

Village poultry, food security and HIV/AIDS mitigation

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Abstract

Village chickens can be found in all developing countries and play a vital role in many poor rural households. They require the lowest capital investment of any livestock species and they have a short production cycle. Village chickens play an important role in households where there is a lack of able-bodied workers, such as households affected by HIV/AIDS or those that have a disabled family member. In households headed by widows, children or grandparents, chicken represent the easiest species to raise for sale and home consumption, providing a source of high quality protein and micronutrients which play an important role in the nutrition of HIV/AIDS patients. Eggs can be stored for several days under village conditions and require very little energy or time to cook.

Three case studies are presented: (1) Southern Africa Newcastle Disease Control Project in Malawi, Mozambique and Tanzania; (2) Junior Farmer Field Schools in Zimbabwe; and (3) Improvement of village chicken production by junior farmers and people living with HIV/AIDS in Mozambique. The case studies demonstrate methodologies that contribute to the wellbeing of both households and communities through improved food security and HIV/AIDS mitigation.

Introduction

HIV/AIDS impacts on farm households by destruction of available labour through reduction in numbers of able-bodied workers, the time and energy available and the knowledge necessary for production (du Guerny 2002). This loss of labour changes the focus of household activity from agricultural production to food security. Following an HIV/AIDS-related sickness or death, food security is maintained through revising the complex division of labour at the household level in accordance with the possibilities presented by the local farming system.

Village chickens can be found in all developing countries and play a vital role in many poor rural households (Alders 2004; Alexander *et al.* 2004). They provide scarce animal protein in the form of meat and eggs and can be sold or bartered to meet essential family needs such as medicine, clothes and school fees. Village chickens are active in pest control, provide manure, are required for special festivals and are essential for many traditional ceremonies. The output of village chickens is lower than that of intensively raised birds but it is obtained with a minimum input in terms of housing, disease control, management and supplementary feeding (Table 1). They are generally owned and managed by women and children and are often essential elements of female-headed households (Guèye 2000). As

women are the main carers of sick people, chickens can play an important role providing them with additional resources to carry out their important task of supporting to People living with HIV/AIDS (PLWHA).

Table 1: Comparison of village and commercial chickens (Alders and Spradbrow 2001).

Feature	Village Chickens	Commercial Chickens
Labour inputs	Minimal	Considerable
Housing	Trees; chicken houses of local material; inexpensive	Chicken unit using conventional materials; expensive
Nutrition	Scavenging feed resource base, leftover food, cereals, no supplements; inexpensive	Balanced commercial ration; expensive
Water	Well water, used water, natural sources	Clean water supply essential
Production	Low; could improve with better nutrition, disease control and shelter from predators	High; but require a high level of inputs
Meat quality	Little fat; pleasant flavour; preferred texture	More fat; less flavour; poorer texture
Adaptability	Good: good flight skills, more likely to escape predators, can scavenge for own food	Limited: poor flight skills, easily caught by predators, less skilled at scavenging
Veterinary inputs	None; ND vaccination	Control of many viral, bacterial and parasitic diseases essential for efficient production
Environmental impact	Minimal: can be positive through provision of organic fertilizer and pest control	Negative: intensive production of cereals for rations; occasional improper use of antibiotics, excess ammonia production.

Chickens require the lowest capital investment of any livestock species and they have a short production cycle (Lough *et al.* 2001). They also play an important role in households where there is a lack of able-bodied workers, such as households affected by HIV/AIDS or those that have a disabled family member. In households headed by widows, children or grandparents, chickens represent the easiest species to raise for sale and home consumption, providing a source of high quality protein and micronutrients which play an important role in the nutrition of PLWHA.

Eggs, in particular, offer a great nutritional bargain: they contain approximately 315 kilojoules and are one of the best quality protein sources known. Eggs also supply an array of vitamins such as A and B12, and they are one of the best food sources of vitamin K, a bone-boosting nutrient. Eggs also provide choline, a B vitamin that plays a role in brain

development. In addition, eggs can be stored for several days under village conditions and require very little energy or time to cook.

The components of village poultry production include:

- type of bird;
- feed;
- shelter;
- disease control; and
- community collaboration and group formation (Alders 2004).

Examples of how these components can be incorporated into HIV/AIDS mitigation programs are presented below in three case studies.

Case Study 1: Southern Africa Newcastle Disease Control Project in Malawi, Mozambique and Tanzania

The goal of the Southern Africa Newcastle Disease Control Project (SANDCP) is to assist the Governments of Mozambique, Malawi and Tanzania to improve rural food security and improve livelihoods of the rural poor (Harun *et al.* 2004). It is financed by the Australian Agency for International Development (AusAID) and will run until October 2005. The project is designed to build on research into Newcastle disease (ND) control done by the Australian Centre for International Agricultural Research (ACIAR). Implementation of the project is the responsibility of GRM International as the Australian Managing Contractor, in association with the University of Queensland. The project is working towards:

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

Village chickens in each of the three countries are the most significant livestock species in terms of levels of ownership, access to animal protein, and the potential for earning cash income.

During the first year of implementation, the project demonstrated the effectiveness of the I-2 thermotolerant ND vaccine under field conditions; developed and produced a comprehensive extension package; and supported vaccination campaigns undertaken by government agencies and NGOs. Vaccination campaigns using I-2 vaccine are conducted in collaboration with community vaccinators. In 2004, during the first two vaccination campaigns in 35 districts in Mozambique, a total of 27,501 families presented 402,864 chickens for vaccination (SANDCP 2004). SANDCP works directly in ten villages in Tanzania where a total of 4,134 families presented 24,057 chickens for vaccination during the first two campaigns (SANDCP 2004). In Malawi, I-2 vaccine production was introduced in 2003 and vaccine field trials were successfully completed in December 2004. The first ND vaccination campaign is to be held in March 2005.

Rural farmers are the clients of the ND control program and their participation in the implementation and monitoring is critical to its success. The community is involved with the selection of local farmers who are trained to be community vaccinators. Community vaccinators benefit from their work by protecting their own birds against ND and receiving a small fee when vaccinating their neighbour's birds. The project collaborates with a number of NGOs (including Action Aid, CARE, Concern Worldwide, Concern Universal, Heifer Project International, INTERAID, PLAN International, VETAID, World Vision International) to facilitate ongoing and active linkages with communities.

Experience has shown that a sustainable ND control program is composed of five essential components (Alders, R., *et al.*, 2001):

- effective coordination of activities;
- an appropriate vaccine and vaccine technology;
- effective extension materials and methodologies that target veterinary and extension staff as well as community vaccinators and farmers;
- simple evaluation and monitoring systems of both technical and socio-economic indicators used by both communities and supervising agencies; and
- economic sustainability based on the commercialisation of the vaccine and vaccination services and the marketing of surplus chickens and eggs.

Modelling performed by SANDCP indicated that household income increases by 42% for ND control only (Table 2). Furthermore, when ND control is coupled with other initiatives (such as supplementary feeding and shelter), the model shows an increase in household income of 82% above pre-ND control levels (Woolcock *et al.* 2004). During a PRA done in February 2004 (after the vaccination campaigns in 2003), both men and women when interviewed in groups of the same sex said that they observed a decrease in chicken mortality following vaccination. In the group of twenty men interviewed, all had vaccinated their chickens. They said that as the result of the vaccination, the number of chickens owned by each household had increased. In the group of seventeen women, only a few vaccinated their chickens. But the women said that they were able to see the difference in mortality between vaccinated and non-vaccinated chickens. With the increase in the number of chickens, men and women mentioned an increase in sales more often than an increase in consumption (Woolcock *et al.* 2004).

Table 2: Results of flock modelling and calculations using Mozambican prices expressed in US dollars comparing traditional village chicken production, the introduction of ND vaccination only and the introduction of improved poultry husbandry in addition to ND vaccination (adapted from Woolcock *et al.* 2004).

Production System	No. of birds raised	Estimated annual income from village chicken production (USD)
Traditional	10	55.00
ND vaccination only		
- egg production model	10	78.00
- meat production model	9	78.00
Improved husbandry plus ND vaccination		
- egg production model	10	100.00

- meat production model	3.3	97.00
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Sra Luisa Arnaldo is 36 years old and a widow with three children living in Chirodzi-Ponte, Mozambique. She started raising three chickens in 2000 but their number did not increase due to regular outbreaks of ND. In the middle of 2003 she started to vaccinate her chickens and has since participated in five vaccination campaigns paying MZM 500 (USD 0.025) per bird to the community vaccinator. In October 2004 she had a total of 25 chickens and decided to sell five roosters. The roosters sold for MZM 45,000 each (i.e. USD 2.25), raising a total of MZM 225,000. She used MZM 150,000 to buy a goat that has subsequently become pregnant. All of her children attend primary school.

The community-based experiences in controlling ND in rural areas where the project is being implemented, show that poor farmers are willing to pay for good quality services provided in an efficient and effective manner, in order to minimize the risk to their investment.

Case Study 2: Junior Farmer Field Schools in Zimbabwe

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) and the Food and Agricultural Organisation of the United Nations (FAO) have identified the Junior Farmer Field School (JFFS) concept as a useful way to assist rural youth in HIV/AIDS programs (ICRISAT 2004). The JFFS program provides technical, business and life skills, while at the same time providing some constructive activities (and avoiding risky ones) to get junior farmers started in income generating enterprises to help support their families and themselves into the future.

ICRISAT proposed using poultry as a model to develop farming/entrepreneurial skills. Poultry offer several benefits: their high turnover rate allows rapid exposure of JFFS members to the production and marketing process providing valuable experience in financial management and learning processes. JFFS members learn about extensive and semi-intensive poultry production systems to enable them to choose the production system(s) best suited to their individual situations.

Small-scale poultry production combines easily with other on-farm activities, e.g. chicken manure can be used to fertilize the family vegetable garden and to supply nitrogen required in the diet of ruminants. As young farmers develop their skills, they can graduate to other forms of agriculture including bee keeping, pig production and milk production.

The International Rural Poultry Centre (IRPC) was invited to assist ICRISAT and partners to develop and test curriculum and training modules on extensive and semi-intensive poultry production for use in both Farmer Field Schools and JFFSs in Zimbabwe.

Participatory curriculum development activities revealed that JFFS members are generally interested in poultry production. Participatory rural appraisal (PRA) tools were used to gain information on poultry production and poultry farmers' aspirations. Members of the

JFFS indicated that they wished to know more about general poultry husbandry (e.g. housing, feeding, watering and disease control) and reproductive cycles (e.g. “I have a four week old chicken, when will it start laying eggs?”).

The comparative production trials (looking at different options for housing, health and nutrition) that were developed for the JFFS members to implement during workshops have been modified overtime to better suit local conditions. The IRPC worked with workshop participants to develop a manual on village chicken production for use by JFFS facilitators.

The JFFS program is having a significant impact on the lives of the JFFS members with their chickens now contributing both to household food security and generating income (W. Makumbe, pers.comm.). With the lessons learnt through this pilot program focussing on poultry production, it is expected that the JFFS program can be improved and expanded to enable young farmers to not only survive but also actively contribute to their communities.

‘We raise chickens for their eggs and so that they increase in number, so that we can sell and get money. This money will help me to buy what I want. If I have a visitor I can slaughter them and get relish. If a child fails to get school fees, the chicken can be sold to get money. Money to buy sadza comes from chickens. Chickens give manure that we use in our gardens for green vegetables and tomatoes. The other thing I can do is to buy clothes using chickens. When celebrating a birth I can also use a chicken as a gift. When I want someone to work in my fields, I can slaughter a chicken. I can also eat the eggs with sadza.’

Ms Nomsa Nkomo, JFFS member, Vukuso Village, Zimbabwe

Case Study 3: Improvement of village chicken production by junior farmers and people living with HIV/AIDS in Mozambique

Mozambique is among the ten countries in the world most affected by HIV/AIDS. The national adult¹ HIV prevalence rate is 13.6% (MISAU/PCN 2003) but the highest prevalence rates are found in three provinces in the centre of the country, Tete, Manica and Sofala (19.8%, 21.1% and 18.7 %, respectively) (INE/MISAU/ MPF/CEP-UEM/CNCS/UEM/ MINED 2002).

FAO is supporting new pilot activities that can mitigate the effects of HIV/AIDS on food security and nutrition in Mozambique in Manica and Tete Provinces. Within the framework of this project, OSRO/RAF/403/SAF, FAO is currently supporting the IRPC to pilot improved management of village chickens and the vaccination of the flocks of people living with HIV/AIDS (PLWHA) in the framework of Home Based Care systems run by the local NGOs ASVIMO and Kubatsirana.

In Mozambique village chickens are generally owned and managed by women and the rural poor, and are usually run under a free-range, low input management system (Lough *et al.* 2001; Mata, *et al.* 2000). These village chickens are a very important part of women’s

¹ People aged between 15 and 49 years.

livelihoods in rural Mozambique. Small-scale farmers own over 90% of the national flock, which is estimated to be around 25 million birds. In the poorest households, the contribution of chickens is significant, with around 23% of income being derived from chickens. Chickens can be easily sold or exchanged, and are raised to satisfy the basic needs of the family. Some varieties of chicken are exclusively reared for use in traditional ceremonies. Chickens are sold live with about 70% of rural households selling their chickens at the farm gate while the remainder sell along the roads. The poorest and medium poor families rarely raise chickens for home-consumption, and across the social groups, eggs are rarely consumed, as they are more highly valued for reproductive purposes (Lough *et al.* 2001; Mata, *et al.* 2000). Less poor families will raise chickens for home consumption. Thus if chicken numbers were to increase, the consumption of eggs would become an option and a very good use of resources (Alders *et al.* 2000).

One of the major constraints to the production of village chickens in Mozambique is Newcastle disease (ND). As presented in Case Study 1, community-based Newcastle disease control programs improve the livelihoods of poor livestock keepers in Mozambique through the effective and sustainable control of this devastating disease. Other constraints include shortage of feed protein especially for chicks and laying hens; and high chick mortality due to cold, heavy rains, and predators as a result of poor housing and husbandry practices. Once ND control has been achieved in the project area, secondary constraints mentioned above will be addressed by focusing on training in and farmer experimentation with low-cost improvements to village poultry husbandry. To ensure that the activities above are sustainable in the long term, the project will also work with local health posts and primary schools to promote village poultry production and the consumption of poultry meat and eggs. Activities to improve farmer knowledge about avian nutrition will also be used to discuss the components of a balanced diet for the farmers' families.

Senhora Joaquina Guente lives in Dondo, Sofala Province, Mozambique, and has been taking care of her four grandchildren since their parents passed away. She used to raise many chickens for sale but in October last year, most of her birds died during an outbreak of Newcastle disease. She was left with only one rooster that is yet to reach maturity. Sra Joaquina was pleased to hear of the new Newcastle disease control project and hopes that it will be successful.

Filipe Jose Joao is 14 years old and is the head of his family since his parents passed away. His sister Francisca takes care of the house and does the cooking for Filipe and her younger sister Amelia and brother Joao. With support from ASVIMO, a local NGO in Dondo, they have been able to continue their studies. Their family previously raised chickens but all were slaughtered and consumed during the funerals of their parents. They plan to restart chicken production and are on ASVIMO's list to receive four hens and one rooster. Once the chickens arrive, the challenge will be making sure that they produce well for their young owners and do not die from Newcastle disease.

The main activities of this pilot project are:

- Conducting initial PRAs

- Training volunteers of ASVIMO and Kubatsirana as community vaccinators against ND;
- Training NGO technical staff and local government agricultural staff in ND control;
- Implementing two ND vaccination campaigns;
- Training farmers to experiment with low-cost improvements to village poultry husbandry;
- Working with volunteers and staff of ASVIMO and Kubatsirana, local health posts and primary schools to promote village poultry production and consumption of poultry meat and eggs; and
- Technical backstopping and monitoring and evaluation.

To promote the sustainability of the ND control activities, community vaccinators will charge farmers a fee (equivalent to USD 0.05 per bird; birds currently sell for around USD 1.60 each) to vaccinate each bird. To ensure that vulnerable families within the community receive assistance through this program, the vaccinators decided that families affected by HIV/AIDS that have five or fewer birds would have their birds vaccinated free of charge during two campaigns.

The IRPC has secured funding from charity groups in Australia to support the distribution of one rooster and four hens and ND vaccination vouchers to child-headed households and families affected by HIV/AIDS in the project area. Following vaccination, the vaccinators will present the vouchers to either ASVIMO or Kubatsirana to receive payment for their services corresponding to the number of birds vaccinated.

Conclusions

Improving the management of village chickens by junior farmers and PLWHA contributes to HIV/AIDS mitigation principally through improved household food security and income generation. It also provides junior farmers with experience in small-scale business management and improved knowledge about human nutrition.

Families affected by HIV/AIDS will be more likely to make use of the above benefits if veterinary services work in collaboration with the Ministries of Education and Health to improve general knowledge about human nutrition.

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