

COMPARATIVE ANALYSIS OF FAMILY POULTRY PRODUCTION IN TWELVE AFRICAN COUNTRIES

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Abstract

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The purpose of the research was to conduct a survey on family poultry to obtain information on disease prevalence, feeding practices, and the management of poultry housing in twelve African countries. The survey data were collected during both the wet and dry seasons and summarised (average and standard deviation) by country, village/region, season, and survey question.

The disease data results show that three (greenish/bloody diarrhoea, swollen head, and coughing) of top four reported symptoms are part of Newcastle disease's presenting signs. Chick mortality was also higher in the wet season, when there is a higher incidence of Newcastle disease. This was also supported by the individual country data in that those countries with high chick mortality data also had low hatchability in the wet season with Egypt being the only exception.

The types of housing used for shelter for family poultry was quite variable and presented a challenge to determine the level of cleaning/sanitation to assist in controlling Newcastle disease. On the one hand, a large percentage of households reported never cleaning the poultry house (e.g., Cameroon, Morocco, Mauritius, and Sudan). On the other hand, 34% of the responses to housing type were either trees or other forms of housing that would be difficult to clean i.e., old car, fence, surrounding wall, etc. Obviously, these results should be closely examined when instituting control programs for Newcastle disease.

The large variety of available scavenged feed without any data on intake raises the question of how to balance the ration for the flock. Family poultry scientists need to determine a method to estimate intake which could assist in determining what supplementary feed is necessary if any. This challenge may be one of the most important aspects to family poultry management because of the importance of nutrition to poultry production with the added difficulty of providing balanced nutrition in an extensive system.

1. INTRODUCTION

With the exception of urban areas in Northern and Southern Africa, most poultry production in Africa is undertaken through the extensive system at village or family level. This poultry provides a good source of protein and ready cash for villagers. The financial gains in turn help to sustain the village economy and contribute to the prevention of urban migration. The benefits from family poultry production go directly to the rural poor, in most cases to the women, they being the principal caretakers.

However, this type of poultry production suffers from the constraints of disease, particularly Newcastle disease, insufficient feeding and lack of housing. If these could be removed, productivity would be increased to the direct benefit of the marginal farmer. Little research has been published on rural poultry production, despite the fact that 80% of the poultry population in Africa is kept by the households in their 'backyard' [1]. Rural poultry production provides valuable protein through a low input system and at present 20% of the protein consumed in developing countries originates from poultry products [2]. Village level poultry production is encountered in the rural and peri-urban areas all over the world.

As part of a Co-ordinated Research Programme, twelve African scientists specialised in poultry research were awarded a contract to initiate investigations in the characteristics of family poultry production at a local level. The purpose of the research was to collect background information and assess management practices of family poultry production in Africa through a survey using standardised questionnaires, serological sampling, and post-mortem examinations. In each of twelve African countries a survey was carried out to investigate in more detail the causes of high mortality in village chickens and the risk factors involved. The results of each country have been published in the

present volume. In an effort to compare the national results in a wider context and on a regional scale, we summarised the data and prepared a comparative analysis.

2. MATERIALS AND METHODS

The submitted survey data from each country were summarised by category for each season (dry and wet) using Excel spreadsheets. Depending on category, data were totalled (summed) or averaged. The totals or averages of the data were entered into a separate spreadsheet by country, village/region, season and category. Finally, totals or averages were calculated by season for the individual countries. Additional columns or rows have not been shown in the summary sheets, but are available upon request as are summary sheets for each of the twelve countries. The wet season data from Madagascar were unfortunately not available when the summary tables were prepared, but can be found in the individual country report [3].

3. RESULTS

The results show a large range in flock size between countries (Table I). The smallest average flock size was encountered in Madagascar (mean flock size: 11), while the largest average flock sizes were found in Mauritius and Côte d'Ivoire with a mean flock size of 69 and 60, respectively.

The hen:cock ratio varied from 1.4 in Cameroon during the wet season to 6.1 in Morocco (Table I).

Chick mortality was highest in Zimbabwe, Egypt, Ghana and Tanzania during the wet season (Table II). Similarly hatchability was low during the wet season in these countries (Table II).

In the majority of cases in the various countries some kind of housing was provided for the family poultry, either as a chicken house (41%), or in the kitchen or house of the family (22%). Nearly one fifth of the flocks (20%) had to perch in the trees (Table III).

Of the households which provided housing for the chickens in the various countries, 56% cleaned the chicken pens frequently (daily/weekly), while 44% cleaned on a monthly basis or less frequently (Table IV).

When scavenging, family poultry eat a large variety of feeds (Table V). Poultry were most often seen to eat insects and cereals (Table V).

Cereals composed the majority of supplemented feeds both during the dry and the wet season (Table VI). The cereals were most often obtained from the harvest (38% of households), but also quite frequently purchased (26% of households). The second most frequently supplemented type of food were leftovers from the kitchen (Table VI).

The table summarising disease symptoms and/or diseases shows that 3 of the 4 most often reported symptoms, i.e. greenish/bloody diarrhoea (21%), swollen head (13%), coughing (11%) and twisted neck (8%) are likely due to Newcastle disease (Table VII). Furthermore, adult chickens were reported to show symptoms of disease more frequently with the exception of fowl pox, which occurred more often in younger chicks. Birds were frequently reported to be affected by ectoparasites, such as mites, ticks and fleas (Table VII).

A large variety of different treatments were used to cure diseased birds in the different countries (Table VIII). Some of the treatments can be regarded as part of ethno-veterinary practice. Farmers in only five of the twelve countries reported the use of vaccine against Newcastle disease to protect their birds. In many of the countries farmers do not have the means to treat their flocks when symptoms are noticed.

On a continental scale women own the flocks in 56% of the cases (Table IX). Women are most often involved in activities such as cleaning the chicken house or providing the birds with supplementary feeding. The men are most often involved when veterinary treatments are required but still at a lower level than women (Table IX).

In addition, women make 49% of the decisions with regard to activities concerning the flock (Table X). However, men are more often involved in decision-making (34%) than in labour activities (23%).

The main methods of exchange patterns with regard to family poultry revolve around selling and buying of chicken products (Table XI).

4. DISCUSSION

The summary tables provide an interesting comparison between countries. Differences may not necessarily be attributed to regional differences in poultry keeping, but may also be due to a bias of the interviewer or a bias of the selection of farmers interviewed. The standardised questionnaire and work plan used by all twelve Research Contract holders was intended to minimise bias as much as possible.

The high mean of the flock size in Mauritius is remarkable (Table I). This is largely due to the large flock sizes on the island of Rodrigues, which exports poultry meat to the larger island of Mauritius [4]. In addition, both Mauritius and Côte d'Ivoire (flocksize=60) had the highest standard deviation for flock size indicating that the distribution of the size of flocks was more extensive than in other countries.

When the number of hens is divided by the number of households and multiplied by hen/cock ratio a flock size of 37 can be calculated, while average flock size was calculated to be 28 (Tables I and II). This difference highlights the challenge to collect consistent data using field surveys from the various countries.

Chick mortality was higher in the wet season, which could have been due to a higher incidence of Newcastle disease during the wet season. This was also supported by the individual country data in that those countries with high chick mortality data also had low hatchability in the wet season with Egypt being the only exception.

Surveys from countries reporting a large percentage of households which never clean the poultry house (e.g., Cameroon, Morocco, Mauritius, and Sudan as mentioned in Table IV) should be closely examined. This response might be due to the fact that no chicken house was available for the family poultry. For example, in Morocco, Mauritius and Cameroon chickens frequently had to perch in the trees (Table III). Furthermore, about 34% of the responses to housing type were either trees or other forms of housing that would be difficult to clean i.e., old car, fence, surrounding wall, etc. This point again illustrates the challenge in identifying where management practices can change to have some impact on diseases like Newcastle that may be spread through poor sanitary practices.

The summarised data suggest that more food was available for scavenging birds during the wet season (Table V). However, the table just indicates what feed birds were seen to eat, not how much food was ingested. This leads to some interesting questions regarding ration balancing for production: "What % of daily energy does scavenged feed represent?" "If a large % is the diet balanced?" The challenge for family poultry scientists is to determine an easy method possibly by some indirect means (e.g., scavenging time) to estimate how much of what type of scavenged feed is eaten which could assist in determining what supplementary feed is necessary if any. This challenge may be one of the most important aspects to family poultry management because of the importance of nutrition to poultry production with the added difficulty of providing balanced nutrition in an extensive system [5].

It is not clear from the survey results how much of feed supplementation to birds is used by farmers not only as a nutritional supplement but also as a stimulation for the birds to return home (Table VI). On the one hand, it does make sense to use feed, especially very palatable feed such as grains or leftovers from the kitchen for this purpose. On the other hand, if one could answer the above scavenging feed nutritional questions and limit supplemental feeding to the purpose of bringing birds home then the least cost of this system could be enhanced.

The disease data were based on farmers recalling general disease symptoms and lesions or parasites on the bird's skin. These data were summarised as age specific morbidity rates for the wet and dry season (Table VII). These results show that 3 (greenish/bloody diarrhoea, swollen head, and coughing) of top 4 reported symptoms are part of Newcastle disease's presenting signs. The survey can then become a method of obtaining prevalence data to assess vaccination response or the need to vaccinate in field situations where blood tests, examination of birds, and post-mortems may be difficult to obtain. An important issue for the farmer is that when birds exhibit disease symptoms as above that there is some remedy that will allow birds to recover quickly with minimal costs. The summarised data on treatment show that no treatment is in common practice (Table VIII). Lack of treatments can be due to cultural, technical, or economic factors. In addition, many countries do not treat for a majority of the reported symptoms which is not surprising given the low input nature to this extensive system. However, it is surprising that only 5 of the 12 countries involved in the survey

reported the use of Newcastle disease vaccinations, a disease that based on the morbidity rates above appears to be in relatively high prevalence.

The results concerning ownership, labour, and decision-making (Table IX) clearly demonstrate that a major portion of family poultry production in the village is managed and implemented by women. This fact is important to take into account when one does a survey as to who needs to be interviewed, how the survey is assembled, and how the questions are stated in order to ensure obtaining the most representative data.

The distribution of the % of households' use of poultry products in the village shows a varied set of responses (Table XI). The responses clearly demonstrate the importance of this industry for the local farmer not only as income, food, and use in bartering but its use as a cultural means of exchange as a gift in many important family and village events.

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