

ANIMAL DISEASE CONTROL MEASURES

With the increasing intensification and commercialization of livestock and poultry industries, the economic implications of livestock/ poultry diseases are becoming more important both at farm and national levels, as animal diseases symbolize avoidable waste of scarce resources. From an economic point of view, a disease destroys the basic resources, reduces the attainable output and / or dwindles the resources use efficiency. As a result, a disease is considered to be a “negative resources” in animal production.

4.1 ECONOMIC FRAME WORK OF A LIVESTOCK DISEASE

The effect of animal diseases in a given production system is to reduce the efficiency with which inputs are converted into outputs, i.e. they decrease productivity. The effects of disease can be classified as direct or indirect.

Direct effects

- ❖ Destruction of the basic resource of the livestock production process through mortality of productive stock;
- ❖ Lowering the efficiency of the production process and the productivity of resources employed (for e.g. reduced feed conversion); and
- ❖ Reduction in the quantity and or the quality of output.

Indirect effects

- ❖ Additional costs incurred to avoid or reduce the incidence of disease (e.g. vaccination and quarantine) or to treat sick cases, *etc.* and
- ❖ Posing a threat to human health through spreading zoonotic diseases.

4.1.1 Losses due to disease acting as a constraint on production

Besides causing direct losses, diseases can act as constraints on production by determining the producer’s efforts to avoid as far as possible the risks of disease in his animals. If a disease control policy removes constraints, the benefits resulting from such changes are called indirect benefits. The losses thus avoided are called indirect losses. Quantifying such effects can be complex, but it is possible. It principally involves the estimation of changes in the income of the producer groups involved, which would arise if the disease threat were removed and the producers were able to

improve existing systems of production or adopt new ones. These income changes can then be related to the effects of the diseases control policy.

4.1.2 Estimating disease losses – A few results from TANUVAS

- Studies had been conducted to analyse the economic consequences of diseases in livestock and poultry

Disease		Year	Estimated loss (Rs. in millions)
Objective : To measure economic impact, epidemiological measures of association between incidence and predisposing factors			
Clinical mastitis in dairy animals		1993 - 96	56
Post partum reproductive disorders in bovines	Metritis	2000 - 02	1156
	Retained placenta		63
Sheep pox		2002 - 04	967
Enterotoxaemia			419
Metabolic disorders in milch animals	Milk Fever	2005 - 08	406
	Ketosis		253
Objective: To measure economic impact			
Conception failures in dairy animals		2000 - 03	2066
RD, IBD, Colibacillosis and Coccidiosis in layers			16.23 per million layers
Foot and Mouth Disease		2004	127

Livestock and poultry farming is essential for millions of poor households across the country not only as a source of income but also as a major source of protein, supplementary nutrition, fertilizer, fuel and a store of wealth. However, they are prone to many health problems leading to economic loss, weight loss, delayed maturity, high mortality rate, low fertility rate, etc., apart from making them susceptible to other infections. To overcome the above deleterious effects, the Central and State Government took initiatives through implementation of various animal disease control programmes over the years. As the result, the disease outbreaks and losses due to animal diseases in the country as well as the state had shown a drastic decline. To evaluate implementation of various animal disease control programmes in Tamil Nadu, the present study was carried out with the following objectives:

4.2 OBJECTIVES

- ❖ Review the past performance of major Animal Disease Control Schemes by analysis of secondary data.
- ❖ To identify the approach, mandate, target and present status of the schemes of the Animal Disease Control.
- ❖ To identify the gaps, constraints-SWOC analysis of the schemes.
- ❖ To get feedback from stakeholders through interactions and Focus Group Discussions.
- ❖ To suggest measures for further development which will serve as input for Twelfth Plan Document.

4.3 IMPLEMENTING AGENCIES OF VARIOUS ANIMAL DISEASE CONTROL MEASURES

- ❖ Department of Animal Husbandry (DAH), Tamil Nadu.

4.4 FUNDING AGENCIES OF VARIOUS ANIMAL DISEASE CONTROL MEASURES

- ❖ Central Government
- ❖ State Government

4.5 ANIMAL DISEASE CONTROL MEASURES PROGRAMMES IN TAMIL NADU

- ❖ Assistance to States for Control of Animal Diseases.
- ❖ Part-II Schemes
- ❖ National Agriculture Development Programmes (Rashtriya Krishi Vikas Yojana-RKVY)
- ❖ National Project on Rinderpest Eradication.
- ❖ Foot and Mouth Disease Control Programme - Kanniyakumari District.
- ❖ Extended Foot and Mouth Disease Control Programme in Tamil Nadu (Excluding Kanniyakumari District).
- ❖ Establishment and Strengthening of Existing Veterinary Hospitals and Dispensaries.
- ❖ National Animal Disease Reporting System.
- ❖ Implementation of “National Control Programme of Brucellosis.
- ❖ Implementation of “National Control Programme of Peste des Petits Ruminants.
- ❖ Provision of Establishment of Networking for e-governance.

4.6 GOVERNMENT ORDERS PERTAINING TO ANIMAL DISEASE CONTROL PROGRAMMES

The Government orders (G.O) for Assistance to States for Control of Animal Diseases are listed below:

- ❖ G.O.(D).No.337 dated 27.11.2007 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu
- ❖ G.O.(D).No.22 dated 22.01.2008 of the Animal Husbandry, Dairying and Fisheries (AH3-2) Department, Government of Tamil Nadu
- ❖ G.O.(D).No.143 dated 29.10.2008 of the Animal Husbandry, Dairying and Fisheries (AH3-2) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.7 dated 20.01.2009 of the Animal Husbandry, Dairying and Fisheries (AH3-2) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.104 dated 28.08.2009 of the Animal Husbandry, Dairying and Fisheries (AH3-2) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.20 dated 11.02.2010 of the Animal Husbandry, Dairying and Fisheries (AH3-2) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.50 dated 29.03.2010 of the Animal Husbandry, Dairying and Fisheries (AH3-2) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.134 dated 19.10.2010 of the Animal Husbandry, Dairying and Fisheries (AH3-2) Department, Government of Tamil Nadu

The Government orders (G.O) for National Agriculture Development Programme (Rashtriya Krishi Vikas Yojana-RKVY) are listed below:

- ❖ G.O.Ms.No.21 dated 29.01.2009 of the Agriculture (AP 1) Department, Government of Tamil Nadu
- ❖ G.O.Ms.No.212 dated 09.10.2009 of the Agriculture (AP 1) Department, Government of Tamil Nadu
- ❖ G.O.Ms.No.48 dated 08.03.2010 of the Agriculture (AP 1) Department, Government of Tamil Nadu

The Government orders (G.O) for National Project on Rinderpest Eradication are listed below:

- ❖ G.O.Ms.No.191 dated 07.12.2007 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu

- ❖ G.O. Ms.No.140 dated 25.10.2010 of the Animal Husbandry, Dairying and Fisheries (AH3-2) Department, Government of Tamil Nadu
- ❖ G.O.Ms.No.143 dated 22.11.2011 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu

The Government orders (G.O) for Centrally Sponsored Schemes - Foot and Mouth Disease Control Programme are listed below:

- ❖ G.O.Ms.No.189 dated 26.11.2007 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu
- ❖ G.O.(D).No.4 dated 06.01.2011 of the Animal Husbandry, Dairying and Fisheries (AH3-2) Department, Government of Tamil Nadu
- ❖ G.O.(D).No.62 dated 14.03.2011 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu
- ❖ G.O.(D).No.63 dated 22.03.2011 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu

The Government orders (G.O) for Centrally Sponsored Schemes - Livestock health and disease Control are listed below:

- ❖ G.O.Ms.No.89 dated 19.08.2011 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.94 dated 29.08.2011 of the Animal Husbandry, Dairying and Fisheries (AH3-2) Department, Government of Tamil Nadu

The Government orders (G.O) for Centrally Sponsored Schemes - National Control Programme of Brucellosis and Peste des Petits Ruminants are listed below:

- ❖ G.O.(Ms).No.158 dated 09.12.2011 of the Animal Husbandry, Dairying and Fisheries (AH2) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.159 dated 09.12.2011 of the Animal Husbandry, Dairying and Fisheries (AH2) Department, Government of Tamil Nadu

The Government orders (G.O) for Part-II Schemes are listed below:

- ❖ G.O.(Ms).No.68 dated 29.05.2008 of the Animal Husbandry, Dairying and Fisheries (AH3-2) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.80 dated 03.06. 2008 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.81 dated 06.08.2009 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.82 dated 06.08.2009 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.83 dated 06.08.2009 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.84 dated 06.08.2009 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.85 dated 06.08.2009 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.86 dated 06.08.2009 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.87 dated 06.08.2009 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.87 dated 06.08.2009 of the Animal Husbandry, Dairying and Fisheries (AH3) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.89 dated 10.08.2009 of the Animal Husbandry, Dairying and Fisheries (AH4) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.79 dated 07.08.2010 of the Animal Husbandry, Dairying and Fisheries (AH4) Department, Government of Tamil Nadu
- ❖ G.O.(Ms).No.80 dated 07.08.2010 of the Animal Husbandry, Dairying and Fisheries (AH4) Department, Government of Tamil Nadu

4.7 FINANCIAL ALLOCATION FOR ANIMAL DISEASE CONTROL MEASURES PROGRAMMES

The financial allocation for control of various animal diseases in Tamil Nadu for the years from 2007 to 2011 is mentioned below.

S.No.	Disease Control	Amount (Rs. in lakhs)
1.	Foot and Mouth Diseases	4895.22
2.	Brucellosis	92.00
3.	Peste des Petits Ruminants	584.20
4.	BQ	26.90
5.	HS	20.23
6.	Anthrax	145.68
7.	Blue Tongue	15.00
8.	Rinderpest	32.00
9.	Automatic Blood analyser	77.50
10.	Automatic Urine analyser	14.50
11.	Mobile diagnostic laboratories	96.00
12.	Others	934.51

4.8 PARTICULARS OF DISEASE OUTBREAK, ATTACK AND DEATH IN TAMIL NADU

The Particulars of Disease Outbreak, Attack and Death in Tamil Nadu from the year 2000-01 to 2010-11 is presented in Table. It clearly implied that the number of disease outbreaks, animal attacked and deaths found to be meagre to nil during the last five years (2006-07 to 2010-11) compared to previous five years. This clearly implied the positive impact of various animal disease control measures in Tamil Nadu.

Disease Outbreak, Attack and Death in Tamil Nadu from the year 2000-01 to 2010-11

(in numbers)

Year	BT		FMD		HS		SP		PPR		ET		ANTHRAX		BQ	
	O	A	O	A	O	A	O	A	O	A	O	A	O	A	O	A
2000-01					1	7					1	5	3	11	2	13
2001-02			11	233	3	39	32	1	7	0			6	20	19	132
2002-03			19	141	2	10	7				4	38	6	43	5	43
2003-04	1	8	2	75	6	47	40	3	92	84	5	49	26	9	43	14
2004-05	31	1652	5	40	2	7	7	3	36	5	5	363	40	10	28	3
2005-06	2	29	3	148	3	2	2	1	7	5	5	149	59	2	24	
% OBR	6.8	337.8	8.4	127.4	3.0	2.4	18.4	1.6	28.4	118.8	3.0	112.2	25.0	7.2	33.8	6.4
2006-07			1	8	0			1	7	5				2	7	7
2007-08			15	247	58					1	3	0	1	6	6	2
2008-09			2	7	0									1	1	1
2009-10														1	3	3
2010-11			4	110	17	1	8	8					2	8	8	1
% OBR	-	-	4.4	74.4	15.0	0.2	1.6	-	-	-	0.2	0.6	-	0.2	1.2	1.2
														4.4	4.4	0.4
																2.2
																2.0

(O – Outbreaks, A – Attacks and D – Deaths)

BT – Blue Tongue, FMD – Foot and Mouth Disease, HS – Haemorrhagic Septicaemia, SP – Sheep pox, PPR – Peste de Pesticis Ruminants; ET – Enterotoxaemia and BQ – Black Quarter)

Source: Department of Animal Husbandry, Government of Tamil Nadu

4.9 RESPONSE GROUP DISCUSSION

A response group discussion was conducted at Veterinary University Training and Research centre, Erode on 27-01-2012 to have an interaction regarding Animal Disease Control measures done at Animal Husbandry department with funds allotted during XIth Plan. The participants were Deputy Director of Animal Husbandry, Assistant Director of Animal Husbandry, Veterinary Assistant Surgeons, Manager from Aavin and farmers in and around Erode district. Based on the feed back received from farmers and line department officials, SWOC analysis was made and conclusions drawn with policy implications.

4.10 SWOC ANALYSIS OF VARIOUS DISEASE CONTROL MEASURES

Strengths

- ❖ Quality manpower
- ❖ Dedicated veterinarians
- ❖ Regular conduct of mass conduct programme
- ❖ Reporting system
- ❖ Mobile veterinary units
- ❖ Timely vaccination
- ❖ Good quality vaccines and drugs

Weaknesses

- ❖ The staff available at these institutions are unable to carryout vaccination along with hospital routines, because vaccination is time bound and to be followed as per schedule in relation to other environmental factors
- ❖ Extensive area of operation per individual
- ❖ Inadequate transport facilities

Opportunities

- ❖ Vast network of institutions
- ❖ Vaccines and diagnostics production for new diseases

Challenges

- ❖ Farmers are reluctant to bring the animals to a common place, because they are high yielders and also to shortage of labourers and they insist the staffs to come to their doorstep for vaccination.
- ❖ Inadequate awareness among farmers about the economic impact of various animal diseases
- ❖ Emerging and re-emerging diseases

4.11 CONCLUSIONS AND POLICY IMPLICATIONS

- ❖ The current targets for vaccination against specific diseases are seemed to be unrealistic, with available manpower and infrastructure. Understandably, these vaccination targets were achieved by grouping the animals in one locus, which in turn may expose the virgin and become a predisposing factor.
- ❖ The vaccination coverage should be augmented through wide publicity, as followed for polio vaccination in human being.
- ❖ Considering the endemic factors, vaccination schedule specific to livestock zones should be developed, propagated and adhered to.
- ❖ Vaccination at farm gate would serve as a mean for sufficient coverage with adequate quality.
- ❖ In order to enable periodic farm gate vaccination, a separate 'Disease surveillance and vaccination wing' may be created at block level under a qualified veterinarian, vaccinators, vehicles with adequate fuel who will vaccinate the animals all through the year (as it was done for eradication of Rinderpest disease).
- ❖ Incentives may be given to vaccinators, so that all the animals will be covered.
- ❖ The delivery of vaccine should accompany all the accessories, including disposable needle/ syringe.
- ❖ Grouping the animals during disease outbreaks would provoke the incidence in the disease free livestock population. Hence, the conduct of livestock shandies during the period of outbreak in the surrounding should be curtailed. In addition, efforts to screen the animals that are brought to the shandies could be taken up to assess the potential hubs for epidemics.
- ❖ Vaccination for specific diseases should cover not only bovine population, but also ovine and caprine, which may act as carriers or facilitators.

- ❖ The number of Animal Disease Intelligence Units (ADIU) should be increased at the rate of one per every district. ADIUs should have all major diagnostic kits and disease screening facilities. Besides staffing ADIUs with qualified laboratory technicians, veterinarians with specialisation in animal health or clinical studies should be placed, so as to make the units positive. Creating a mobile team, for disease intelligence with adequate infrastructure, in each ADIU would aid in quick surveillance and monitoring.
- ❖ A Vaccination squad must be established at State borders.
- ❖ The animal vaccine production centre in Tamil Nadu, should be strengthened to make the state self sufficient, for which adequate number of technocrats, specialized in vaccine technology, should be appointed. In addition, technicians with Diploma in Laboratory Technology and support staff, also, should be posted to match the needs.
- ❖ The institute should also get GMP license, which requires infrastructure. Infrastructure such as fermenters, freeze driers, automatic bottling and labeling machines, media filtration facility, high precision autoclaving, automatic bottle washing machines, ultrapure water plants, cryopreservation facility for cultures and cell lines, adjuvant homogenizers, Liquid Nitrogen plant, incineration, liquid handling systems, etc.
- ❖ *Foot and Mouth Disease*: The entire population of the State (Cattle & Buffalo) needs to be vaccinated within 45 days for effective herd immunity, in a bi-yearly vaccination schedule.
- ❖ Establishment of separate units for JD, Swine Fever, Leptospirosis, Goat pox BTV & PPRV vaccines. These vaccines have potential for nation – wide market.
- ❖ Concerted efforts should be taken up to strengthen the Central Referral Laboratory (CRL), Animal Disease Intelligence Units (ADIU'S) and Regional Disease Diagnostic Laboratories (RDDL'S).

RESPONSE GROUP MEETING AT ERODE



Dr.K.N.Selvakumar explains the objective of the focussed group discussion



Dr.P. Sakhivelu, DD (AH) offers his view points



VAS and Farmers explain their stake



Dr.Ranganathan, Manager, Aavin narrates their success and puts up new strategies

ANNEXURE

Vaccines and Diagnostics Produced in the Institute of Veterinary Preventive Medicine, Ranipet

Sl. No	Details	2011-12 Target
1.	Black Quarter vaccine (in lakh doses)	5.00
2.	Haemorrhagic Septicaemia vaccine (Alum Precipitated) (in lakh doses)	6.00
3.	Enterotoxaemia vaccine (in lakh doses)	2.50
4.	Anthrax Spore vaccine (in lakh doses)	32.00
5.	Ranikhet disease 'K' vaccine (in lakh doses)	350.00
6.	Ranikhet disease 'F' vaccine (in lakh doses)	As per demand
7.	Duck Plague vaccine (in lakh doses)	85.00
8.	Ranikhet Lasota vaccine (in lakh doses)	As per demand
9.	Sheep Pox vaccine (in lakh doses)	As per demand
10.	Brucella abortus plate antigen (ml)	As per demand
11.	Brucella abortus tube antigen (ml)	As per demand
12.	Brucella abortus milkring test antigen (ml)	As per demand
13.	Salmonella pullorum coloured antigen (ml)	As per demand
14.	California Mastitis test reagent (ml)	As per demand
15.	PBS (lt)	As per demand
16.	Boric ointment (kg)	As per demand
17.	Sulphur ointment (kg)	As per demand
18.	Zinc ointment (kg)	As per demand
19.	Whitefield ointment (kg)	As per demand

Details of Animal Disease Intelligence Units in the State

Sl. No	Animal Disease Intelligence Unit	Districts covered
1.	Coimbatore	Coimbatore, Tiruppur
2.	Cuddalore	Cuddalore
3.	Dindigul	Dindigul
4.	Erode	Erode
5.	Kancheepuram	Chennai, Tiruvallur, Kancheepuram
6.	Karur	Karur
7.	Krishnagiri	Krishnagiri
8.	Madurai	Madurai, Theni
9.	Nagapattinam	Nagapattinam, Tiruvarur
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

