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Large and Small Ruminants



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NDDB Experience in FMD Control

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National Dairy Development Board initiated FMD control way back in 1982 when it was commissioning its FMD vaccine production facility which later became an independent wholly owned subsidiary company of NDDB, named as Indian Immunologicals Limited.

The NDDB had the experience of three different FMD control programmes in India.

1. FMD Pilot Scheme
2. FMD Control Project
3. Animal Disease Control Project

FMD PILOT SCHEME (FMD PS):

The NDDB with technical and financial assistance of Overseas Development Administration, UK (ODA) in May 1982 initiated a pilot scheme of three year duration to control FMD in the Nilgiris. The objective of the scheme was to identify and enumerate the problems which could be associated in a mass vaccination campaign – like storage and delivery of vaccine in far flung rural areas maintaining cold chain, achieving a high rate of vaccination coverage, identification of vaccinated animals, assessing the immune response of vaccinated animals on a regular basis and investigating the outbreaks to find out the factors affecting the initiation and spread of FMD in the mass vaccinated area.

The main components of FMDPS were:

- Collecting all epidemiologically relevant information like village-wise susceptible animals census, mapping cattle movement routes and animal markets, vaccine cold chain points and distribution network and computer codes for different teams, tasks and people.
- Six-monthly vaccination of cattle, buffalo, sheep and goat using separate needle for each animal. Total six vaccination rounds were proposed.
- Ear-tag each vaccinated animal for identification.
- Collect pre-vaccination and post-vaccination sera samples to assess the immune response of the population
- Investigate each outbreak, ascertain the cause of the outbreak and collect samples for laboratory typing and strain characterisation.
- Arrest the spread of infection through use of zoo

sanitary measures and application of ring vaccination.

The aluminium hydroxide gel based FMD vaccine was used in the project and contained strains of type O, A, C and Asia-1.

The salient observations were:

- It is possible to maintain cold chain for storage, transport and delivery of vaccine.
- It is possible to achieve a vaccination coverage high and ranged from 83% to 97%
- It is possible to apply and use ear-tag for identification of vaccination.
- Maximum outbreaks occur on cattle migratory routes and usually the index case was an unvaccinated animal.
- Mass vaccination significantly reduces the number of outbreaks and number of animals affected.
- Early reporting of outbreak helps contain spread of outbreak.
- There is increase of neutralising antibody titers for initial three vaccination rounds compared to the previous round, but after fourth round, the post vaccination titers are similar to the previous round. The herd immunity was adequate for six months after three vaccination rounds.
- Incorporation of an appropriate strain in the vaccine is very critical as the field outbreak strains keep changing, therefore a constant need to compare the field strains and the vaccine strain.
- The cost-benefit analysis revealed that FMD control using vaccination was an effective way of controlling FMD.

It highlighted the need for:

- Effective legislation for compulsory vaccination, prompt disease reporting and identification of vaccinated animal
- Incentives for prompt disease reporting

FMDPS was implemented by NDDB.

FMD CONTROL PROJECT (FMDCP):

Encouraged with the success of FMDPS, NDDB expanded FMD control to adjoining 29 districts in Tamil Nadu, Karnataka and Kerala covering about 21 million

animals in four phases with a duration of nine years. The project was started in 1984-85 and was completed by March 1994 with a total expenditure of Rs. 26.45 crore.

The districts included were:

The vaccination strategy of FMDCP was to mass vaccinate all cattle, buffalo, sheep and goat population for three vaccination rounds at six monthly interval, which was followed by border area vaccination (10 km) and migratory route (3 km on either side of the route) vaccination. All other components of FMDPS were also continued. After three vaccination rounds, the animals of the farmers which did not fall within Border area or Migratory Route zone were vaccinated on subsidised cost basis.

The project was implemented by NDDDB with participation of Animal Husbandry Departments and concerned Milk Producers Cooperative Federation/Union.

Tamil Nadu	
Nilgiris	Pudukottai
Coimbatore	Thanjavur
Periyar	Chidambarnar
Madurai	Tirunelveli
Dindigul	Ramanathapuram
Salem	Pasumpon
Trichy	Kamarajar

Karnataka	
Mysore	Coorg
Mandya	Dakshin Kannada
Hassan	Chikmagalur

Kerala	
Wynad	Trichur
Mallapuram	Ernakulam
Calicut	Kottayam
Palghat	Idukki
Cannanore	Alleppey

The salient observations were:

- In certain areas farmers resisted application of ear-tags and alternative methods like application of different colour paint to denote different vaccination round was applied.
- Farmers preferred to protect only the productive

cattle and buffaloes on cost sharing basis. Sheep, goat, male cattle, very young and old cattle and buffaloes were usually left out. Therefore, the vaccination coverage was not very high.

- Although, there was reduction in number of outbreaks and number of animals affected, the results were not as good as in FMDPS.
- Effective monitoring of vaccinations and communication with farmers is essential

ANIMAL DISEASE CONTROL PROJECT, KERALA (ADCP):

The Government of Kerala, with the financial and technical assistance from NDDDB, implemented the Animal Disease Control Project (ADCP) from 2004 to 2009 in the 11 districts of Kerala. The three other southern districts were covered by FMDCP of GoI. The project consisted of various components namely; mass vaccination, outbreak management, sero-monitoring, extension and publicity, animal movement management, project management unit, information management, manpower development and epidemiological studies. The major component was mass vaccination.

Five rounds of mass vaccination covering all the susceptible species (cattle, buffalo, sheep, goat and pig) were completed since project inception in October 2004, till March 2009 using oil adjuvanted FMD vaccine.

Mass vaccination:

The 11 districts covered under ADCP followed annual mass vaccination of all the susceptible livestock (cattle, buffalo, sheep, goat and pig). Follow-up vaccinations for animals unvaccinated due to other disease, advanced pregnancy, under-age and reluctance of farmers etc, were also covered in a 'follow-up' vaccination round of 10 days after 2-3 months of completion of each round.

For maintaining the cold chain, five walk-in coolers located at various locations in the State were established. The walk-in coolers were provided with round-the-clock power supply and generator backup in case of emergency.

To carry out sero-monitoring, three laboratories in the State were strengthened. Sero-monitoring was routinely done after each vaccination round to assess the herd immunity levels for all the three strains of FMD virus.

Vaccination performance:

The overall coverage increased from 66% in the first round to 82% in the 5th round, which is above the

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targeted 80% coverage. The total number of vaccinations in all the animals after five rounds of vaccination was around 120 lakhs.

FMD outbreaks:

The number of outbreaks reduced since the implementation of ADCP from 2004-05, with lesser number of animals affected and mortalities. The severity and duration of the disease was also significantly reduced. The reporting system also was beefed-up since disease reporting was made compulsory.

The pre-project average of number of outbreaks, animals affected and animal mortalities from 1998-2004 was 611, 8225 and 92 respectively. The average figures for the same during the project phase (2004-09) reduced drastically to 91, 816 and 41 respectively.

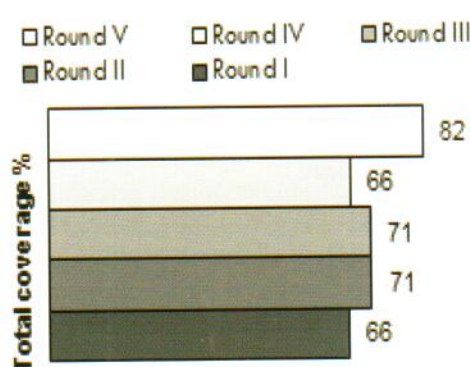
The salient point about the project was part sharing of cost of vaccine by the farmer and building a corpus for

use in future for FMD control.

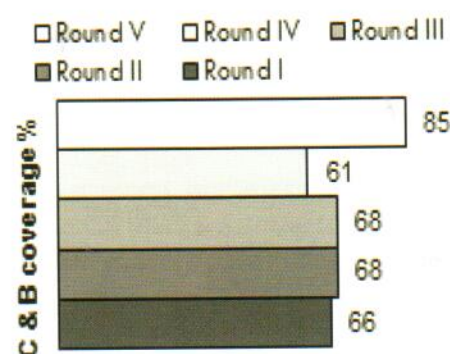
On the basis of our experience, we believe following are the significant components of a successful FMD control programme:

- Close monitoring of vaccination to ensure in-time vaccination maintaining cold chain and using single needle for each animal.
- Identification of each vaccinated animal.
- Incentive for prompt disease reporting.
- In-time post-vaccination sample collection as per design, dispatch and analysis.
- Proper training for outbreak management.
- Enforcement of the 'Prevention and Control of infectious and Contagious Diseases in Animal Act'.
- Periodic review of the progress of the project by external experts.

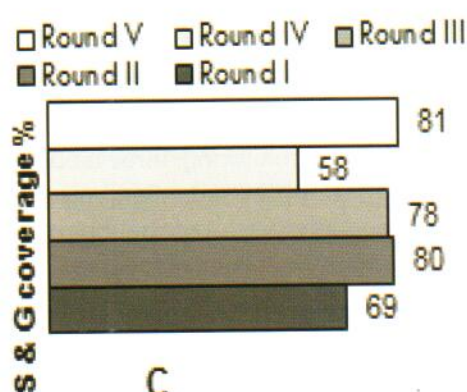
Overall and species wise vaccination coverage



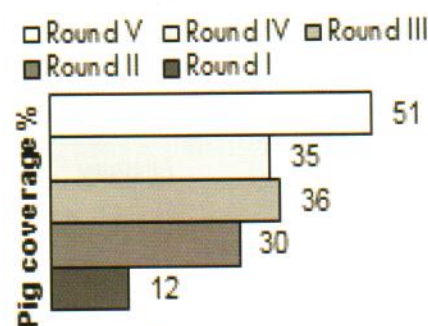
A



B



C




D

Outbreaks prior to and during the project phase

Pre-project period	Year	Outbreaks	Animals affected	Animal mortalities
	98-99	804	19205	1178
	99-00	255	7714	741
	00-01	45	850	5
	01-Feb	45	487	11
	02-Mar	2383	19207	1424
	03-Apr	132	1888	92
Avg.		611	8225	575
Project period	04-May	17	445	66
	05-Jun	90	744	21
	06-Jul	100	924	26
	07-Aug	189	1569	87
	08-Sep	58	399	4
Avg.		91	816	41

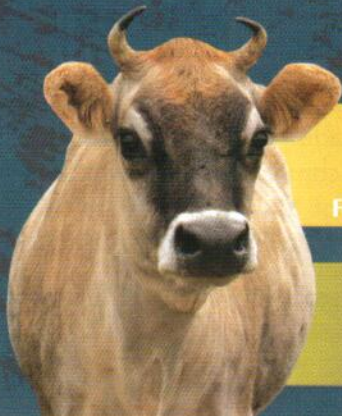
Only Vaccine in India which Reduces the cost of Vaccination



CHOOSE

Raksha-Triovac

Combined Oil Adjuvant Vaccines for FMD, HS & BQ



Use
SINGLE SHOT
Against
FMD, HS and BQ

**Stronger
PROTECTION
Longer
PROTECTION**

Dose
Cow, buffalo and calf 3 ml

Vaccination schedule:
Primary Vaccination
4 months (16-18 weeks)
Booster
1 month (4-5 weeks) after Primary Vaccination with Raksha Ovac
Revaccination
After every 6 months (24-25 weeks) with Raksha OVAC and Once in a year with Raksha Triovac

Route of Administration
Deep intramuscular route at the mid-neck region.

Presentation
30 ml vial

