A survey of rural poultry management in the West Mamprusi District and the Ga Rural District of Ghana

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ABSTRACT

Ninety-six households in the Ga Rural District in southern Ghana and 54 in the West Mamprusi District in northern Ghana were interviewed during the survey. Farmers in the south were predominantly females (81.25 %) while farmers in the north were predominantly males (83.3 %). Most respondents were either formally uneducated (46 %) or did not go beyond the 1st cycle schools (78 %). The birds were extensively kept with little financial input into production. Birds scavenged around compounds or farms with occasional feeding of grains or household wastes. Housing (wooden coops or mud pens), if any, was provided only at night. Average stock holding of domestic fowls, the preferred species, was 10 birds per household in the south. The average holding per household of this same bird in the north was much higher (88 birds). Mortality of chicks and adults was a major limitation to growth in numbers. Poultry diseases (especially Newcastle disease) were noted as the major cause of adult mortality. Regular vaccinations against poultry diseases and regular deworming of birds would cause a fairly rapid growth in the rural poultry industry. The formation of co-operatives of local poultry keepers, to promote their interests, would also help.

Original scientific paper. Received 29 Oct 98; revised 21 Mar 2000.

RÉSUMÉ

DANKWA, D., NELSON, F. S., MZAMO, K. B. & ODDOYE, E. O. K.: *Une enquête sur l'exploitation de volaille rurale dans le District de West Mamprusi et le District de Ga Rural du Ghana.* Quatre - vingt - seize ménages du District de Ga Rural au sud du Ghana et 54 du District de West Mamprusi au nord du Ghana étaient interviewés au cours de l'enquête. Les volailleurs au sud étaient principalement des femelles (81.25 %) alors que les volailleurs au nord étaient principalement des mâles (83.3 %). La majorité de personnes interrogées étaient officiellement sans instruction (46 %) ou ne sont pas allées au-delà de l'école primaire (78 %). Les volailles étaient largement élevées avec peu d'intrants financiers à la production. Les volailles fouillent dans les poubelles autours des maisons et des champs avec de nourissement de grains et de déchets domestiques de temps en temps. Le logement (poulailler en bois ou enclos de terre), même s'il y en a, est utilisable pendant la nuit seulement. Les possessions moyennes de poulets domestiques, l'espèce préferrée étaient 10 volailles par ménage au sud. Les possessions moyennes par ménage de la même volaille au nord étaient beaucoup plus élevées (88 volailles). La mortalité de poussins et d'adultes était découverte d'être une limitation majeure à la croissance en nombres. Les maladies de volaille (surtout la maladie de Newcastle) étaient constatées d'être la cause majeure de la mortalité d'adulte. Les vaccinations regulières contre les maladies des volailles et la dévermination regulière de volaille pourraient promouvoir une croissance presque rapide de l'industrie de volaille. La formation de coopératives des volailleurs locaux, pour promouvoir leurs intérêts, pourrait aider également.

Introduction

The local domestic fowl in Ghana has been neglected as far as planned management practices are concerned. Yet, the indigenous fowl is reared all over the country in small backyard units (Williams, 1990) and is well adapted to its environment. The current knowledge on the status of rural poultry in Ghana is only partially

documented. For any meaningful development or improvement in the performance of indigenous birds, there is an urgent need for surveys of the rural flock to obtain baseline data.

This survey was intended to contribute to information in the areas of management practices, housing, feeding, and prevalent diseases, and to determine what the rural poultry farmer requires to enhance productivity.

Methodology

The West Mamprusi District and the Ga Rural District were chosen for the survey to represent the northern and southern parts of Ghana, respectively. The survey was conducted between January and July 1997.

Questionnaires were designed to elicit data on the following:

1. Demographic characteristics of producers.
2. Source(s) of stock.
3. Management systems (housing, feeding, health care, extension services).
4. Reproductive traits.
5. Use and marketing of rural poultry.

Ninety-six households in the Ga Rural District and 54 in the West Mamprusi District (randomly chosen) were interviewed. The person interviewed was the one who owned the birds, and was responsible for all major decisions affecting the birds such as sales, culling for use in the home, and purchase of feed and veterinary drugs.

Results and discussion

Poultry was kept in 86 per cent of the households in the West Mamprusi District and 77 per cent of the households in the Ga Rural District.

Demographic structure of farmers

Sex of farmers. Of the 96 households interviewed in the Ga Rural District, the farmers were mostly females (81.25 %). This is so in most parts of Africa (Nmeldin, 1990). The explanation given for this sex bias in South West Nigeria by Hassan, Pemida & Fajinmi (1990) was that males usually went to farm while their wives, who stayed at home, looked after the birds. In the Ga Rural District, these indigenous fowls are an important source of extra income for the woman of the house and also serve as a source of animal protein, especially on festive occasions.

In the West Mamprusi District, however, the farmers were predominantly males (83.3 %). A survey by the Animal Research Institute on the farming system of the Saboba Chereponi District (Otchere, Karbo & Bruce, 1997) confirmed this. The report stated that livestock and poultry production was the domain of males. A taboo barred females, in their productive years, from engaging in poultry production. It was also learnt from interviews that a common traditional practice for adult males in some of the tribes in northern Ghana (e.g. the Konkonbas) was to give hens to their young nephews in the family to rear. If the attempt yielded good results, the birds were sold and the proceeds used in buying larger livestock. This practice encourages many young men to keep poultry early in life. This tradition, among the Konkonbas, was not reflected in the West Mamprusi District.

Age of farmers. In both districts, rural farming was unrestricted to any particular age group, although the middle-aged farmers (30 - 49 years old; Ga Rural (66.7 %), West Mamprusi (53.1 %) played a more active role.

A few farmers (Ga Rural, 5; West Mamprusi, 5) above 60 years old were found keeping birds. The dependence on the whole family for the upkeep of the birds makes it possible for all age groups to be engaged in production.

Most respondents were either formally uneducated (46 %) or did not go beyond the 1st cycle schools (78 %). Only 4 per cent had tertiary education of any sort. There were many more formally uneducated keepers in the north (55.6 %) than in the south (40.6 %).

Almost all the respondents (98 %) were engaged in other gainful ventures like trading, crop farming or fishing. Sixty-four per cent of the respondents in the West Mamprusi District kept other livestock such as sheep and goats compared to only 36 per

cent of the farmers in the Ga Rural District.

Species reared and source of stock

The preferred species for rural poultry production in the two districts studied was the domestic chicken, and was kept by 60 per cent of the respondents. Mixed chicken stock was kept by 36 per cent of respondents (Table 1). Guinea fowls were more common in the West Mamprusi District. Turkeys and geese were rare in both districts.

TABLE 1

Average Holding of Rural Poultry Species in Ga Rural District (GRD) and West Mamprusi District (WMD)

Species	*Sex of species*	*Total no. of birds*		*No. of households*		*Average holding/household*	
		GRD	*WMD*	*GRD*	*WMD*	*GRD*	*WMD*
Domestic chicken	Male	315	1047	96	54	3.3	19.3
	Female	609	3720	96	54	6.3	68.9
Ducks	Male	9	54	12	16	0.75	3.8
	Female	48	237	12	16	4.0	14.8
Turkeys	Male	6	9	3	6	2.0	1.5
	Female	9	24	3	6	3.0	4.0
Guinea fowl	Male	-	498	-	16	-	3.8
	Female	-	1566	-	16	-	14.8

The number of domestic chickens raised per household was between three and 20 in the Ga Rural District, with an average holding of 10 per household. In the West Mamprusi District, the bird population was much higher, ranging between three and 219, with an average holding of 88 birds per household.

Initial stock (usually a hen) was either purchased (72 %) or received as a gift. Replacement stock usually came from chicks hatched in the homestead. Occasionally, the eggs of a brooding hen may be replaced by eggs of a less common preferred species (e.g. ducks, turkeys or guinea fowls) purchased from another keeper. Exotic cockerels were sometimes purchased and kept around the homestead to upgrade the performance of the local bird.

Management practices

Very few respondents (6 %) could declare income from their poultry rearing or other income-generating activities. Reasons offered included infrequent sales, fluctuating prices, and forgetfulness. None of the farmers kept records of their stock, sales, or other activities in the year. Family members provided all the labour needed for production.

Feeding. Generally, birds, in both districts, scavenged around farms, compounds or households. A handful of grain, household waste or wheat bran (used more frequently in the Ga Rural District) was thrown out to the birds as supplement every morning. If termites were available, the birds were given some. Newly hatched chicks were usually better cared for than the adults. They were often given broken maize and other grains apart from what was made available to the other birds. No farmer used formulated feeds and no feeding troughs were provided. Broadcasting grains at a particular time daily (usually in the mornings) brought the birds together and afforded the farmer the ability to take a quick census of his stock. Many birds (even those that roost on trees) would hang around the homestead for this morning ritual. Water was provided *ad libitum* in plastic containers or pots. It is evident from these results that nutrition of birds is limiting, and is one of the reasons for the low output of indigenous poultry.

Housing. Most respondents provided housing at night only. Nesting places for laying birds were

also frequently provided. Housing provided by the respondents were either wooden coops (found frequently in the Ga Rural District) or mud pens (found more commonly in the West Mamprusi District). Others allowed the birds to roost in trees (20 %) or under timber boards or under piles of firewood.

Brooding birds were generally better cared for. Brooding of eggs occurred in the kitchens of respondents or in specially elevated places above coops or in secluded places where hen and eggs could be protected from rain and snakes. Hens and newly hatched chicks were usually also given some preferential treatment. They were allowed to sleep under baskets to protect the chicks from being trampled on by other birds.

Floor space in coops or pens was usually unrelated to the number of birds housed. Overcrowding frequently caused birds to sleep on top of coops or on trees.

Daily care of the structures for housing birds involved sweeping the structures daily after spreading wood ash on the droppings of birds.

During the rest of the day, birds were left to endure the prevailing weather or to seek shelter under vegetation or eaves of houses.

Health. Many of the respondents identified Newcastle disease, Marecks disease, worm infestation, fowl pox, fowl typhoid, and ectoparasites as the health problems facing them. They considered Newcastle disease as the most important, as it destroyed most of their stock.

Recurring disease outbreaks (especially Newcastle disease in November - January) were usually responsible for decimating the population of the rural flock yearly, leaving small numbers to start building up the population again.

Sixty-six per cent of the farmers interviewed had no health programmes at all. Only 14 per cent regularly vaccinated the flock against Newcastle disease. No farmer vaccinated the birds against Gumboro and fowl pox. Four per cent dewormed the birds.

When there were disease outbreaks, 18 per cent of the farmers did nothing about the situation. Fifty-eight per cent of the farmers treated the birds with traditional herbal concoctions such as mahogany, mango, and cashew tree barks in water. Others drenched the birds with human drugs such as paracetamol, ampicillin, and B complex suspension in water.

Ectoparasites were controlled in the traditional way. Wood or charcoal was burnt in the pens. Wood ash was applied to the body of birds or spread on the walls of the pens or coops. Palm oil or sheanut oil was smeared on scabs of fowl pox.

Veterinary officers were consulted by only 20 per cent of the farmers. Reasons given for the limited use of the veterinary officers included the small number of birds in the flock, the high cost of treatment, and the uncertainty of cure.

Culling. All the farmers indicated that birds which were not prolific layers or did not possess good mothering ability (protection of chicks from danger) were sold out or eaten as a way of culling stock.

These results support the work of Mahaka (1990) who stated that rural poultry production systems in Africa are based on very low-level inputs of feed, healthcare, and husbandry.

Loss of stock

Mortality of chickens (both chicks and adults) was the major cause of reduction in stock numbers. Respondents indicated that mortality of chicks (30-65 %) was highest during the rainy seasons (May- July). Chick mortality was mostly due to drowning, predators, and malnutrition. Adult mortality was at its highest during the dry season (December - February) when disease outbreaks were frequent.

Mortality seemed to be the major limitation to the growth of the local poultry industry in North Central Nigeria (Otchere *et al.*, 1990), and poultry diseases played a major part in eroding the profit margin of the farmer. The picture was not different in Cameroon where mortality was 80 to 100 per

cent at the village level (Ngoupayou, 1965).

Fourteen per cent of stock was lost through theft and accidents (fairly serious problems in the Ga Rural District). Predators such as hawks, snakes, rats, dogs, and cats increased the mortality rate.

Interventions to curb mortality should be considered as a top priority. Otchere *et al.* (1990) noted that mortality rather than reproduction was the major limitation to the productivity of local fowls and chicks in the extensive management system in North Central Nigeria. Poultry diseases contributed to the high mortality of adult birds in the two districts investigated. Most of the important poultry diseases could be prevented by routine vaccinations. The local poultry keeper should, therefore, be encouraged to have a regular vaccination programme for birds as an important health care procedure. Admittedly, there are grave problems with vaccinating local birds. Being able to find the chickens to vaccinate them is a major problem. The use of conventional vaccination methods (using vaccines that require a cold chain/ refrigeration) increases the difficulties. The rate at which diluted vaccines denature (2 h for Lasota - a Newcastle disease vaccine) adds to the problems. Finally, large dose packages (1000 doses) are unsuitable for very small-scale farmers.

Use and marketing

Farmers kept stock for eggs and meat. Consumption of the produce was limited to festive occasions for most of the farmers. Some of the birds (about 7 %) were given out as gifts. Most of them were sold either at the farm gate (38 %) or at the local markets (52 %); 2 per cent of the respondents indicated that stock was delivered in bulk to a buyer dressed or undressed. Birds were sold when money was needed for paying bills. Weighing scales were never used. Age of the birds was never considered during sales.

The price of a mature bird was determined by size or plumage colour. White-plumaged birds (liked for traditional sacrifices) were often priced higher than black. The prices of brown and mixed colour plumage birds did not vary much.

The price of a bird at the markets in Accra ranged from ¢5, 000 to ¢12,000. Large male birds resulting from crosses could sell at ¢18,000. In the Gambaga market (the major market in the West Mamprusi District), prices ranged from ¢2,500 to ¢7,000. At the farm gate prices could be lower.

Productivity

Table 2 shows some production indices of local poultry, as found during the survey. Hens in both districts weighed about 1 kg at 5 months while cocks weighed about 1.3 kg at the same age. Age at first lay was about 28-30 weeks. Clutch as it is used here indicates the number of eggs laid before the hen becomes broody.

The total number of eggs produced by a local hen per year, in the two districts, was between 30 and 40 eggs. Out of every eight chicks hatched, only three or four reached adult age. Newly hatched chicks were weaned after a period of about 2 months. The mother hen would enjoy a rest period of about 1 month before egg laying started again.

TABLE 2

Productivity of the Domestic Fowl in the Two Districts Studied

Parameters	*Mean of two districts*
Mean weight (g) of an egg	37
No. of clutches/year	3.7
Mean clutch size	10.1
Mean no. of eggs hatched	8.1

Productivity of the local bird was very low (Table 2) as compared with the productivity of exotic birds. Smith (1990) reported similar findings in an earlier study.

Enhancement of productivity

Adene (1990) considers that the development

of rural poultry stock in Africa would contribute to solving regional and global hunger and malnutrition problems, and could be executed most appropriately through a multidisciplinary co-operation between agriculturists, veterinarians, and rural economists.

Mahaka (1990) lists the constraints facing rural poultry production in Zimbabwe as follows :

1. A nearby market and consumers with purchasing power.
2. Slaughtering facilities.
3. Transport.
4. Feed and medicine availability.
5. Poultry products promotion.
6. Training and availability of extension staff.

The suggestions by Manaka (1990) for the improvement of rural poultry production included the following:

1. The improvement of stock either by introducing exotic breeds or by selective breeding of available stock.
2. Improvement of nutrition with suggestions that feed supplement be added after thorough investigations.
3. Improvement of management.
4. Control of diseases.
5. Introduction of other species of poultry that do not compete for feed, e.g. pigeons are vegetarians and guinea fowls do well in low rainfall areas where home-grown grain is unavailable.

All the aforementioned constraints and suggestions for improvement are relevant to the local poultry farmer in Ghana and need to be addressed properly by trained personnel such as are described by Adene (1990). Research should cover the areas of breeding and genetic improvement; efficient use of local feeds and housing; and disease control, taboos in production and marketing strategies.

However, there are simple interventions that the farmers themselves may be able to carry out to increase production levels several fold. The formation of co-operatives of rural poultry farmers, which would enable the farmers to take concerted action to promote their interests, would be a very important step in developing the rural poultry industry.

Recommendations

Suggested solutions to some of the problems facing the rural poultry industry include the following:

1. Fencing a small area around the hen coop (24 m^2) where birds can be fed and watered daily.
2. Forming a habit of broadcasting supplementary feed within the fence each morning caused birds to wait within the fenced area each morning for their supplementary feed. Water provided would be taken out of habit. On vaccination days (if the drinking water method of vaccination is used), the diluted vaccine would be taken orally in place of the water, especially when very dry supplement of feed is offered.
3. In villages without electricity where the cold chain of vaccines cannot be maintained, the thermostable vaccines (dosed in the form of pellets, e.g. V4 against Newcastle disease) just beginning to appear on the markets may replace the conventional vaccines. Intra occular V4 vaccines also available on the markets may be considered (Anonymous, 1984).

Smaller packages of vaccines (100-dose packages) must be introduced alongside the large-dose packages. Co-operatives can further dilute and dispense these so that members with less than 100 birds would be able to vaccinate their birds easily at affordable prices.

The extension services department must be actively involved in administering vaccines.

Mortality of chicks due mainly to drowning of chicks, predators, and malnutrition may be reduced by tethering fowls with chicks in the homestead under any available shed until the chicks start growing wings. Provision must be made to feed these chicks with a fairly balanced feed supply. Crushed grain, maggots, termites, groundnuts,

and soyabean, among others, may be offered.

Purchasing initial stock from the market or farm gate is not a good way of beginning the rural poultry industry. Most of the farmers admitted selling the worst performers in their stock at the farm gate and in the markets. Farmers interested in providing high-yielding birds for their friends at a slightly higher price should be encouraged to do so.

Record keeping by all farmers is strongly recommended. Farmers should involve educated family members in keeping very simple records for them. This would enable them to carry out rudimentary selection of their stock and assess their net profit as various interventions are put in place.

Feed supplements are greatly encouraged. Smith (1990) noted that 75 g of maize per egg was needed by hens to enable them to produce 170 eggs in a calendar year. Dankwa & Nelson (1995) reported that adding protein-rich maggots to the diet encouraged rapid weight gain. Bigger and more eggs were produced with the maggot supplement.

These simple interventions would give the local poultry industry the needed boost while research efforts directed at finding more long-term solutions are being awaited.

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