



Small Scale Livestock Promotion Program

Malingunde Newcastle Disease

Vaccination Promotion

End of Project Evaluation

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December 2010

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Acknowledgements

This evaluation consisted largely of a survey of chicken owners in Malingunde Extension Planning Area. I would like to express my deep appreciation to the District Agricultural Development Officer for Lilongwe, the Agricultural Extension and Development Coordinator for Malingunde EPA, the field staff of Malingunde EPA, and the villagers interviewed for their invaluable assistance in conducting this survey. Without their cooperation and good will, I could not have undertaken the survey and could not have gained the valuable information it revealed.

Background

Newcastle disease is an acute viral disease of poultry which causes high mortality in chickens and which is widespread in southern Africa. It is widely regarded as the most significant cause of mortality in village chickens in Malawi. There is no treatment for birds suffering from Newcastle disease but effective vaccines do exist.

During several years from the late 1990s, the Australian Agency for International Development, AusAID, supported research and development of the thermo-tolerant Newcastle disease vaccine I-2, for the control of Newcastle disease in village flocks in southern Africa. Under this development, a production unit was established at the Central Veterinary Laboratory in Lilongwe and a program of institutional strengthening and involvement of communities and NGOs was encouraged. Currently, the program is focussed on promoting Newcastle disease vaccination and poultry health in rural communities through the development and use of extension materials, community development, and improved rural poultry husbandry practices.

Being thermo-tolerant, the I-2 vaccine is particularly well suited for use under field conditions in rural communities in Malawi, where refrigeration is usually not immediately available. Stored in a cool shady place, the vaccine can be held at room temperature for at least a few days without losing potency. Like other Newcastle disease vaccines, booster vaccination is required every four months. The government extension services have produced a vaccination calendar with vaccination periods in March, July, and November of each year.

In January 2010, SSLPP received support from Irish Aid in Malawi to undertake a program to promote Newcastle disease vaccination using the I-2 vaccine in Malingunde Extension Planning Area to the south-east of Lilongwe. This support was a timely and significant contribution to the wider national efforts promoting Newcastle disease control. SSLPP expresses its appreciation of the opportunity provided through this support.

The Malingunde proposal aimed to:

1. Increase the production capacity of the Newcastle disease vaccine unit at the Central Veterinary Laboratory in Lilongwe through procurement of an egg incubator;
2. Train and equip community based vaccinators to promote and explain the necessity for Newcastle disease vaccination, and to conduct vaccination within their villages on a regular basis;
3. Support the initial program of vaccination through provision of vaccine (once only), through monitoring and evaluation of the outcomes, and through collaboration with the government field staff operating in the target area.

An integral part of this proposal was an end of project evaluation. This report describes the conduct of that evaluation and the findings.

Methods

The end of project evaluation was conducted through a study of villages in Malingunde EPA which aimed to compare households which had started vaccinating their chickens in July 2010 with those which had not. The evaluation thus aimed to provide information on the effectiveness of vaccination of chickens under typical field conditions. The evaluation also complemented the baseline survey which had taken place in July 2010 and which was reported separately.

A copy of the questionnaire used in the evaluation is shown at Attachment 1.

The survey was undertaken in late November 2010 by nine government extension staff within the EPA. Interviewers were instructed on techniques and the overall objective of the survey in order to minimise bias in the results.

Results

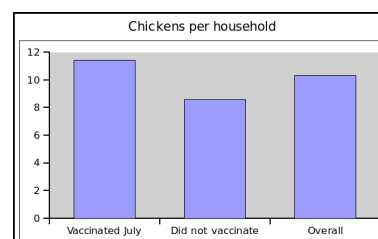
A summary of the major results from the survey is shown below.

	H'holds	Chickens owned	Chickens/h'hold	Vaccinated Nov		Will vacc Mar		Chickens died ND		Chickens culled		All losses	
				Y	N	Y	N	Number	Rate	Number	Rate	Number	Rate
Vaccinated July	149	1701	11.4	76	73	148	1	466	27%	142	8%	608	36%
Did not vacc	96	822	8.6	25	71	93	3	596	73%	162	20%	758	92%
Total/average	245	2523	10.3					1062		304		1366	
Ratio high/low			133%						265%				258%

	Vaccine Effective						Importance of ND		
	Y	Rate	N	Rate	??	rate	high	med	low
Vaccinated July	127	85%	12	8%	10	7%	66	17	66
Did not vacc	50	52%	4	4%	42	44%	50	14	32

A total of 245 households owning a total of 2,523 chickens, were interviewed by EPA staff. Of these, 149 households, owning 1,701 chickens, had vaccinated in the July vaccination campaign and 96 households, owning 822 chickens, had not. This sample of 245 households represents 1.4% of the estimated total of 17,684 households in Malingunde EPA.

The average number of chickens owned per household was 10.3. The average number of chickens per household which had vaccinated in July was 11.4 compared with 8.6 chickens in households which had not vaccinated.



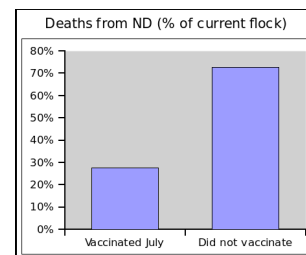
Approximately half of households which had vaccinated in July also vaccinated in November, at least by the time of the interviews (the vaccination program was still not complete so the ultimate proportion would likely be higher). However only one quarter of households which had not vaccinated in July had vaccinated in November.

Over 99% of all households intended to vaccinate in the March 2011 campaign, and in this there was no significant difference between households which had vaccinated in July and those which had not. It would seem that all respondents wanted to vaccinate in future or at least give that impression to the interviewers.

During preliminary investigations, it was found that rural chicken owners take a range of different actions when faced with the threat or reality of Newcastle disease. If they are threatened by news of the disease in

the vicinity, they may prematurely kill, sell or cull chickens. If the disease has already struck, they may kill the sick chicken and consume it. In other cases, the chicken may simply die of the disease without any form of salvage. With this in mind, the survey attempted to measure both losses from deaths and losses from premature slaughter or sale.

With respect to deaths attributed to Newcastle disease, there were 466 deaths amongst the 1,701 chickens in vaccinating households compared with 596 deaths amongst the 822 chickens in non-vaccinating households. The rate of 72.5% mortalities in households which had not vaccinated was thus 2.6 times the rate of 27.4% in households which had vaccinated. The ratio of losses from both deaths and premature slaughter was similar, with non-vaccinating households suffering 2.6 times the rate of loss seen in vaccinating households.



There was a difference in attitudes about whether the I-2 vaccine actually works. Of people who had vaccinated, 85% believed it was effective vs 52% of people who had not. Interestingly, 8% of vaccinators did not have confidence in the vaccine vs 4% of non-vaccinators. Perhaps more significantly however, only 7% of vaccinators felt they did not know whether the vaccine worked vs 44% of non-vaccinators.

On the question of the perceived importance of Newcastle disease, the data are inconclusive. There seem to have been significant differences in the pattern of responses depending on the interviewer. No useful conclusions can be deduced from this part of the data. However this shortcoming is regarded as only of minor importance.

Discussion

Number of chickens per household

The average number of chickens owned per household, 10.3, was in good agreement with the average of 11.3 per household calculated from the July 2010 baseline study. Amongst households which had vaccinated in July the average was 33% higher than amongst households which had not vaccinated. This difference is possibly a result of vaccination being effective in protecting chickens. Alternatively it could be a result of chicken owners with smaller flocks being less likely to choose to vaccinate.

Losses from Newcastle disease

The survey results give solid support in favour of vaccination of village chickens against Newcastle disease. In a nutshell, households which vaccinated in July lost about 36% of the number of chickens they have today to Newcastle disease, whereas households which did not vaccinate lost about 92%. The rate of deaths and the rate of overall losses to Newcastle disease for households which did not vaccinate was about 2.6 times the rate of deaths/losses for households which did vaccinate.

Chicken numbers in any household are quite dynamic as chickens die, get slaughtered, sold or hatched, and it is difficult to calculate an average population over time. This study was retrospective and related past deaths and losses to the numbers of chickens at the end of the period under study rather than to the numbers at the beginning. However, the results give very useful information and can be translated into a message suitable for consumption by rural chicken owners.

The fact that there were losses in chickens from households which did vaccinate is explainable and there should be no attempt to hide the fact. First there is the possibility that chickens hatched after the vaccination campaign were left vulnerable to Newcastle disease. In addition, there is the possibility that the owner's diagnosis was erroneous and that the chickens in fact died of other diseases. Both of these possibilities should be made known to rural chicken owners in terms which they can understand. It is important that rural chicken owners clearly understand that some chickens can and do die after being vaccinated for Newcastle disease. To conceal this fact is to invite a loss of confidence in vaccination in situations where it has actually benefited the farmer. (At a more technical level, it is also certain that protection in vaccinated chickens is

going to be less than 100% but this aspect is a little more difficult to explain in terms palatable to rural chicken owners.)

Owners' attitudes

The findings regarding people's confidence in the efficacy of the vaccine were unexpected. Of people who vaccinated chickens in July, more (8%) felt the vaccine was ineffective than people who had not vaccinated (4%). The big difference in this part of the data was amongst people who did not know whether the vaccine was effective or not. Here, 44% of people who had not vaccinated did not know whether it was effective, compared to only 7% of people who had vaccinated. People who had vaccinated in July were thus much more opinionated, much clearer in their mind, about whether the vaccine worked notwithstanding the fact that some of them thought it didn't.

Recommendations

1. This type of short survey should be repeated in a range of different environments to obtain confirmatory information about the effectiveness of I-2 vaccination under practical field conditions.
2. The results of this survey should be translated into extension message(s) which are easily understood by rural chicken owners in Malawi.

Report prepared by:

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10 December 2010

Attachments

1. The survey questionnaire

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Questionnaire on the Malingunde NCD project - November 2010

Guidelines for interviewer

1. Interview only households which own one or more chickens today.
2. Try to get approximately equal numbers of households which vaccinated in July and households which did not.
3. Circle the selected answer where appropriate.
4. Keep questions open. As far as possible, avoid suggesting answers.

A. Identification and Household information

Name of interviewer: _____

Date of interview: _____

1. Name of respondent: _____

2. EPA _____ 3. Village _____

4. Group Village _____ 5. TA _____

B. Information About Newcastle Disease Vaccination

a. How many chickens do you have today? (Include baby chicks.)			
b. Did you vaccinate your chickens in July 2010?	YES	NO	
c. Did you vaccinate your chickens in November 2010?	YES	NO	
d. Will you vaccinate your chickens in the March 2011 campaign?	YES	NO	
e. Consider only Newcastle disease (chitopa) <u>not other diseases</u> . In the period since 1 July 2010, how many of your chickens do you estimate have died of chitopa? (Include baby chicks.)			
f. In the period since 1 July 2010, how many of your chickens have you killed prematurely because chitopa was threatening?			
g. Give your own honest and frank opinion. From your observations, does vaccination with the I-2 vaccine reduce deaths from chitopa?	YES	NO	DON'T KNOW
h. How important is chitopa for your household?	HIGH	MEDIUM	LOW

Thank you for your assistance in this survey.