**Planning and evaluation of disease control policy**

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**Introduction**

We use many techniques in the planning, monitoring and evaluation of livestock disease control programmes. This involves the use of a range of scientific disciplines and approaches which have to be coordinated if satisfactory strategies for the control of animal diseases are to be conceived, developed and implemented. While an understanding of the epidemiology of a particular disease is vital in the planning and execution of disease control programmes, the process does not stop there. Disease control activities normally involve the expenditure of considerable resources in terms of finance, facilities and trained manpower. Such resources are in limited supply. How much of these scarce resources, for example, should be allocated to promoting agricultural development and how much to industrial development? How much should go to education or public health services or security?

Within the field of disease control itself, choices have to be made as to which diseases merit priority in their control. Developments in the animal health sciences have meant that a range of different techniques or strategies may be available for the control of a particular disease, but which one is likely to give the best return for the effort spent? It is against this background of extremely complex choices and considerations that animal health activities have to be planned, evaluated and executed. A set of tools and a series of concepts are therefore needed, which enable disease problems to be identified and tackled in ways that make the most efficient use of the resources available.

**The systems approach to livestock development**

The veterinarian in India has two rather different functions with regard to livestock health and development. The first is to provide health services to the livestock populations. The second centres on the extension related livestock production including fodder development for the existing livestock production system . Introducing changes in any livestock production system involves interfering in a very complex process. Livestock production systems, like all other systems, consist of an assembly of related components which combine for some common purpose. It is simply not possible to change one component in isolation without affecting the other components of the system.

For example, when building a dip the aspects that need to be taken into consideration are inputs, dipping and outputs. These aspects are closely interrelated and must be considered from a holistic point of view.

***Inputs.***What inputs do we need to consider? The animals are the most obvious. Will owners really dip their cattle? How frequently will the cattle need to be dipped? How far will they need to walk to the dip? Will they have easy access and is there a danger of them damaging crops on their way to the dip? Will the coming together of animals at the dip provide a means of spreading other diseases? Acaracide is another input. What acaracide will be used? Can it be delivered regularly and stored securely? The need for water must also be examined. Are water supplies adequate and can they be made available on a year-round basis?

***Dipping.***The dipping activity itself can then be considered. Is skilled supervision available and where will the staff live? What measures will be necessary to ensure that the dip is properly obtained and the dip wash kept at the right concentration? Are problems of acaracide resistance likely to arise and how can these be prevented or controlled?

***Output.***What is important on the output side? We will create a population of dipped cattle and we hope that they will be healthier. Will this result in an increase in the cattle population? How will this larger population be fed and watered? How will farmers sell the surplus? Do the marketing facilities have to be improved? Do the prices of cattle and their products need to be manipulated in order to encourage their sale? And lastly, what is the cost of all this? Who is going to pay for it and how is this payment to be arranged?

We can see, therefore, that what started off as a relatively simple idea, "build a dip" may in fact have many aspects. These can be multiplied even further if we consider another component of the system, the host-parasite-vector relationship in the tick-transmitted disease present. Suppose that prior to the installation of the dip, the climate is such that the tick population is at a high enough level throughout the year to ensure that the challenge to young stock will convert an age immunity into a state of active immunity. This may have resulted in a generally low level of mortality. What is the effect of dipping? We reduce the tick challenge to a level at which adult cattle do not acquire an active immunity. All goes well until, at a time favourable to tick multiplication, the dip breaks down and dipping ceases. We have created a population of susceptible adult cattle and an epidemic ensues causing a high level of mortality in these susceptible animals.

Many attempts at livestock improvement have failed because the total impact of the change envisaged has not been identified. Since livestock projects frequently cover large areas, affect many people and absorb large amounts of money, the systems approach is invaluable in the planning process.

**Stages in the planning process**

For convenience, the planning process can be divided into three main stages:

***Stage 1*** *-* Establishing goals and targets for the animal health programme

This is an initial stage during which the information available on the livestock sector as a whole, and on the potential demand for livestock products, is examined to assess:

* The present situation in livestock production and future trends.
* The effect disease is having on the present situation as well as the effects it is likely to have in the future.
* The potential for intervention in animal health, the resources available, and the types of intervention those are technically possible.

***Stage 2*** *-* Project identification, design and appraisal

Several steps are involved in this stage. Given the goals and targets, and the resources and approaches available to deal with disease, a set of possible projects can be identified. These should cover both the different disease problems and the different ways in which the problems could be tackled. A rough design for the projects is made and their technical, social, organisational/institutional, financial and economic feasibility is evaluated. After this a more detailed designing and planning exercise is undertaken for those projects that appear promising.

***Stage 3***- Project implementation, monitoring, control and evaluation

Here again several steps can be distinguished, starting from the time when the project actually takes off. The monitoring and control activities carried out during this stage enable the necessary adjustments to be made in the project design as the project progresses. The information generated from these activities will provide feedback to all levels of the planning process, and will also be used in the final evaluation of the project once it has ended or a particular phase has been completed.

**The role of various disciplines in the planning process**

The planning and evaluation of animal health programmes involves a series of relationships, many of them very close, with a variety of scientific disciplines. These relationships are illustrated in Figure 1.

The disciplines and techniques involved may be grouped under two heads: the specific disciplines that are essential to the understanding of animal health problems (epidemiology and livestock production), and the general ones (statistics, information systems and economics) that have a role to play in any planning exercise.

The figure indicates the need for an inter-disciplinary approach involving the close and continuous cooperation of the various disciplines concerned. This is easily said but presents practical problems with regard to real and imaginary conflicts of interest, the general human tendency towards demarcation and the creation, and indeed physical separation, of departments.

Planning and evaluation of animal health programmes require a clear understanding of *both* the epidemiology of the diseases in question *and* the livestock production systems involved. Such an understanding can only be achieved through the availability of reliable and up-to-date information at all stages of the planning and evaluation process.

**Figure 1. The major disciplines involved in the planning and evaluation of animal health programmes.**

General Economic theory

Decision theory

Anim Prodn & Planning

**Animal health planning**

Animal production

Social Anthropology

Epidemiology

Preventive medicine

Extension

Statistical data management