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## **Progress with the control of Newcastle disease in village chickens in Mozambique and plans for future expansion**

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### **Abstract**

Achievements and lessons learnt during the implementation of a Newcastle disease control project in Mozambique are discussed. Experience indicated that a sustainable ND control program was composed of four essential components: a) an appropriate vaccine and vaccine technology; b) effective extension materials and methodologies that target veterinary and extension staff as well as community vaccinators and farmers; c) simple evaluation and monitoring systems; and d) economic sustainability based on the commercialization of the vaccine and vaccination services and the marketing of surplus chickens and eggs.

The proposed AusAID Southern Africa Newcastle Disease Control Project to be implemented in Mozambique, Malawi and Tanzania is reviewed. A proposal by the University of Queensland and GRM International to establish Graduate Certificates in Village Chicken Production and the Small Scale Production and Quality Control of I-2 ND Vaccine is outlined.

### **Introduction**

Village chickens are raised throughout Mozambique and can be found in all developing countries where they play a vital role in many poor rural households. In Mozambique, as in many countries, one of the major constraints to production of village chickens is Newcastle disease (ND; Alders and Spradbrow 2001; Alexander 1991).

Since 1984, the Australian Centre for International Agricultural Research (ACIAR) has been supporting collaborative research on the control of ND in village chickens (Copland 1992). The ACIAR project that ran from 1996 to 2001 developed a comprehensive ND control package that is reviewed in this paper. With the development of this ND control package, ACIAR has successfully fulfilled its research brief.

The Australian Agency for International Development (AusAID) proposes to build on the ACIAR research through the implementation of Southern Africa Newcastle Disease Control Project. An overview of the aims and components of this project are presented below. A proposal by the University of Queensland and GRM International to establish Graduate Certificates in Village Chicken Production and the Small Scale Production and Quality Control of I-2 ND Vaccine is also outlined.

## **Achievements and lessons learnt by the ACIAR/INIVE ND control project in Mozambique**

The ACIAR/INIVE ND control project in Mozambique ran from July 1996 to December 2001. The initial objectives of the project were:

1. To investigate distribution and administration systems for thermostable ND vaccine in Mozambique.
2. To evaluate the efficacy of the thermostable commercial heat-resistant V4 vaccine for the control of ND in Mozambique under both laboratory and field conditions.
3. To prepare a batch of I-2 vaccine under local conditions and to compare it with NDV4-HR vaccine.
4. To facilitate links between Mozambican Scientists and the International Village Poultry Network.
5. To determine a future program and strategies that will facilitate the production, distribution and testing of ND vaccine under village conditions, and administration of a cost-recovery system.

### **Major achievements**

The implementation of this project has been a learning experience with many highlights along the way. The major achievements were -

- Efficacy of NDV4-HR and I-2 ND vaccines demonstrated under laboratory and field conditions (Dias, Alders, Fringe and Mata 2001)
- Comprehensive ND control extension package produced that has been adapted for use in other countries. The initial package was reviewed in a previous presentation (Alders, Fringe and Mata 2000). As the need for further information became apparent, further material was developed and includes -

**A ND training manual** – a 128 page manual entitled ‘Controlling Newcastle disease in village chickens: A Training Manual’ is for trainers of community vaccinators and provides guidance on the preparation, implementation and evaluation of a three day training course for community vaccinators (Alders, dos Anjos, Bagnol, Fumo, Mata and Young 2002).

**A ND laboratory manual** – details the small-scale production and quality control of live, thermostable ND vaccine (Young, Alders, Grimes, Spradbrow, Dias, da Silva and Lobo 2002).

**A booklet entitled ‘The Essential Package for Newcastle Disease Control’** - was developed to facilitate access in the field to key documents. This package ensures that provincial veterinary and extension staff, as well as NGO staff, have ready access to all materials needed to successfully implement a ND control program, e.g. basic instruction sheets for community vaccinators, vaccination calendars and vaccination

registration sheets. This package is in black and white for easy reproduction at the provincial level.

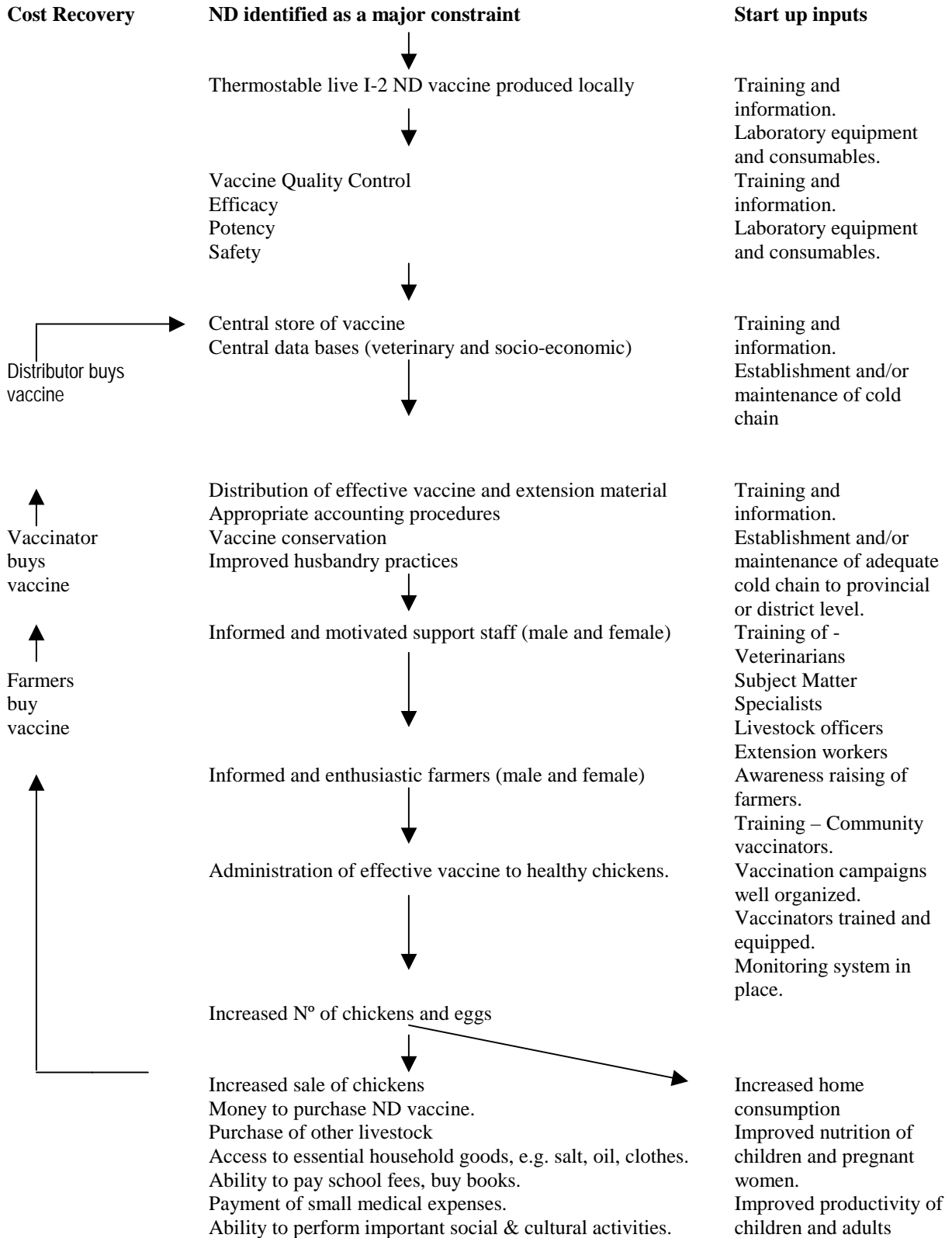
**A booklet entitled Essential Information for distributors of I-2 vaccine against Newcastle disease** - aims to provide vaccine distributors with information that will enable them to be successful. It contains chapters on how to be a good distributor and make a profit, an introduction to ND and its sustainable control, the price of ND control material available from INIVE, how to determine the price of vaccination by community vaccinators and advice on the effective storage and transport of the vaccine.

- Successful collaboration with NGOs - Work in villages relied heavily on co-operation with NGO's. VetAID, World Vision, Community Aid Abroad (Oxfam Australia) and Heifer International Project all had important roles.
- Establishment of the Poultry Working Group - A Mozambican Poultry Working Group was formed as a project initiative, it included representatives from INIVE, DINAP, DNER, the Veterinary Faculty, the Animal Production Institute and the Institute for Rural Development.
- Successful use of I-2 ND vaccine in trial zones leading to increased chicken numbers and improved food security for owners (Alders, Fringe and Mata, 2000; Bagnol 2001; Dias, Alders, Fringe and Mata 2001).
- Clients from the trial zones have continued to buy I-2 ND vaccine since March 1999 (Alders, Costa, Dias, Fringe, Fumo, Lobo, Mata, da Silva and Young 2001).

### **Sustainable ND control program**

A sustainable ND control program is difficult to achieve. Experience to date would suggest that such a program is composed of four essential components:

1. An appropriate vaccine and vaccine technology;
2. Effective extension materials and methodologies that target veterinary and extension staff as well as community vaccinators and farmers;
3. Simple evaluation and monitoring systems; and
4. Economic sustainability based on the commercialization of the vaccine and vaccination services and the marketing of surplus chickens and eggs. (Alders, Spradbrow, Young, Mata, Meers, Lobo, and Copland 2001)



*FIG 1: Components and desired results of a sustainable ND control program in village chickens. (Adapted from Alders, Spradbrow, Young, Mata, Meers, Lobo, and Copland 2001)*

## Lessons learnt

The key lessons learnt during the implementation of the project were that:

- a sustainable program requires -

- effective communication and coordination between all stakeholders;
- thorough testing, evaluation and monitoring of all components;
- a thermostable vaccine with reliable distribution and cost-recovery mechanisms;
- appropriate training and extension materials and methodologies;
- and a stepwise introduction of the control program starting in areas where suitable farmer attitudes and infrastructures are available

- and the control of ND has a positive impact on the lives of poor farmers and their families.

## AusAID Southern Africa Newcastle Disease Control Project

### Background to the project design

ACIAR and AusAID co-sponsored a workshop in Maputo in March 2000, attended by 12 of the 14 SADC countries, which highlighted a number of aspects of ND control that are common in the SADC region. The conclusions drawn by workshop participants were that -

1. ND is an important cause of direct and indirect loss of chickens and a constraint to village chicken productivity in countries of the SADC region.
2. Suitable thermostable vaccines can be produced within laboratories in participating SADC countries or regions.
3. Distribution of vaccines and delivery to end-users is a constraint and must be improved.
4. Surveillance of ND is required in order to target vaccination campaigns, and to monitor and evaluate ND control programs.
5. ND control through a network of trained community vaccinators, selected by local leaders and community groups is the best option for vaccine delivery to end-users.
6. Village chickens are an important resource, especially for women and children.
7. Husbandry of village chickens needs to be improved to maximize benefits from the control of ND.
8. Improved marketing structures for village chickens and products are required to maximize the benefits from ND control. (Alders and Spradbrow 2001)

Following this AusAID selected an Australian Managing Contractor through competitive tender to undertake a *Feasibility and Design Study to Control Newcastle Disease in*

*Village Chickens in Participating SADC Countries.* The Feasibility and Design Team visited the Southern African Region from 29 June – 3 August 2000. (McKay 2001)

The design team visited the following countries: Botswana, Malawi, Mozambique, South Africa, Swaziland, Tanzania and Zambia. The team confirmed that village chickens make an important contribution to the livelihoods of villagers in the SADC countries and that ND is the most important constraint to their productivity. The team found that a regional project to control ND was feasible and should be implemented initially in Mozambique, Tanzania and Malawi. (McKay 2001)

AusAID is planning to fund a three year project in which Mozambique is to be the lead country and the country in which the project team will be based. In Tanzania the project will predominantly support the community and extension components. AusAID will also consider the possibility of supporting Malawi in vaccine production at the time of project implementation. It is hoped that the three year phase will provide lessons which other SADC countries can draw on (McKay pers.com. 2002).

### **Description of the project design**

The outcomes of the project are expected to be:

- A strengthened capability of, and relationship between, stakeholders in order to successfully implement ND control programs in Mozambique, Tanzania and Malawi, and
- A decrease in chicken mortality rates caused by ND in project activity areas.

These outcomes have been designed to help meet the overall project goal of improved rural food security and an improvement in the livelihood of the rural poor (McKay 2001).

### **Project Components**

There are four components to this project (McKay 2001):

1. **Community:** The project design proposed a participatory approach and the establishment of a satisfactory working relationship between village communities, government livestock and extension services and NGOs. Existing NGOs will be encouraged to develop expertise in project activities.
2. **Vaccine:** This component aims to achieve a sustainable supply of thermostable vaccine. In practice this includes securing a supply of master seed, ensuring that the national laboratories have the facilities for vaccine production and trained staff and that there is an adequate vaccine distribution system and cost recovery mechanisms in place.
3. **Extension and training:** This component aims to provide village farmers with the information, skills and technical support that will allow them to vaccinate their chickens. This will require the training of extension workers, and especially of

women, who will themselves train and provide technical support. Relevant materials will be refined and designed as required.

4. **Project management:** This component aims to ensure the efficient, equitable and timely flow of project resources to ensure that project objectives are met. In each country a Country Coordinating Committee will be established with the appointment of Country Coordinators and Country Chairs. Project management will be through a contracted Australian (or New Zealand) Managing Contractor. The Team Leader will be an Australian and the Deputy Team Leader will be selected from a participating country. Both will be stationed in Maputo.

This project is designed to build on the achievements of the ACIAR project and to work in collaboration with NGOs and other donors, such as IFAD in Mozambique. AusAID is committed to project flexibility in implementation to ensure that this project is a success. (McKay 2001)

## **GRM/UQ International Village Poultry Centre**

GRM International, an Australian Consulting Agency, is working with the University of Queensland to establish an International Village Poultry Centre that will provide a wide range of services. One of the services will be the provision of training that will lead to the award of Graduate Certificates, one on the small-scale production and quality control of I-2 ND vaccine and a second on village chicken production.

Each Graduate Certificate will consist of eight units of coursework based on four subjects, of two units each. The Graduate Certificate courses will be run as distance learning courses over at least 13 weeks with students coming together for part of this time in a suitable location. If students do not wish to study fulltime, then the course may be done part time over 40 weeks. Students will require access to e-mail and preferably to the Internet also.

It is proposed that the content of the courses will be -

### Small Scale Production and Quality Control of I-2 ND Vaccine Graduate Certificate

1. Introduction to ND, ND control, ND diagnosis and ND vaccines.
2. Introduction to laboratory management and maintenance; and practical aspects of I-2 vaccine distribution and cost-recovery.
3. I-2 ND vaccine production.
4. I-2 ND vaccine quality control, registration and field testing.

### Village Chicken Production Graduate Certificate

1. Village chicken farming systems, gender, sociocultural aspects and economics.
2. An introduction to avian physiology and pathology.
3. Diagnosis, treatment and control of common diseases and production constraints.

4. Extension methodologies, participatory constraint identification and development of control strategies.

The prerequisite for entry into the course is a degree in veterinary science from a recognized university or an approved degree from elsewhere, or evidence of relevant training and work experience to satisfy the Head of the School of Veterinary Science that the student is suitably qualified. Prospective students will have to submit a formal application, they will have to meet the English requirement of 6.5 in IELTS with a score of 6 for writing. During the course, student's practical skills and theoretical knowledge will be assessed, the latter via the completion of problems and small assignments.

## Conclusion

A solid base for the control of ND in village chickens has been established by ACIAR. It is encouraging to see the development of linkages with other donors and other projects. The sustainable control of ND in village chickens will make an important contribution to the improved livelihoods of rural communities in many countries.

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