and banners about bio-security measures to be followed in poultry farms to prevent entry of infection into farms.
- All materials like Personal Protective Equipment kits, sprayers, flame guns, disinfectants etc., required for preparedness to meet an outbreak have been purchased and supplied to field staff.
- An amount of Rs.50 lakh is kept in bank to give immediate compensation to owners of poultry, which have to be culled forcibly in an outbreak to prevent the spread.
- Whenever there is an outbreak of Avian Influenza in any other State, check posts are immediately installed at State borders to prevent entry of poultry birds, eggs, poultry feed, poultry manure etc from affected State. Vehicles from other States are allowed only after thorough checking and spraying with disinfectants. Railways and major airports are also alerted in this regard to prevent entry of infection.

SPECIAL SCHEMES

Livestock rearing is an important economic activity for the rural people. It generates more value both economically and socially. The growth in human population, availability and cost of agricultural lands, limited water sources and introduction of better yielding livestock have led farmers to shift to some kind of livestock rearing to earn their livelihood. Hence to provide employment, to enhance the participation of the poor in livestock rearing and as part of poverty alleviation programmes, the Department is implementing various livestock oriented schemes.

1. Kalnadai Padukappu Thittam

- Kalnadai Padukappu Thittam is a novel scheme inaugurated on 18.01.2000 by the Hon'ble Chief Minister Dr. Kalaingar at Thirukazhukundram in Kancheepuram district.
- As per this scheme, total health cover is provided to livestock and poultry reared by farmers in remote villages by conducting special camps.
- The special camps are conducted at the rate of one camp per month in all the 385 Panchayat unions at a total cost of Rs.5,000/- per camp.
- On the day preceding the camp, wide publicity is given regarding the place where the camp is to be conducted in the village and surrounding villages. During the process, pamphlets and leaflets are also distributed regarding various activities that are undertaken in the camp.

- Moreover, the help of local village panchayat president, chairman and interested animal husbandry workers are also sought in publicity and propaganda campaign.
- In these camps, activities like health care, disease prevention, deworming, castration, artificial insemination, pregnancy verification, infertility treatment, etc. are carried out free of cost.
- An exhibition depicting various livestock diseases and preventive measures, fodder development measures are also conducted for creating awareness among the farmers. This year a new activity called calf-rally was included and prizes worth Rs.400/- per camp is being distributed to best calves.
- During 2007-08, 5,500 camps have been conducted. 67.00 lakh livestock and poultry were provided with veterinary health services and protected against various animal diseases and 16.98 lakh farmers were benefitted.
- The beneficiaries are all animal growers in the villages and near by villages where the camps are conducted. The scheme is very popular among the rural farming community as all the facilities are provided at the farmer's doorsteps free of cost.
- During 2008-09, it is proposed to conduct 5,500 camps at a cost of Rs.5,000/- per camp.

2. Tamil Nadu Irrigated Agricultural Modernization and Water-Bodies Restoration Management Project (TNIAMWARM)

Animal Husbandry Department is one of the line departments involved in implementation of the World Bank assisted Tamil Nadu Irrigated Agricultural Modernisation and Water-bodies Restoration and Management Project. The project is being implemented in the State from 2007 for a period of 6 years. The main aim of the project is to improve the productivity per unit of water in agriculture and allied activities and enhance the farm income ultimately. For animal husbandry component, World Bank has allotted Rs.3,938 lakhs for implementing various schemes in the 63 sub-basins during the project period.

The objectives of the Animal Husbandry Department in the project are:

- ↻ To improve the production potentialities of livestock in the sub-basin.
- ↻ To provide veterinary services and breeding support at the farmers' doorsteps or nearest to the farmers.
- ↻ To ensure total health cover both preventive and curative.
- ↻ To improve conception and calving rate in bovines.
- ↻ To reduce the gap between requirement and availability of green fodder.
- ↻ To improve the knowledge level of the farmers on best animal husbandry practices / techniques.

The interventions by the department in the sub-basins are:

- Delivery of veterinary services and breeding support to livestock reared by farmers in unserved areas by establishing Sub-basin Veterinary Units, utilising the services of unemployed veterinary graduates.
- Improving the quality in delivery of veterinary services and diagnosis by strengthening the essential and needy infrastructure of veterinary institutions.
- Utilising the high-yielding frozen semen straws for artificial insemination.
- Increasing the availability of green fodder by bringing more area under fodder cultivation.
- Ensuring total health care and improving the conception rate by conducting Infertility cum total health care camps and distribution of mineral mixture.
- Improving the know-how level of farmers on best animal husbandry practices / techniques by conducting various information, education, communication and training programmes.

During 2007-08, the project is to be initially implemented in 9 sub-basins Viz., Varahanadhi, Upper Vellar, South Vellar, Palar (Parambikulam Aliyar Project), Aliyar (Parambikulam Aliyar Project), Pambar, Arjunanadhi, Manimuthar and Kottakaraiyar at a cost of Rs.262.62 lakhs.

The following activities are carried out during 2007-08:

- ☞ Breeding support and veterinary services are made available at the farmer's door steps or nearest to the farmers by establishing 27 Sub-basin Veterinary Units, utilising the services of unemployed veterinary graduates.
- ☞ Around 770 hectares of land have been brought under fodder cultivation by supply of fodder inputs like Co3 slips, kolukattai etc.
- ☞ 600 Infertility cum total health care camps have been conducted.
- ☞ 800 night meetings have been conducted.
- ☞ Information, education and communication campaigns are being carried out by distribution of pamphlets and leaflets, erection of hoardings and carrying out wall paintings.
- ☞ 3,600 farmers have been trained on best animal husbandry practices.

During 2008-09, in addition to the 9 sub-basins, 15 more sub-basins namely Koundinyanadhi, Poiney, Swethanadhi, Chinnar, Anaivari odai, Agniyar, Ambuliyar, Therkar, Upper Vaigai, Upper Gundar, Sengotaiyar, Kalingalar, Nichabanadhi, Ponaiyar and Varratar-Nagalar have been planned to be taken up for implementation.

The activities planned are:

- ❖ Establishment of 15 Cluster Sub-basin Veterinary Units to provide breeding support and veterinary services at the farmer's door steps or nearest to the farmers, utilising the services of unemployed veterinary graduates on Public Private partnership.
- ❖ Bringing 580 hectares of private land under fodder cultivation by supply of fodder inputs like Co3 slips, kolukattai, fodder cholam, fodder maize, etc., free of cost.

- ❖ In addition Azolla cultivation will be propagated.
- ❖ Bringing in the practice of periodical deworming by carrying out deworming of 14 lakh sheep and goats free of cost.
- ❖ Proper identification of breedable bovines by tagging them free of cost.
- ❖ Improving the fertility and health care by conducting Infertility cum health care camps.
- ❖ Improving the know-how level of farmers by conducting farmer's interactive meetings half yearly.
- ❖ Carrying out information, education and communication campaigns by distribution of pamphlets and leaflets, erection of hoardings and carrying out wall paintings.
- ❖ Training of farmers on best animal husbandry practices.
- ❖ Providing refresher training to veterinarians.

3. Assistance to States for Control of Animal Diseases (ASCAD)

To control economically important diseases affecting livestock, "Assistance to States for Control of Animal Diseases programme (ASCAD) is being implemented with 75% central assistance except for one component "Training / Seminar" for which assistance is 100%.

During 2007-08, the following works have been carried out :

- ☑ 20.00 lakhs cattle covering Thiruvallur, Kancheepuram, Vellore and Villupuram districts have been protected against **Haemorrhagic Septicaemia** disease.
- ☑ 20.00 lakhs cattle covering Kancheepuram, Pudukottai, Sivagangai, Villupuram and Cuddalore districts have been protected against **Black Quarter** disease.
- ☑ 31.51 lakhs cattle, sheep and goats covering Dindigul, Madurai, Thanjavur, Villupuram, Thiruvannamalai, Theni, Tirunelveli and Vellore districts have been protected against **Anthrax** disease.
- ☑ **Foot and Mouth Disease (FMD)** is a viral disease affecting livestock resulting in economic loss to the farmers. During 2007-08 outbreaks, the Department has intensively covered the State with Foot and Mouth disease vaccination. A total of 82.06 lakhs cattle in the State have been covered and the disease has been brought under control. During 2008-09, it is proposed to cover 95% of the livestock under FMD vaccination.
- ☑ 43.44 lakhs sheep and goats in the State have been protected against **Pesti-des-petits-ruminant disease**.
- ☑ Rs.155 lakhs has been allotted for upgrading the Poultry Vaccine Laboratory to Good Manufacturing Practices standards at the Institute of Veterinary Preventive Medicine, Ranipet and the work is in progress.
- ☑ 60 Veterinary Assistant Surgeons will be given capacity building training on various disease diagnostic methods.

- ☑ Rs.4.88 lakhs has been provided for purchase of materials required for preparedness and training of Rapid Response Teams against Avian Influenza.

In addition, various pamphlets, leaflets and booklets on various diseases and prevention measures have been distributed to farmers.

4. Western Ghats Development Programme

Implementation Areas: 135 watersheds in 8 Western Ghats districts viz., Coimbatore, Dindigul, Theni, Madurai, Tirunelveli, Kanyakumari, Erode and Virudhunagar.

During 2008-09, the scheme will be implemented with the following activities:

- ✓ Fodder Development
- ✓ Training to farmers
- ✓ Distribution of Giriraja poultry units
- ✓ Distribution of crossbred heifer calves
- ✓ Distribution of goat and sheep units
- ✓ Conducting infertility camps

5. Hill Area Development Programme

Implementation Areas: The Nilgiris district

Mode of functioning:

- ❖ Reclamation of uncultivable land for fodder production.
- ❖ Supply of Giriraja birds at 25% subsidy.
- ❖ Supply of high pedigree crossbred bulls for breeding and crossbred heifer calf to ST beneficiaries.
- ❖ Construction of new Veterinary Dispensary at Sholurmattam and repairs to Veterinary Sub-centres at Erumadu.
- ❖ For 2007-08, Government have released a sum of Rs.16.91 lakhs to carryout the above scheme.

6. Foot and Mouth Disease Control Programme

Implementation Area: Kanyakumari district since 2004.

Mode of functioning:

- ☑ Systematic coverage of Foot and Mouth disease vaccination in all susceptible cattle in the project area as per the guidelines provided by the Government of India.
- ☑ Upto 2004-05, Foot and Mouth disease vaccination have been carried out in 4 phases.
- ☑ During 2005-06, Government have provided a sum of Rs.40.61 lakhs and 1 lakh doses of Foot and Mouth Disease vaccine for vaccination in the project area and the work was completed.
- ☑ For 2006-07, Government have released a sum of Rs.12.88 lakhs to carryout the above scheme.

- ☑ For 2007- 08, Government have released a sum of Rs.10.00 lakhs to carryout the above scheme in Kanyakumari District.

7. Integrated Sample Survey Scheme

Implementation Areas: All districts since 1977.

Mode of functioning:

- ▶ Integrated Sample Survey Scheme is a 50% centrally assisted scheme covering all the districts. It provides timely and reliable statistical data on major livestock products like milk, egg, meat, etc.
- ▶ It also studies livestock management practices annually and seasonally in a regular and continuous manner. Estimation of milk production and other livestock products is done by analysing the data collected from the field.
- ▶ During 2007-08, the Department has taken up a study on estimation of yield rate of Meat by products in different species.

ESTIMATED PRODUCTION OF MILK, EGG AND MEAT DURING 2006-07 AND TARGET FOR 2007-08

Item	Achievement 2006-07	Target 2007-08
Milk (Lakh metric tonnes)	55.60	55.90
Egg (Million Nos.)	8,044	8,366
Meat (Million Kgs)	220	229

This scheme helps to assess and monitor the impact of various Animal Husbandry development activities initiated and implemented by the Department. Besides, the survey provides base level data, which helps in planning future programmes.

CO-OPERATIVE SOCIETIES

Co-operative societies for breeding sheep, poultry, pig etc., are functioning in the Department since 1964. The Commissioner of Animal Husbandry and Veterinary Services is the functional Registrar of these societies. The objective of these societies is to improve the economic conditions of the weaker sections by making them members of the society. As on 31.03.2008, the Department has 338 societies, out of which 81 societies were active and 257 were inactive.

TAMIL NADU POULTRY DEVELOPMENT CORPORATION LIMITED

Tamil Nadu Poultry Development Corporation Limited was incorporated on 12th July, 1973 under Companies Act. Due to continuous loss, the Government have decided to close down the operation of this Corporation. The Commissioner of Labour, who is the competent

authority accorded permission under section 25 (0) of the Industrial Disputes Act to close down this Corporation with effect from 29.12.2000.

As per orders of Government all the movable and immovable properties of TAPCO located at various places have been handed over to Animal Husbandry Department. A proposal is under consideration to write off a sum of Rs.8,52,35,844/- repayable by TAPCO to Government towards loans and advances sanctioned from the inception of the Corporation including interest due there on. Action will be taken for liquidation of TAPCO as per Companies Act.

VETERINARY SERVICES

Animal Husbandry Department plays a major role in providing veterinary assistance, health care and breeding support to the livestock and poultry reared in the State. The services provided are artificial insemination, pregnancy diagnosis, treatment of ailing animals, vaccination, deworming, castration, extension and implementation of various schemes. Various institutions functioning in various grades provide the above services. The institutions include:

Polyclinics	:	6
Clinician Centres	:	22
Veterinary Hospitals	:	139
Veterinary Dispensaries	:	1,207

Apart from this, 1,829 Sub-centres provide first-aid and breeding support. Of the above institutions, Polyclinics are functioning round the clock and provide specialized services in gynaecology, surgery and medicine and have in-patient facilities. In-patient facilities are also available in all Clinician centres and Veterinary Hospitals. In addition X-ray facility is available in all the institutions functioning in district headquarters except at Namakkal and Thanjavur. Ultrasound scan facility is being provided in Chennai, Coimbatore and Madurai polyclinics.

The average number of cattle units covered per graduate veterinary institution in the State is 9,570. The graduate institutions in Coimbatore, Dharmapuri, Erode, Kancheepuram, Krishnagiri, Nagapattinam, Namakkal, Perambalur, Salem, Sivagangai, Thiruvallur, Thiruvannamalai, Thiruvarur, Villupuram and Virudhunagar districts are covering more cattle units than the State average. The average number of villages covered per graduate veterinary institution in the State is 9.

Livestock benefited from the above Institutions during 2007-08 are as follows:

Sl. No	Veterinary Institutions	No.of Livestock benefitted in 2007-08 (in lakhs)
1	Vety Institutions	156.68

2	Mobile units	2.68
3	Subcentres	36.92
	Total	196.28

Veterinary Services at doorsteps

55 Mobile Veterinary Units are providing veterinary health services like vaccination, deworming and breeding coverage like artificial insemination to livestock reared by farmers residing in remote areas who face difficulties to reach veterinary institutions. These units go around their area of operation on a scheduled programme. During 2007-08, to improve their services, the vehicles in Mobile Veterinary Units of Coimbatore, Erode, Mannargudi, Kovilpatti, Sirkazhi and Myladuthurai are replaced at a cost of Rs.28.50 lakhs. The services provided by these units are well recognised by the public as they provide benefits at their doorsteps.

Under the TNIAMWARM Project, 50 Mobile Veterinary Units manned by unemployed Veterinary graduates in the 9 sub basins are established to provide veterinary services and breeding support at the doorsteps of the uncovered area. TNLDA has trained 102 rural youths to take up doorstep Artificial Insemination work during this year.

Training Programmes

To improve the quality of veterinary services and to disseminate knowledge on important technologies in Animal Husbandry, this Department has conducted trainings for Veterinarians, Para-veterinarians and farmers. During 2007-08 the following trainings were conducted for **Technical staff**:

- ✓ Orientation Seminar cum Refresher Training at Madras Veterinary College was started by Hon'ble Minister for Animal Husbandry for the newly joined Veterinarians and field Veterinarians on 07.12.2007 and the subsequent training was conducted at Villupuram, Salem, Thanjavur and Madurai benefiting 245 new veterinarians.
- ✓ Under ASCAD programme, Avian Influenza training was conducted at Namakkal Veterinary College benefiting 10 poultry belt veterinarians.
- ✓ A total of 79 officials including 2 Regional Joint Directors, 42 Assistant Directors and 35 Veterinary Assistant Surgeons have been provided capacity building training on various technical aspects at various institutions in the country.
- ✓ Government have permitted to train 425 individuals as Livestock Inspectors. As first phase training for 110 individuals is under progress at District Livestock Farm, Hosur.

Farmers Training:

During 2007-08, the following trainings were conducted under various schemes for farmers:

- ▶ Under TNIAMWARM Project, 3,600 farmers were trained on best animal husbandry practices.
- ▶ Under Emergency Tsunami Reconstruction project, 82 local unemployed youths were trained on first aid, deworming, vaccination and breeding support. Besides these 10,000 farmers are to be trained in Animal Husbandry practices soon.
- ▶ Under ASCAD scheme, disease awareness camps for farmers in all the 385 Panchayat Unions and district level camps for 100 farmers in 19 districts were conducted.

Veterinary Infrastructure Development through NABARD

Many veterinary institutions in the State were functioning without adequate and proper infrastructure facilities, leading to non-delivery of quality veterinary services to the public. Improved infrastructure will provide improved veterinary services, contributing to reduction in the incidences of animal diseases, thereby increasing the overall productivity, which can contribute significantly to rural development. Therefore with the ultimate aim of rural development, the Department's infrastructure is being developed with assistance from NABARD Rural Infrastructure Development Fund (RIDF).

☞ **RIDF X:** Government have accorded sanction for Rs.5,978.92 lakhs with assistance from NABARD RIDF X for the following works:

- ☞ Rs.4,380.38 lakhs towards construction of 89 Veterinary Dispensaries, 13 Veterinary Hospitals, 9 Semen banks, 23 Field monitoring units, 10 Disease Diagnostic Units, 97 dressing sheds, 152 In patient units and 19 X-ray units.
- ☞ Rs.1,374.54 lakhs towards providing needy equipments to 1,327 veterinary institutions and 18 diagnostic centres.
- ☞ Rs.224.00 lakhs towards providing essential furniture to 95 veterinary institutions and 17 diagnostic centres.

The works in 297 buildings have been completed. The works in remaining buildings are being carried out at a fast pace. The essential equipments and furniture for the above buildings are also being provided. All the works will be completed during the current year.

☞ **RIDF XI:** The Government have accorded sanction for Rs.304.47 lakhs with assistance from NABARD RIDF XI for construction of bull sheds at Hosur, Udthagamandalam and Eachenkottai, Livestock Farms and quality control laboratories at Livestock Farms at Hosur and Udthagamandalam. The works are under progress.

EMERGENCY TSUNAMI RECONSTRUCTION PROJECT (ETRP)

World Bank Emergency Tsunami Reconstruction Project is being implemented in 13 coastal districts of the State at a cost of Rs.866.702 lakhs with the following objectives:

- Improving the infrastructure facilities and thereby improving the delivery of veterinary services in the coastal areas.
- Training and dissemination of best practices in livestock rearing, to provide alternative sustainable employment and income opportunities to the coastal communities.

- Ensuring fodder security through construction of fodder banks.

3 Veterinary Hospitals, 9 Veterinary Dispensaries, 13 District Veterinary Extension Centres, 2 Fodder Banks, 12 Community Based Veterinary Worker Centres and 70 Sub-centres are to be constructed. In addition, 4 damaged buildings are to be renovated. Totally 113 buildings are to be constructed. Work is completed in 88 places and is under progress in remaining places. Moreover to make the above units completely functional, all essential equipments and furniture are being supplied. In addition, as alternative livelihood opportunities, 82 local unemployed youths were trained on first aid, deworming, vaccination and breeding support. Besides these 10,000 interested farmers are to be trained on livestock rearing. The trainees have been selected. Since the approval from World Bank to conduct the training has been received, it will be started soon.

DISEASE PREVENTION, DIAGNOSIS, CONTROL AND ERADICATION

" Animal Health is Nation's Wealth ". Outbreak of diseases cause huge economic losses to the farming community by way of livestock mortality and decreased productivity. Outbreaks tend to affect the socio-economically under privileged more than the well to do. Control and eradication of many animal diseases is must, not only for profitable livestock production but also essential to make our livestock and livestock products globally acceptable. As farmers generally show interest only in curative veterinary practice and not in prevention and control of diseases, the department plays a major role in disease prevention and eradication. Systematic control of diseases will progressively lead to its containment first and eradication ultimately.

A) DISEASE PREVENTION:

Institute of Veterinary Preventive Medicine (IVPM):

As the adage goes "Prevention is better than cure", this Department is giving importance to the prevention of diseases in livestock and poultry. The Institute of Veterinary Preventive Medicine, Ranipet, Vellore district is producing vaccines and other biological products required for the protection of livestock and poultry. At present, the institute is producing 5 types of bacterial vaccines, 5 types of viral vaccines, 5 diagnostic reagents, 4 pharmaceuticals and one diluent. In addition, Indian Council for Agriculture Research aided All India Coordinated Research Project (AICRP) on Foot and Mouth Disease is functioning in this institute to undertake investigation into Foot and Mouth Disease outbreaks and for virus typing.

The vaccines produced in the institute are:

1. Bacterial Vaccines

1. Haemorrhagic Septicaemia Vaccine - Alum precipitated
2. Black Quarter Vaccine - Alum precipitated
3. Enterotoxaemia Vaccine - Alum precipitated

4. Anthrax Spore Vaccine
5. Brucella abortus Vaccine

2. Viral Vaccines

1. Cell Culture Sheep Pox Vaccine
2. Ranikhet Disease Vaccine (F-Strain)
3. Ranikhet Disease Vaccine (Lasota-strain)
4. Ranikhet Disease Vaccine (Komorov-Strain)
5. Duck Plague Vaccine

During 2007-08, the institute has produced products worth Rs.3.96 crores. The value of products produced during 2007-08 and anticipated value of production during 2008-09 are as follows:

Items	Production 2007-08 (In lakh Rs.)	Proposed 2008-09 (In lakh Rs.)
Bacterial vaccines	283.01	353.50
Viral vaccines	110.72	122.80
Diagnostics reagents	0.24	0.75
Pharmaceuticals	0.72	2.50
Diluents	1.49	1.21
Total	396.18	480.76

To meet the international standards in vaccine production, it is essential to upgrade the vaccine manufacturing laboratories to Good Manufacturing Practices (GMP) standards. As a first step, the poultry vaccine production laboratory is in the process of being upgraded to Good Manufacturing Practices standards under Assistance to States for Control of Animal Diseases (ASCAD) scheme. The remaining Vaccine Production Laboratories and Quality Control Division at the Institute are to be upgraded to Good Manufacturing Practices standards with NABARD assistance.

B) DIAGNOSTIC SERVICES

Early forecasting of diseases and surveillance is essential to provide 'early warning signals' of outbreaks while epidemiology helps in systematic study of the distribution and determinants of health problems. For this purpose 20 Animal Disease Intelligence Units, 4 Mobile Laboratories, attached to Animal Disease Intelligence Units one each at Madurai, Vellore, Tirunelveli and Coimbatore. 2 Poultry Disease Diagnostic Laboratories one at Andagalurgate, Namakkal district and another at Erode are functioning in the State.

i) Animal Disease Intelligence Units: They play a major role in developing a system of disease monitoring and surveillance of all important livestock and poultry diseases in the State. This in turn helps in evolving strategic control measures. They map out the disease prone areas by collecting epidemiological information and data. Based on their advisories,

the field veterinarians take adequate protective and prophylactic measures well in advance. In addition, in disease outbreaks, they render technical assistance to field staff in diagnosis and control of diseases.

20 Animal Disease Intelligence Units functioning in the State are as detailed below:

Sl. No	Animal Disease Intelligence Unit	Districts covered
1	Coimbatore	Coimbatore
2	Cuddalore	Cuddalore
3	Dindigul	Dindigul
4	Erode	Erode
5	Kancheepuram	Chennai, Kancheepuram, Tiruvallur
6	Karur	Karur
7	Krishnagiri	Krishnagiri
8	Madurai	Madurai, Theni
9	Nagapattinam	Nagapattinam, Thiruvavarur
10	Salem	Salem, Namakkal
11	Sivagangai	Sivagangai, Ramanathapuram
12	Thanjavur	Thanjavur, Pudukottai
13	Thoothukudi	Thoothukudi
14	Tiruchirapalli	Tiruchirapalli, Perambalur, Ariyalur
15	Tirunelveli	Tirunelveli, Kanyakumari
16	Udhagamandalam	Udhagamandalam
17	Vellore	Vellore, Thiruvannamalai
18	Villupuram	Villupuram
19	Virudhunagar	Virudhunagar
20	Dharmapuri	Dharmapuri

During 2007-08, 3.21 lakhs specimens have been examined for various diseases by the above units.

ii) Poultry Disease Diagnostic Laboratory: To cater to the needs of the farmers in areas of high poultry production, 2 Poultry Disease Diagnostic Laboratories one at Andagalurgate in Namakkal district and the other at Erode are functioning. These are mainly involved in conducting post-mortem, testing of droppings, blood samples and other specimens for accurate diagnosis of poultry diseases. In addition, they render technical advice to farmers for prevention, diagnosis and control of various infectious and parasitic diseases. During 2007-08, 1,292 poultry farms and 1,097 villages have been visited and 8,238 samples have been examined. The Government of India have sanctioned Rs.44.00 lakhs during 2007-08 to upgrade the existing two Poultry Disease Diagnostic Laboratories (PDDL) to Bio Safety Level II under the World Bank assisted project "preparedness, control and containment of Avian Influenza".

iii) Central Referral Laboratory: Central Referral Laboratory is the apex laboratory which coordinates the work of Animal Disease Intelligence Units and Poultry Disease Diagnostic Laboratories and helps the field staff in diagnosis and allied activities. The laboratory is also involved in conducting Eliza test for Peste-des-petis-ruminants disease, screening of farm animals for various diseases, testing of export materials from animal origin and issuing health certificates. The laboratory plays a vital role in creating awareness among poultry

farmers about Avian Influenza and trains field veterinarians (Rapid Response Team) to act in case of emergency. During 2007-08, 3,025 specimens have been examined for various diseases. In addition, 1,739 animals from Livestock Farms have been screened for Tuberculosis, Brucellosis, etc. Apart from this, 9,750 serum samples have been sent to Southern Regional Disease Diagnostic Laboratory, Bangalore for screening of Avian Influenza.

C) DISEASE CONTROL AND ERADICATION

Animal Husbandry Department had made notable achievements in the control of various contagious diseases like Haemorrhagic Septicemia, Black Quarter, Anthrax, Enterotoxaemia and Ranikhet. The most important landmark and the major breakthrough is the stamping out of Rinderpest disease, which has been the greatest killer of bovines and sheep. This was achieved through implementation of National Project on Rinderpest Eradication since 1993-94. The State being declared "Rinderpest Free" from May 2004 onwards remains the most important milestone in the successful disease control activities of the department.

Controlling major livestock diseases has the potential to bridge the yield gap (i.e.,) the difference between the actual production and the production potential, which will help in improving the quality of life of the rural poor. Moreover the presence of contagious diseases prevents our country in exploiting fully the international export market, as our livestock and livestock products should comply to the zoo-sanitary specification and standards prescribed by the Office International Epizootics (OIE) to freely enter and compete in world markets.

As systematic and periodical vaccination is the key for prevention and control of various livestock diseases causing huge economic loss to the farmers, the Department is giving prime importance to this component of work by vaccinating the susceptible livestock and poultry in all veterinary institutions, Kalnadai Padhukappu Thittam camps, Mass Contact Programmes and under ASCAD. During 2007-08, 496.39 lakh vaccinations have been carried out. During 2008-09, it has been planned to carry out 525.00 lakh vaccinations through veterinary institutions and under other programmes.

VACCINATIONS

Sl. No.	Vaccination	Target 2007-08 (In lakhs)	Achievement 2007-08 (In lakhs)
1	Haemorrhagic septicemia	22.00	25.43
2	Black quarter	22.00	22.62
3	Anthrax	30.00	42.32
4	Foot & Mouth Disease	83.50	85.63
5	Peste-des-petis-ruminants	60.00	43.44
6	Enterotoxaemia	3.50	2.64

7	Sheep pox	2.50	0.91
8	Ranikhet K	250.00	272.89
9	Others	1.55	0.51
	Total	475.05	496.39

The timely and regular prophylactic vaccination of susceptible animals in the endemic areas has lowered disease outbreaks in the State. Now with the eradication of Rinderpest and containment of bacterial and viral diseases and several other steps taken, the State is steadily moving towards the goal of freedom from major animal diseases.

VETERINARY PUBLIC HEALTH

Nearly 4/5 of all communicable diseases are shared by man through animals, which are called zoonotic diseases. With animal husbandry forming the core livelihood of millions of rural population, veterinary public health plays a vital role in controlling the zoonotic diseases.

Some of the services related to these aspects are detailed below:

(a) Canine Rabies Control Programme:

The dog population of Tamilnadu is 27.17 lakhs in which domestic dogs and stray dogs accounts for 73% and 27% respectively. Rabies continues to be the important zoonotic disease. Moreover they play a major role in transmission of the disease to livestock. Thus elimination of canine rabies constitutes the most effective means of controlling transmission to human beings and other livestock.

With this aim, Canine Rabies Control Programme Unit is functioning at Madurai and Tirunelveli. The main work of these units are:

- Systematic, periodical door-to-door prophylactic vaccination of pet dogs against rabies after collecting the cost of vaccine;
- Post exposure vaccination of all livestock including dogs free of cost and
- Creation of awareness among the public through publicity and propaganda by distributing pamphlets and handbills and by conducting dog shows.

During 2007-2008, a total number of 6,074 vaccinations have been done in the above centres.

b) Mass Vaccination and Deworming:

Regular vaccination and periodical deworming of livestock and poultry are done by the Department free of cost. By this, the chances of spreading of zoonotic diseases like Anthrax, Brucellosis, Taeniasis, Strongylosis, Amphistomiasis etc., are minimized. Also the like cycle of parasites for which the human beings act as permanent or intermediate host is broken.

During the year 2007-08, 223.18 lakhs livestock and 272.89 lakhs poultry have been vaccinated. Also 30.65 lakhs cattle, 5.21 lakhs buffalo, 97.82 lakhs sheep, 77.63 lakhs goat and 4.53 lakhs poultry have been dewormed.

C) Meat Inspection:

Regular meat inspection work is conducted by the department in the 110 registered slaughterhouses functioning under the control of the local bodies located throughout the State. By this, the chance of getting meat borne diseases like taeniasis, trichinosis hydatidosis by the meat consuming public is almost eliminated.

EXTENSION SERVICES

Without proper extension and propaganda all the new techniques and scientific know-how cannot be fully utilized. With efficient extension activities, people can not only be made aware of the latest developments in animal husbandry practices but also can make the schemes and programmes of the Department more transparent to the public. Moreover it will have a greater role in solving many field problems and in containment of economically important diseases that threaten livestock.

With the motto of "**Seeing is learning**", each and every opportunity is being utilised by the Department to enlighten the farmers on various animal husbandry practices and disease diagnosis. Fairs & festivals are conducted by the Animal Husbandry department to collect and disseminate knowledge about Animal Husbandry and allied activities to the public those areas. Information on prevention and control, knowledge about deadly diseases which are important for livestock and public health significance, deworming, vaccinations, Artificial Inseminations, calf rearing, goat & sheep rearing, poultry keeping, pasture management, meat inspection, sanitary measures, destruction and disposal of carcasses, disinfection of contaminated premise and surfaces are provided to the farmers / stake holders.

During the year 2007-08, the Government allocated a sum of Rs.3.25 lakh to the Animal Husbandry Department towards conducting fairs. The department participated in the following fairs:

- Dindigul - Kodaikannal - kodai vizha
- Yercaud - Kodai vizha
- Krishnagiri - Mangani vizha
- Villupuram - Kalvarayan malai - Kodai fair
- Cuddalore - Silver beach fair
- Vellore - yelagiri - Kodai vizha
- Thiruvannamalai - Deepathiru vizha
- Chennai - Island ground trade fair
- Madurai - trade fair

- Coimbatore - trade fair
- Tirunelveli - trade fair

Apart from this, a special allocation was made to the Department to conduct Republic Day float for a sum of Rs.80,000/-.

Latest information to farmers is carried through mass media like Television, All India Radio and Press. The department is utilising mass media to the maximum extent. In addition, information on best animal husbandry practices, diseases affecting livestock and their control and various developmental activities and schemes implemented in Animal Husbandry Department is broadcasted via All India Radio at 720 K.Hz frequency in 'Veendum Vayalum' programme on all Saturdays between 7.30 PM to 8.00PM.

ANIMAL WELFARE MEASURES

To prevent cruelty to animals and to treat them ethically in a humane manner, the Government in coordination with Animal Welfare Board of India are addressing the problems of unethical treatment to animals.

Some of the important measures taken are:

- Society for Prevention of Cruelty to Animals (SPCA) has been established in all districts in Tamil Nadu.
- A State level coordination committee headed by Secretary, Animal Husbandry, Dairying and Fisheries Department, Government of Tamil Nadu has been constituted. District level coordination committees headed by District Collector have also been constituted in every district.

Stray Dog Birth Control Programme

To control the stray dog population by the municipalities and local body authorities, the Government of India has formulated the Animal Birth Control (Dogs) Rules.

The main objectives of this programme are:

- ⇒ Effective control of the population
- ⇒ Incidence of Rabies are reduced
- ⇒ Killing of healthy stray dogs are prevented

Under this programme, the stray dogs are caught in a humane method, sterilized, vaccinated against rabies and let back in the same original place from where they were caught. Government have ordered implementation of Animal Birth Control programme in 5 corporations and 50 municipalities covering 2.03 lakhs dogs involving Municipal Administration Department, Animal Husbandry Department and Animal Welfare Board of India.

PERFORMANCE OF SCHEMES DURING 2007-08

1. 40 new Veterinary Dispensaries have been opened, to expand the veterinary health services, to benefit more number of farmers and to protect the livestock of poor farmers from diseases.
2. Orathanad and Abishekapatti District Livestock Farms have been sanctioned with a sum of Rs.21.50 lakhs and Rs.16.09 lakhs respectively, to improve their fodder production. Chaff cutter and green fodder harvester have been purchased. Erections of borewell and Sprinkler Irrigation works have been entrusted to Agricultural Engineering Division and the work is being undertaken.
3. To store excess quantity of eggs produced in flush season and to avoid losses in times of disturbances in transport and Ban on export of eggs in time of out breaks of Avian Influenza in India, which leads to stagnation of large quantities of eggs, it is proposed to construct a Cold Storage Unit for storage of eggs at Namakkal at a cost of Rs.10.00 crores as a Joint Venture project under public-private partnership. For this the Government have released Rs.1.00 crore as Government's equity to TIDCO.
4. To generate gainful self-employment, improve nutrition and to satisfy the considerable urban demand that exist for pork and pork products, this department is encouraging pig rearing among the rural poor. For this purpose, Piggery Unit at District Livestock Farm, Abishekapatti in Tirunelveli district is being strengthened at a cost of Rs.33.92 lakhs.
5. A new Regional Joint Director's office for Namakkal district has been established at a cost of Rs.3.42 lakhs for better administration.
6. To improve the services of Mobile Veterinary Units, the vehicles in Coimbatore, Erode, Mannargudi, Kovilpatti, Sirkazhi and Myladuthurai Mobile units are replaced at a cost of Rs.20.85 lakhs.
7. For effective monitoring and control of livestock diseases, an Animal Disease Intelligence Unit has been opened in Dharmapuri district. Supply of necessary chemicals and equipments to be effected by Tamilnadu Medical Services Corporation.
8. To provide communication facilities, to 385 Veterinary Dispensaries functioning at Block headquarters, cell phones at a cost of Rs.18.10 have been purchased and distributed to veterinarians in these dispensaries.
9. The Small Animal Pet Clinic in Adyar, Chennai is being strengthened by providing essential infrastructure like X-ray, operation table, etc., at a cost of Rs.20.00 lakhs.
10. To improve the first-aid and breeding coverage, 55 Visiting Sub-centres have been opened.
11. Government have permitted to recruit and to train 425 individuals and post them as Livestock Inspectors. Training for 110 individuals who were selected on compassionate grounds, is under progress at District Livestock Farm, Hosur.

NEW PROGRAMMES FOR 2008-09

UNDER NATIONAL AGRICULTURAL DEVELOPMENT PROJECT

A sum of **Rs.1.57 crore** has been sanctioned towards identification and traceability of breedable bovine population so as to monitor and improve the conception rates of the bovines. Implementing the scheme to 9 lakh bovines will benefit large number of farmers.

UNDER PART II SCHEME

1. It is proposed to provide, Sheep units each unit comprising of 20 ewes and one Ram, with 50% subsidy to Self Help Groups in the districts of Thoothukudi and Ramanathapuram in all the 23 blocks with the Government share of **Rs.60.00 lakhs**.

2. It is proposed to create sustainable livelihood opportunities to the rural poor by providing backyard poultry units to Self Help Groups at a cost of **Rs.15.00 lakhs** in Dindigul, Pudukottai, Ramanathapuram, Sivagangai and Thoothukudi districts.

3. It is proposed to undertake vector control operations for control of Blue Tongue disease in Tirunelveli, Thoothukudi, Madurai, Dindigul and Erode districts at a cost of **Rs.15.00 lakhs**, since it is a viral disease affecting Sheep and is particularly prevalent in the southern districts of Tamilnadu causing economic losses through mortality and morbidity of small ruminants. So far there is no sufficient vaccine available for protecting the Sheep population and hence, vector control measures are the only way to prevent the disease.

4. Livestock when fed with green fodder tend to waste a lot of these precious feed. Further the utilization of the fodder (both green fodder & dry fodder) is enhanced and the feed conversion efficiency increases when the fodder is chopped and fed. Hence it is proposed to provide chaff cutters at a cost of **Rs.6.00 lakhs** that will chop the fodder there by reducing the wastage.

5. It is proposed to provide telephone facilities to 16 Animal Disease Intelligence Units (ADIU) which are not having the telephone facility at a cost of **Rs. 2.24 lakhs**. By this, the information regarding disease outbreaks can be immediately passed on to the ADIU's so that necessary control and containment operations can be undertaken immediately. Further, since all the ADIU's are being provided with computers with internet connectivity, availability of a telephone connection will help in accessing the latest information regarding the guidelines and protocols for disease control measures.

6. It is proposed as a pilot programme to provide Genetic upgradation of Goats by artificial insemination in Vellore and Thoothukudi districts in collaboration with Tamilnadu Veterinary and Animal Sciences University at a cost of **Rs.2.00 lakhs**.

TAMIL NADU LIVESTOCK DEVELOPMENT AGENCY

INTRODUCTION

Tamil Nadu Livestock Development Agency (TNLDA) has been established as an autonomous State Implementing Agency to co-ordinate all the breeding activities in cattle and buffaloes in the State. The Agency is implementing the National Project for Cattle and Buffalo Breeding (NPCBB) in Tamil Nadu since 09-01-2003.

The primary aim of the Agency is to increase milk production, per capita availability of milk and per animal productivity.

The objective of the agency includes bringing all the breedable female cattle and buffaloes under defined breeding programme through artificial insemination and natural service in a phased manner.

OBJECTIVE

1. Introduction of quality bulls with high genetic merit for frozen semen production.
2. Quality control of goods and services at sperm stations, semen banks.
3. Supply of quality genetic inputs.
4. Intensification of Progeny Testing Programme.
5. Identification of elite cows through Field Performance Recording Programme.
6. Increasing the breeding facilities
 - Establishing new mobile AI centres by training rural youth and equipping them
 - Encouraging Door-step delivery of breeding services
 - Facilitating stationary AI centre to perform mobile AI work by Conversion of existing Stationary Artificial Insemination Centre into Mobile cum Stationary Centre.
7. Support for acquisition of frozen semen and artificial insemination equipment.
8. Streamlining storage and supply of liquid nitrogen.
9. Conservation of indigenous breeds.
10. Human resources development through regular training.

QUALITY ASSURANCE

By procuring genetically superior bull calves, screening of bulls for genetic defects before induction for frozen semen production, testing for diseases like Tuberculosis, Johnes disease and Brucellosis every year, by strengthening the infrastructure and laboratories at frozen semen production stations, by implementing the Minimum Standards Protocol and by subjecting the frozen semen doses produced to quality control test, high quality frozen semen doses are produced and distributed for Artificial Insemination.

The quality of the frozen semen straws from production to utilization is ensured, by equipping the Artificial Insemination Centres and frozen semen banks with sufficient number

of liquid nitrogen containers for storage of frozen semen straws, transport containers for transport of frozen semen and liquid nitrogen and by streamlining and facilitating uninterrupted supply of liquid nitrogen through placement of liquid nitrogen storage silos.

REVISED BREEDING POLICY FOR CATTLE

The existing cattle breeding policy in operation since 1982 has been reviewed by a team of experts and stake holders and revised as follows:

(a) Indigenous cattle breeds

Selective breeding of native breeds (Kangeyam and Umbalachery) which are found true- to- type and in areas where the local breeders are willing and interested to conserve the native stock. The lesser known breeds such as Pulikulam , Bargur, Alambadi and Malaimadu have to be surveyed, characterised and conserved. Selective breeding of these breeds in their respective breeding tracts is to be followed.

(b) Non-descript cattle

Crossing of low-yielding non-descript cows with Jersey or Holstein Friesian. **Jersey** is the breed of choice for crossing with non-descript cows in the plains of Tamil Nadu and **Holstein Friesian** breed is preferred for crossing with non-descript cattle in the hilly areas, high rainfall zone and highland area. The level of exotic inheritance should be restricted to 50 per cent.

In addition to the use of pure breed Jersey, high pedigreed Indian milch breeds like Red Sindhi and Tharparkar may also be used for crossing non-descript cows. Likewise, Sahiwal breed may be used wherever crossing of non-descript cows with Holstein Friesian is to be practiced.

(c) Crossbred/graded cattle

Jersey crosses/grades are to be bred with bulls of 50 per cent Jersey inheritance by *inter se* mating. Holstein Friesian crosses/grades are to be bred with bulls of 50 per cent Holstein Friesian inheritance by *inter se* mating.

REVISED BREEDING POLICY FOR BUFFALOES

(a) Graded / non-descript buffaloes

Upgrading of non-descript buffaloes with Murrah is to be followed. Graded Murrah buffaloes are to be upgraded with Murrah.

(b) Toda buffalo

Pure breeding of Toda buffaloes are to be followed in the high ranges of the Nilgiris.

PROCUREMENT OF QUALITY INPUTS FOR GENETIC UPGRADATION

Tamil Nadu Livestock Development Agency has been nominated as the nodal agency for procurement and supply of bovine breeding inputs. In order to procure and supply quality frozen semen, standards for procurement of frozen semen based on pedigree of the bulls

and its capacity to produce genetically superior off spring was formulated by the Technical Committee. During the year 2007-08, 6.36 lakh frozen semen straws produced from bulls of superior genetic quality were purchased and supplied to the Department of Animal Husbandry. It is envisaged to procure and supply 24.00 lakh frozen semen straws of Jersey, Holstein Friesian, Crossbred Jersey, and Crossbred Holstein Friesian during the year 2008-09.

During the year 2007-08 a sum of Rs.6.00 crore has been released for carrying out the cattle and buffalo breeding activities.

ACTIVITIES UNDERTAKEN DURING THE YEAR 2007-08

1. Strengthening of Frozen Semen Production Stations

- a. The frozen semen laboratory and the semen collection yard at District Livestock Farm (DLF), Ooty has been strengthened at a cost of Rs.40.00 lakh.
- b. The frozen semen laboratory and the semen collection yard at Exotic cattle Breeding Farm (ECBF), Eachenkottai has been strengthened at a cost of Rs.48.00 lakh.
- c. 10 Quality Jersey bull calves for breeding were procured for District Livestock Farm, Ooty and 18 Cross bred Jersey bull calves have been procured for Exotic Cattle Breeding Farm, Eachenkottai.
- d. For acquiring of ISO certification for Exotic Cattle breeding Farm, Eachenkottai and District Livestock Farm Ooty action has been initiated and is under progress.

2. Strengthening of artificial insemination network in the State by establishing new Mobile Artificial Insemination Centres

- a. During the year 2007-08, 18 New Artificial Insemination (AI) Centres have been established with self-employed Veterinary Graduates to do doorstep artificial insemination work.
- b. 102 Rural youth were trained to take up doorstep artificial insemination work during the year 2007-08 and action has been initiated to establish new mobile AI centres through them.
- c. 30 Retired Veterinarians / Livestock Inspectors have been provided with necessary Infrastructure during the year to carry out artificial insemination at farmers' doorstep.
- d. Facilitating 1700 Stationary AI Centres to perform mobile AI work is under progress.

3. Strengthening and streamlining of liquid nitrogen distribution

Purchase and placement of 10 Vertical Bulk liquid nitrogen storage Silos for streamlining and providing uninterrupted supply of liquid nitrogen is under process.

4. Training Programmes

Tamil Nadu Livestock Development Agency has arranged and sponsored the following training programmes during the year 2007-08.

- a. 3 Veterinarians and 28 technical staff working in Frozen Semen production station of Animal Husbandry Department and Tamil Nadu Co-operative Milk Producers' Federation (TCMPF) have been trained in the training centre of Kerala Livestock Development Board.
- b. 6 technical staff working in the Frozen semen production Laboratories have been trained at Sabarmathi Ashram Gaushala (SAG), Bidaj , Gujarat

5. Progeny Testing Scheme

This programme is implemented by Tamil Nadu Cooperative Milk Producers' Federation with the financial assistance from the Tamil Nadu Livestock Development Agency with headquarters at Erode. It is implemented through 160 Dairy Co-operative Societies federated to 8 District Co-operative Milk Producers' Unions (DCMPU) covering 15 revenue districts. The third batch has been completed and results are awaited. The fourth batch of 13 crossbred jersey bulls, fifth batch of 23 crossbred jersey bulls and sixth batch of 20 crossbred Jersey bulls are under test.

6. Field Performance recording of Elite animals

This programme is implemented by Tamil Nadu Cooperative Milk Producers' Federation with the financial assistance from the Tamil Nadu Livestock Development Agency. Elite Crossbred Jersey cows numbering 1,400 have been selected from more than 150 Milk Producers' Co-operative Societies of 7 District Co-operative Milk Producers' Unions covering 13 revenue districts. After screening for diseases like Tuberculosis, Johnes diseases and Brucellosis these cows are put under milk recording. The Elite cows are inseminated with proven bull semen and the bull calves born to high yielding cows are selected and reared for semen production in the semen stations. So far, 18 bull calves born under the programme has been selected.

7. Conservation of indigenous breeds of cattle and buffalo

During the year 2007-08, survey and evaluation of native breeds, such as Alambadi, Bargur and Pulikulaum has been taken up in their native tracts through Tamil Nadu Veterinary and Animal Sciences University.

8. Propaganda and Publicity

A weekly 30 minutes programme was sponsored by TNLDA and aired over Prasar Barathi (AIR) Chennai during 2007-08. The programme was titled as 'Kalnadai Selvam' and aired on every Saturday at 7.30 p.m. The programme contents include, talk by experts, discussion on Animal Husbandry topics, interviews with experts and interviews with farmers.

LIVESTOCK INSURANCE SCHEME

Tamil Nadu Livestock Development Agency has been identified as the State Implementing Agency for the implementation of Livestock Insurance Scheme in the State. High yielding cattle/ buffaloes were insured during the year 2007-08 under the second phase in 5 districts viz; Salem, Coimbatore, Erode, Namakkal and Vellore. 50 % of the cost of premium is provided as grant and paid to the Insurance firm by the Government and 50% of the cost of premium is borne by the farmers. During the year 2007-08, a total of 1,19,032 high yielding milch cattle and buffaloes have been insured and the Insurance Companies have settled death claim of Rs.2.08 crore.

The following activities will be taken up during 2008-09

1. Strengthening of frozen semen production stations
2. Strengthening of Artificial Insemination network in the State.
3. Establishment of New private Artificial Insemination Centres
4. Conversion of the Stationary Artificial Insemination Centres into Stationary cum Mobile Artificial Insemination Centres.
5. Strengthening and streamlining of liquid nitrogen distribution.
6. Training Programme for Para Veterinarians and Workers.
7. Continue the Progeny Testing Scheme.
8. Continue the Field Performance Recording Programme.
9. Conducting infertility camps.

TAMIL NADU VETERINARY AND ANIMAL SCIENCES UNIVERSITY

INTRODUCTION

Tamilnadu Veterinary and Animal Sciences University (TANUVAS) was established during the year 1989. It is first of its kind in India. The credit of establishing this University goes to the Hon'ble Chief Minister Dr.Kalaignar M. Karunanidhi. The following are the objectives of TANUVAS.

- ◆ To impart best education to undergraduate, post-graduate and doctoral students in different fields of Veterinary and Animal Sciences and Fisheries Sciences.
- ◆ To carry out research in animal and fish production, protection and products.
- ◆ To disseminate knowledge on important technologies to line Departments and farming community for the sustenance and growth of livestock, poultry and fisheries in the State.

UNITS OF TANUVAS

The constituent units of TANUVAS are given in Annexure.

ACTIVITIES OF TANUVAS

The activities of TANUVAS in the area of Education, Research, Clinics and Extension Education are outlined below:

EDUCATION

- ❖ Details of students admitted for the year 2007-2008 at TANUVAS are furnished below.

Courses	Madras Veterinary College, Chennai	Veterinary College and Research Institute, Namakkal	Fisheries College and Research Institute, Thoothukudi	Institute of Food and Dairy Technology Koduvalli	Total
B.V.Sc. & AH	142	73	-	-	215
B.F.Sc	-	-	34	-	34
B.Tech. (FPT)	-	-	-	18	18
M.V.Sc	62	12	-	-	74
M.F.Sc	-	-	11	-	11
Ph.D. (Veterinary)	14	4	-	-	18
Ph.D. (Fisheries)	-	-	-	-	-
P.G. Diploma in Bioinformatics	1	-	-	-	1
M. Phil in Bio-technology	6	-	-	-	6
Total	225	89	45	18	377

- ❖ Consequent to the signing of Teaming Agreement by TANUVAS with Michigan State University, USA during 2006, five students attended internship programme and two staff members attended training programme at Michigan State University, USA during 2007.
- ❖ A Memorandum of Agreement has been signed between Virginia Maryland Regional Colleges of Veterinary Medicine, USA., and Tamilnadu Veterinary and Animal Sciences University on 7th May, 2007. This agreement is based on the principle of reciprocity and expresses the interest of both parties in exchanging scholars, students, academic information and materials in the belief that the research and educational process at both the institutions will be enhanced and that mutual understanding between their respective scholars and students will be increased by the establishment of such exchange programmes. In this connection, an **International Workshop on Capacity building in the areas of Avian Viral Diseases and Animal Biotechnological Applications** was organised during 21st to 23rd August 2007 at Madras Veterinary College, Chennai. Under this programme, four students attended internship programme and one teaching faculty attended the training programme at Virginia Maryland Regional College of Veterinary Medicine, USA.
- ❖ National Workshop on **“Digital inclusion on Development in Rural India with an emphasis on livestock and poultry sector”** sponsored by National Informatics Centre, Ministry of Communications and Information Technology, Govt. of India was organised on 24.11.2007 at Madras Veterinary College, Chennai
- ❖ A meeting on Small Business Innovation Research Initiative (SBIRI) a new scheme launched by the Department of Biotechnology, Ministry of Science and Technology, New Delhi was organised by TANUVAS on 10.12.2007 at Madras Veterinary College, Chennai to boost public-private-partnership in the Veterinary and Animal Sciences area.
- ❖ One Final Year B.F.Sc., student of Fisheries College and Research Institute, Thoothukudi bagged the Young Scientist and Best Paper presentation Award at the International Conference on “Frontiers in Polymer Science and Technology” held at Administrative Staff College, Guwahati, Assam from 01.11.2007 to 03.11.2007 for his research paper entitled “Collagen from Fish Scales and Waste as an effective biopolymer for food packaging”.
- ❖ Two students of Fisheries College and Research Institute, Thoothukudi ranked first and second best fisheries graduates of India for the year 2007 in a 5 stage screening tests conducted by the Professional Fisheries Graduate Forum of Mumbai.
- ❖ The Pavendhar Bharathidasan Endowment Intercollegiate Competition for the year 2007 was held at Madras Veterinary College, Chennai. Two Students of Veterinary College and Research Institute, Namakkal, won the first and second prize in the Essay Writing Competition and one student got the third prize in the Poetry Competition.
- ❖ The Pavendhar Bharathidasan Endowment Intercollegiate Competition for the year 2007 was held at Madras Veterinary College, Chennai. Two students of Fisheries College and

Research Institute, Thoothukudi won the second and third prize in the Tamil Elocution Competition and one student won the second prize in the Tamil Poetry Competition.

RESEARCH

Externally Funded Schemes

Seventeen external funded research programmes at a total outlay of Rs. 455.59 lakhs have been sanctioned during 2007-08.

Plan Schemes

Under University Plan, 87 Plan Schemes with the financial outlay of Rs. 2256.37 lakhs funded by the Government of Tamil Nadu are in operation for strengthening the infrastructure facilities for higher studies, innovations, research infrastructure and dissemination of knowledge.

Part II Schemes

During 2007-08, the following two Part II Schemes have been implemented at TANUVAS

1. Establishment of an "Ethno Veterinary Herbal Research and Training Unit for Livestock Health Care" at Veterinary University Training and Research Centre, Thanjavur at a cost of Rs.18.00 lakhs.
2. Development of Vaccine against Coliform Mastitis at a cost of Rs.17.01 lakhs

RESEARCH ACHIEVEMENTS IN ANIMAL SCIENCES

ANIMAL PRODUCTION

Molecular Characterisation of Nilagiri Sheep

Genetic variation in Nilagiri sheep, the only apparel wool breed in South India was analysed using DNA microsatellite markers. Microsatellite markers are frequently used to report on genetic variations in domestic animal species. It has been established that microsatellite DNA markers are found suitable for the description of breeds due to their dense distribution in the genome, great variation, co-dominant inheritance and easy genotyping.

Polymerase Chain Reaction amplification of genomic DNA of 48 Nilagiri sheep, unrelated by ancestry, was done. Genotyping of animals was done based on allele sizes. The number of alleles amplified at a locus ranged from 3 to 8 with a mean of 5 across all loci. The size of alleles ranged from 72 to 228 bp. In total, 125 alleles were observed at the 25 loci studied.

Disposal and utilization of dead birds by aerobic composting

Composting of dead bird with caged layer manure and farmyard manure were carried out in mini composting bins. The profit per Kg of compost produced was ranged from 39

paise to 46 paise in Caged Layer Manure compost and the profit was ranged from 10 paise to 14 paise in farmyard manure compost.

Nutritive value of sugarcane tops and its effect on reproductive performance in cattle

Equal quantity of feeding of sugarcane tops silage and green grass or feeding of sugarcane tops alone to cattle did not affect the concentration of major or minor minerals essential for reproduction. The sugarcane tops silage contained 5.81 % digestible crude protein and 47.43 % total digestible nutrients. Sugarcane tops can be ensiled with 1% urea and 2% molasses with 0.5 % salts as additives to enhance its nutritive value.

Probiotics as alternative to antibiotics in broiler diets

A broiler trial was carried out with commercial broilers to evaluate the two probiotic cultures : *L. acidophilus* and *L. sporogenes*. Probiotic was found to reduce serum and meat cholesterol.

ANIMAL HEALTH

Biological control of flies in poultry farms

In vitro trial to determine the frequency of Bti spore application revealed 76 per cent mortality of fly larvae in larval medium mixed with 2 grams of Bti spores. While in control only 4 per cent mortality was observed. The advantage of *Bacillus thuringiensis* lies in the fact that it can be cultivated in tender coconuts, which is an inexpensive and easily available ecofriendly medium. After incubation period of three days, the *Bacillus thuringiensis* incorporated tender coconut is spilt open and the coconut milk is sprayed on the manure for control of fly larvae. Application of the fungus, *Metarhizium anisopliae*, effectively inhibited the adult fly emergence from eggs, larvae and pupa of *Musca domestica*.

Seroepidemiological Studies on Brucellosis in Sheep and Goats in suburbans of Chennai

A study was conducted to determine the prevalence of *Burcella melitensis* infection in 231 sheep and 181 goats in suburban areas of Chennai by serological tests viz. rose bengal test (RBT), standard tube agglutination test (STAT) and i-ELISA. Of the 231 serum samples from sheep screened by rose bengal test, 32 (13.85 per cent) were found positive, and out of 181 serum samples from goats, 32 (17.68 per cent) were found positive by rose bengal test. In sheep 23 (9.96 per cent) and in goats, 29 (16.02 per cent) were found positive by standard tube agglutination test. By i-ELISA, 47 (20.35 per cent) were found positive in sheep 45 (24.86 per cent) were found positive in goats. The economic loss by this disease is Rs.570/animal/annum.

Production, evaluation and standardization of Vero cell adapted live attenuated peste des petits ruminants virus vaccine under field conditions

Twenty thousand doses of live attenuated PPR AR 87 vaccine were prepared. The field evaluation of PPR vaccine was carried out through Veterinary University Training and Research Centres. A total of 14,700 doses were tested. Post vaccination seroconversion was assessed by neutralization and found potent.

Development of Safe and potent anthrax vaccine for small ruminants

A safe and potent anthrax vaccine has been developed. A virulent *Bacillus anthracis* (Stern strain) has been used as seed material and Montanide has been used as adjuvant. The adjuvanted live spore vaccine was found good in laboratory experiment. The vaccine has been validated using goats at Institute of Veterinary Preventive Medicine (IVPM), Ranipet and found potent. An agar gel immuno diffusion (AGID) kit has been developed for the detection of antibody level against *Bacillus anthracis* following vaccination.

Development of cell culture based vaccine for sheep pox

The sheep pox vaccine virus (Ranipet strain) was passaged in Vero cells for forty times and found to have a virus titre of $10^{9.5}$. Sero conversion could be detected almost in all the vaccinated animals by 14 days post vaccination by serum neutralization test. Increase in serum ELISA antibody titre was observed from day 14 post vaccination onwards in all the three animals under Group B, C and D. Whereas increase in serum ELISA antibody titre was observed from day 21 onwards in Group A animals. On challenge studies, severe skin reaction was noticed at all dilutions in the control animals and all control animals died. Whereas mild skin reactions observed in the initial two to three dilutions among vaccinated animals.

Development of inactivated pentavalent bluetongue vaccine using BTV serotypes 1, 2, 15, 18 and 23

Inactivation of bluetongue virus serotypes 1, 2, 15, 18 and 23 was carried out separately. After inactivation, they were added in equal quantity with montanide ISA 206 adjuvant. The inactivated pentavalent bluetongue vaccine was found to be sterile and stable even at 180 days after the vaccine preparation. The pentavalent vaccine is ready for release.

Establishment of canine artificial insemination unit

Two pedigreed stud dogs belonging to Doberman and German shepherd breed have been purchased and trained for semen collection. Semen is collected and used for fresh or frozen semen Artificial Insemination. So far 21 Doberman and 43 German shepherd bitches were inseminated using fresh and frozen semen. Six Doberman and 22 German shepherd bitches have delivered puppies.

Resource Mapping for Livestock Development in Tamil Nadu – A GIS Approach

District and block level boundary maps of Salem, Coimbatore, Villupuram and Thanjavur districts of Tamil Nadu were digitized using Geomedia 6.0 software. Geopositions of the veterinary institutions were recorded using Global Positioning System. Block level data with respect to livestock population, veterinary institutions, agricultural and livestock markets, number of cultivators and agricultural labourers, land use pattern, area under crops, rainfall and rural development programmes have been compiled. The collected data of sample districts were entered and tabulated using the above structured MS Access database.

Rural women empowerment and employment through technology based poultry development

One thousand rural women were trained on desi chicken farming and custom hatching and 100 were given skill training and being utilized for producing chicken. 20 rural hatching units and 20 numbers of bird cage units established in 5 villages.

CLINICAL SERVICES

The Veterinary Teaching Hospitals at Madras Veterinary College and Veterinary College and Research Institute, Namakkal, the Emergency Critical Care Unit, the Centralised Clinical Laboratory at Madras Veterinary College, Chennai and the Veterinary University Peripheral Hospital at Madhavaram Milk Colony, Chennai are supported by State of the art facilities and highly skilled specialists with depth of expertise in Veterinary Clinical Medicine, Obstetrics and Gynaecology, Veterinary Surgery and Radiology and Veterinary Pharmacology and Toxicology. TANUVAS is offering clinical services to the pet and livestock owners round the clock.

Infrastructure and facilities available

1. Ultrasound scan unit with 4D real time Doppler ultrasound scan
2. Small animal and large animal Endoscopy unit
3. Holter monitor for monitoring 24 hours cardiac function
4. Ophthalmology with Phaco Emulcifier
5. Intensive Care Unit
6. Artificial Insemination in Dogs
7. Assisted Reproductive Technology Laboratory
8. Large Animal Services (Artificial Insemination, Infertility Diagnostic Lab, Infertility Clinic, Obstetrical Unit, Rumen Lab, Hoof Care and Soundness Examination Unit)
9. Ambulatory Services “Vet Care on Wheels” to provide health cover to farm animals in rural areas
10. Emergency and Critical Care Unit

Cases treated during the year 2007-2008

HOSPITAL					
Species	Chennai		Madhavaram		Namakkal
	O.P.	Mobile	O.P.	Mobile	
Horse	1296	-	10	-	13
Cattle & Buffalo	12331	367	2132	27	5236
Sheep & goats	2674	192	918	14	2034
Dogs	43193	6	9052	1596	3732
Cats	1407	-	182	30	41
Poultry	135	-	643	47	17
Others	718	18	107	12	40
Total	61754	583	13044	1726	11113

INPATIENT FACILITIES

At the Madras Veterinary College Hospital, a separate inpatient unit is provided for both large and small animals. 453 large animals and small animals were admitted as inpatients for various ailments. At Veterinary College and Research Institute, Namakkal, 1906 large and small animals were admitted as in-patients and treated. A separate quarantine unit for keeping animals under observation for rabies is also functioning at Madras Veterinary College and Veterinary College and Research Institute, Namakkal. 3266 Artificial Inseminations (AI) were carried out.

LABORATORY SERVICES

- **Central Animal Feed and Food Residue Laboratory, Madhavaram**
This laboratory is unique of its kind in offering the services like rapid detection of mycotoxins – Aflatoxin, Ochratoxin – A, Citrinin, Penicillic acid ; detection of Pesticides – Organochlorine and antibiotics – Chloramphenicol, Furazolidone, Furaldone, Semicarbazide, Tetracycline and Sulphonamide to livestock and poultry entrepreneurs. During 2007-08, 3094 samples tested and results communicated with appropriate solution to them.
- **Animal Feed Analytical and Quality Control Laboratory, Namakkal**
This laboratory is involved in analysis of feed/feed ingredients for their composition like nutrients, contaminants, adulterants and mycotoxins. Number of samples submitted and analysed commercially during 2007-08 was 15668 and number of tests carried out was 36963. Apart from this, the lab had issued 103 bi-weekly bulletins on weather related advisories for poultry farming in Namakkal zone.
- **Leptospirosis Research Laboratory, Madhavaram**

During 2007-08, this laboratory screened 2154 animal serum samples for leptospirosis. Out of which 1171 samples were found positive. Apart from this, this laboratory screened 9781 human serum samples for leptospirosis. Out of which 7897 samples were found positive.

▪ **Andrological Laboratory, Chennai**

During 2007-08, this laboratory carried out karyological screening for 418 samples ; hamster egg penetration test for 154 samples and Semen analysis for 409 samples.

EXTENSION EDUCATION

The Directorate of Extension Education is functioning with the objective of planning and execution of all extension programmes of the University in close consultation with other University Officers and also with the line departments like the Dept. of Animal Husbandry, Tamil Nadu Co-operative Milk Producers Federation Ltd., Tamil Nadu Livestock Development Agency and other Government organizations. The activities of the Directorate of Extension Education is furnished below.

Training Programmes Conducted during 2007- 2008

Title of the Training Programme	No. of Training Programmes		Beneficiaries				Total
			SC/ST		Others		
	On campus	Off campus	Men	Women	Men	Women	
Dairy farming	103	100	622	1856	2438	3791	8707
Sheep & Goat farming	75	49	436	842	1516	1265	4059
Poultry Farming	57	47	389	655	775	1218	3037
Turkey Farming	27	4	155	219	462	231	1067
Japanese Quail farming	32	4	167	216	338	255	976
Pig farming	30	7	144	90	355	119	708
Rabbit farming	20	2	75	72	238	110	495
Milk and Milk products	16	13	34	122	351	480	987
Home Science	16	18	41	208	334	346	929
Horticulture	14	16	96	68	763	372	1299
Integrated livestock farming	22	87	431	1178	794	1757	4160
Fish farming / Ornamental fish culture	15	17	139	116	411	401	1067
Crop Science	10	4	94	49	383	155	681
Agricultural Engineering	18	31	82	126	817	689	1714
Feeding and Fodder Cultivation	12	12	96	113	247	209	665

Animal Science	14	11	123	195	456	319	1093
Calf rearing	6	7	19	28	201	79	327
Disease diagnosis and Management	3	15	118	182	147	349	796
Meat Products	5	-	8	46	50	143	247
Breeding problems & its management in crossbreds	5	7	9	38	11	65	123
Animal Husbandry and Fisheries practices	-	9	32	767	78	519	1396
Mineral mixture	-	2	12	8	32	5	57
Silage making	-	2	13	15	54	-	82
Total	500	464	3335	7209	11251	12877	34672

Other Extension Activities

Farmers Queries	
By Post	4171
In Person	13260
By Field Visit	2367
By Telephone	3791
By Email	724
By Touch Screen	2520
Radio Programmes	93
Television Programmes	97
Exhibitions	265

Technologies developed

Products

1. Development of pet food incorporating dry rendered spent hen meal

Pet food (whole meal) with good nutritive quality and palatability to dogs can be prepared by incorporating 10-20 per cent of spent hen meal and the cost of production of pet food will be Rs.18.00 per kg (10% inclusion of spent hen meal) and Rs.22.75 per kg (20% inclusion of spent hen meal).

2. Development of traditional styled meat pickle from Spent Hen Meat

Vinegar added Meat pickle from spent hen meat is highly palatable and it can be stored upto 90 days at room temperature.

3. Multi minerals block for sheep and goats

Macro and micro minerals are incorporated in the block as a lick for sheep and goats. One kg block is recommended for 20 sheep / goat for one month. Deficiency of these macro and micro minerals will be rectified by placing the Multi mineral block in the sheep / goat shed as lick.

4. Nandanam Guinea Fowl I

Nandanam Guinea Fowl I is meant for meat purpose with very good taste and excellent livability. It is suitable for backyard rearing.

5. Emu pelleted feed

Emu layer and grower feed is available in the form of pellet. This pellet feed is convenient for feeding of emu birds.

6. Development of Low back fat thickness Synthetic Strain of Pig for productivity enhancement

The special characteristic of the pork obtained from the synthetic pig is the leanness in meat with less back fat thickness i.e. 2.46 cm.

7. Enriching and ensiling sugarcane tops

The nutritive value of sugarcane tops can be increased with 1% urea, 2% molasses and 0.5% salt and this can be fed to cattle during fodder scarcity.

8. Designing a Low Cost Yoghurt Making Equipment

Yoghurt can be prepared at home using this equipment.

9. Fish Macaroni

Fish Macaroni is rich in protein and it can be used as a snack food. Regular cooking method can be followed before eating.

Vaccines

10. Montanide absorbed Anthrax spore vaccine

Montanide absorbed anthrax spore vaccine is highly suited for small ruminants like sheep and goats. It does not cause any untoward reaction in animals and it can produce higher immune titre against *Bacillus anthracis*. This vaccine is safe and potent under laboratory and field trials.

Diagnostic kits

11. CDV Check – Canine distemper virus antibody test kit

This assay is designed to measure the relative level of antibody to canine distemper virus in dog serum. This test is useful for detection of post vaccinal responses in dogs. This test can be performed at field level.

12. Infectious Bursal Disease Agar Gel Immunodiffusion (IBD-AGID) test kit

Infectious Bursal Disease Agar Gel Immunodiffusion (IBD-AGID) test kit can be used in simple laboratories and hatcheries to detect Infectious Bursal Disease in Chicken.

13. AGID Kit for serological assessment of Anthrax Vaccine

This AGID kit has been developed for the assessment of post vaccinal immune response against anthrax vaccine at field level.

Others

14. Disposal and utilization of dead birds by Aerobic Composting – An Eco Friendly approach

Dead bird in poultry farms can be efficiently disposed by composting either with caged layer manure or with farm yard manure in a period of 60 to 120 days eliminating all pathogens. This manure can be applied to agricultural fields.

15. Vermicomposting using Poultry droppings

Poultry manure is processed as vermicompost which can be used as organic manure for plants. Economically it is cheaper. One tonne of vermicompost cost Rs.1,400/- only.

16. Pruning in Guava and Sapota by using electrically operated Guava Pruner

Guava Pruner machine can be used to prune guava and sapota trees thereby labour cost can be saved by Rs.1,400 per acre.

17. Chaff cutter cum feed disintegrator

This chaff cutter cum feed disintegrator is electrically operatable and easily movable. It will cut 150 kg of grasses per hour and grind 50 kg concentrate feed mixture per hour. The cost of the machine is Rs.20,000/- only.

18. SIS-LIVESTAN – A CD ROM based database for Animal Husbandry

All the particulars pertaining to Animal Husbandry of Tamil Nadu is recorded in this CD ROM.

19. Package of practices for scientific turkey farming

Scientific management practices under native condition have been evolved and the same would be very useful for the farmers.

20. TANUVAS & Commonwealth of Learning (COL) product on interactive multimedia presentation on Optimising Cattle feeding based on locally available fodder resources in CD ROM

It is a software on cattle feeding with “Artificial Intelligence” to prevent illogical inputs during the problem solving approach.

21. Pressure Lavage treatment for Septic Arthritis in cattle

This technology is suitable for irrigating the septic joints under pressure in field conditions.

RESEARCH ACHIEVEMENTS IN FISHERIES SCIENCES

Freshwater Prawn Seed Production

Farm raised brood stock was used for the seed production with a brood stock sex ratio of 1:6 (Male : Female). Successful mating and continuous spawning was evident even at high female stocking density which can be attributed to healthy feed given for maturation and ovulation.

Catfish Seed Production

Brood stock of Catfish (Magur) collected from the wild were purchased from Bhubanesuvar, Orissa and transported in live condition to Fisheries College and Research Institute, Thoothukudi. Brood stocks were maintained in cement tank, feeding with chicken waste. Induced breeding and larval rearing of catfish seeds were standardized.

Conservation of Lobsters in the Gulf of Mannar

The survey conducted for lobsters along Gulf of Mannar showed that three species of lobsters such as *Panulirus homarus*, *P.ornatus* and *P.versicolor* occur along the Gulf of Mannar coast throughout the year. Among them *P. homarus* and *P. ornatus* were abundant. The hatched out larvae were collected and searched in Tuticorin Bay in the Gulf of Mannar to enhance their stock.

Development of technologies for the production of chitin, glucosamine and calcium supplement from marine invertebrate wastes towards women's self employment

Methods for the production of chitin and chitosan from shell waste by chemical treatment with hydrochloric acid and sodium hydroxide were standardized. Utilization of proteolytic enzymes from Papaya, Pineapple and fish gut waste for the production of chitin was also standardized. The research findings were transferred to entrepreneurs and members of self help groups of Thoothukudi, Tirunelveli, Kanniyakumari, and Ramanadhapuram districts through training programme. Guidance was given to interested entrepreneurs for establishing chitin production unit.

Performance of schemes implemented during 2007-08

- ◆ Establishment of an "Ethno Veterinary Herbal Research and Training Unit for Livestock Health Care" at Veterinary University Training and Research Centre, Thanjavur had been sanctioned at a cost of Rs. 18.00 lakhs. During the year 2007-08, 300 farmers and 50 Veterinarians have been trained on the Ethno veterinary medicine activities. Three seminars have been conducted on Ethno Veterinary Medicine. A one day workshop on Ethno Veterinary Medicine using fresh herbal for primary health care of livestock for all stake holders at Veterinary University Training and Research Centre, Thanjavur has been conducted on 22.11.2007. Land has been obtained from the District Collector, Thanjavur to construct the building area 0.40.5 Hec. The first year allotment of Rs.15.15 lakhs has been completely expended.
- ◆ Development of Vaccine against Coliform Mastitis had been sanctioned at a cost of Rs.17.01 lakhs. During the year 2007-08 the microbes namely *S.aureus*, *Bacillus subtilis*, *Streptococcus sp.* and *E.coli* had been isolated and characterized. The first year allotment of Rs.2.63 lakhs has been completely expended.

New Part-II Schemes for 2008-09

The following three schemes have been proposed under Part II for the year 2008-09.

1. Development of a vaccine for goat pox diseases at a total cost of Rs. 20.50 lakhs
2. Development of Lateral flow kit for the Diagnosis of Bovine Brucellosis at a total cost of Rs. 26.36 lakhs.
3. Production of bio-active compounds of pharmaceutical value from marine organisms at a total cost of Rs. 28.14 lakhs.

Future thrust areas

Veterinary

- ↻ Identification of alternate feed resources consequent to reduction in pastoral lands
- ↻ Utilization of tree fodders
- ↻ Enrichment of fodder to improve their nutritive value
- ↻ Fodder banks at village / taluk level for free supply throughout the year
- ↻ Development of rapid, reliable, sensitive and specific molecular diagnostics for infectious diseases
- ↻ Establishment of molecular microbiology laboratory
- ↻ Establishment of endocrinology laboratory

Fisheries

- ↻ Development of shrimp disease vaccine
- ↻ Quality assurance in sea foods
- ↻ Development of bioactive compounds for pharmaceutical value from marine life

ANNEXURE

☞ COLLEGES

Madras Veterinary College Chennai
Veterinary College and Research Institute, Namakkal
Fisheries College and Research Institute, Thoothukkudi

☞ CENTRES OF ADVANCED STUDIES (CAS)

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

☞ CENTRE OF EXCELLENCE

Centre of Excellence in Animal Biotechnology and Immunology, Madras Veterinary College, Chennai

☞ RESEARCH STATIONS

- ✓ Poultry Research Station, Chennai
- ✓ Livestock Research Station, Kattupakkam, Kancheepuram
- ✓ Mecheri Sheep Research Station, Pottaneri, Salem
- ✓ Sheep Breeding Research Station, Sandynallah, Udthagamandalam
- ✓ University Research Station, Madhavaram, Chennai
- ✓ Institute of Food and Dairy Technology, Koduvalli, Chennai
- ✓ Institute of Animal Nutrition, Kattupakkam, Kancheepuram

☞ VETERINARY UNIVERSITY TRAINING AND RESEARCH CENTRES

- | | |
|------------------|-----------------|
| 1. Coimbatore | 2. Dharmapuri |
| 3. Dindigul | 4. Erode |
| 5. Karur | 6. Madurai |
| 7. Melmaruvathur | 8. Parakkai |
| 9. Cuddalore | 10. Rajapalayam |
| 11. Salem | 12. Thanjavur |
| 13. Tirunelveli | 14. Tiruppur |
| 15. Tiruchi | 16. Vellore |

☞ VETERINARY UNIVERSITY REGIONAL RESOURCE CENTRE, PUDUKOTTAI

☞ FISHERIES TRAINING AND RESEARCH CENTRE

1. Parakkai, Kanniyakumari District
2. Thanjavur

☞ AVIAN DISEASE LABORATORY

1. Namakkal
2. Thalaivasal

☞ LABORATORIES

- Animal Feed Analytical and Quality Control Laboratory, Namakkal
- Central Animal Feed and Food Residue Laboratory, Chennai

- Central. University Laboratory, Madhavaram Milk Colony, Chennai
- Leptospira Diagnostic Laboratory, Madhavaram Milk Colony, Chennai
- Shrimp Disease Diagnostic Laboratory, Madhavaram Milk Colony, Chennai
- Bacterial Vaccine Research Centre, Madhavaram Milk Colony, Chennai
- Viral Vaccine Research Centre, Madhavaram Milk Colony, Chennai
- Centralised Instrumentation Laboratory, Madras Veterinary College, Chennai
- Centralised Clinical Laboratory, Madras Veterinary College, Chennai
- Animal facility at Biosafety level 2 (WHO standard), Madhavaram Milk Colony, Chennai

☞ **FARMERS TRAINING CENTRES**

1. Kancheepuram
2. Theni
3. Tiruvarur

☞ **KRISHI VIGYAN KENDRAS**

1. Kattupakkam
2. Kundrakudi
3. Namakkal

Tmt. P. GEETHAJEEVAN
Minister for Animal Husbandry