Small-scale poultry production in peri-urban areas in Ghana[1]

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Abstract

Smallholder poultry production, where highly selected birds are managed under relatively intensive conditions for production of meat or eggs, is one of the livestock enterprises associated with peri-urban agricultural systems in Ghana. This constitutes a means of livelihoods and supplies food to city dwellers. This study was conducted in peri-urban Accra and Kumasi Metropolitan areas to identify the role and importance of backyard poultry production to peri-urban livelihoods, to examine the business decision making process, and to identify constraints to backyard poultry production. A semi-structured interview schedule, including topics such as ownership, feeding of chicken, health of chickens, labour and business records, was used. Responses were compared between variables by chi-squared analysis.

There were 135 respondents in the survey data set. The typical respondent (86.5 per cent) was owner of the enterprise. The majority had some education although 43 per cent had no or only primary education. Poultry keeping was the main occupation (44 per cent), although only a minority of respondents (11 per cent) relied solely on chicken keeping for their livelihoods. A majority (36 per cent) kept layers, broilers and cockerels. Significantly larger bird populations occurred in Kumasi area compared to Accra (Chi square=12.3, P=0.03). The majority of farmers collected records on a daily basis but tended to refer to them on a weekly or monthly basis.

Constraints were identified in the areas of husbandry, feeding and health, availability of inputs, information and credit. Small-scale poultry farmers also encountered problems in marketing produce. Only a limited range of feedstuffs namely, maize, wheat bran and fishmeal were used by respondents as major components of the diet for all classes of birds. Most farmers had limited knowledge or access to ration formulations. Access to public extension service support was only 58 per cent overall and varied significantly between the Accra and Kumasi sites (Chi square = 14.6, P = 0.001). Similarly, just 52 per cent of respondents belonged to a local poultry producers association. More respondents in Accra belonged to associations than in Kumasi (Chi square =4.1, P=0.04). The poor extension coverage and low patronage of associations imply limited access to information, goods and services for peri-urban poultry producers.

It was concluded that backyard poultry production played an important role as the main or secondary occupation for peri-urban livelihoods in the survey. However, small-scale

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poultry producers are confronted with several constraints associated with inputs, cost and quality, and marketing of produce. It is important to assist these farmers with training and information. In particular empowerment in the areas of feed formulations, formation of marketing groups and business management information would help to sustain small-scale production of commercial backyard poultry in peri-urban environments.

Introduction

The peri-urban environment in Ghana, as in other developing countries, occurs at the interface between rural and urban areas. A rapidly increasing population and dwindling agricultural lands characterize these areas. Smallholder poultry production, where highly selected birds are managed under relatively intensive conditions for the purpose of producing either meat or eggs, is one of the livestock enterprises associated with peri-urban agricultural systems that have become a feature of urbanisation in many countries in the developing world. This constitutes a means of improving livelihoods and suppling food for the cities (Ghana Poultry Farmers Association, 2000). Few studies have been made of these businesses (Boa-Amponsem and Sackey 1993; Essien, 1994; Brepulo *et al.*, 1995). This study was conducted in peri-urban Accra and Kumasi Metropolitan areas with the following objectives:

1. To identify the role and importance of backyard poultry production to peri-urban livelihoods

2. To examine the business decision making process for improvement of the system

3. To identify the constraints to backyard poultry production and the interventions required to eliminate them.

Materials and methods

The study was carried out in the Accra-Tema and Kumasi Metropolitan areas. The administrative districts in Accra were Ga and Awutu-Afutu-Senya (AES) where 61 farms were surveyed. The districts covered by the study in the Kumasi administrative area were Atwima, Sekyere West, Kumasi Metropolitan area (KMA) and Kwabere where 149 farmers were interviewed. The small-scale farmers in each district were identified with the aid of Agricultural Extension Agents and purposive sampling employed to establish the study group.

Two methods were employed for data collection: 1) a rapid rural appraisal (RRA), involving focus group discussions followed by; 2) a sample survey or participatory rural appraisal (PRA). For the RRA, a semi-structured interview schedule including topics such as ownership, feeding of chicken, health of chickens, labour and business records was used. The responses were used to design the survey questionnaire, which was tested, and modifications made for use in the PRA. Ten enumerators were involved in the administration of the questionnaire. All were given a one-day training session when they were introduced to the objectives of the study and taken through the questionnaire. The questionnaire was administered in the local languages that were predominantly Twi, Fante and Ga-Adangme. Descriptive statistical analysis was performed on the data. Responses were compared between variables by chi-squared analysis, using contingency tables where there were several possible outcomes.

Results and Discussions

There were 135 respondents in the survey data set after editing; the majority (93 per cent) were male. The typical respondents (86.5 per cent) were largely the owners of the enterprises. The majority had some education although 43 per cent had no or only primary education.

Peri-urban livelihoods

With regards to peri-urban livelihoods, poultry keeping was claimed as the main occupation (44 per cent), although only a minority of respondents (11 per cent) relied solely on chicken keeping for their livelihoods. Means of livelihoods of respondents other than poultry keeping were: farming (42.2 per cent), trading (22.9 per cent), and miscellaneous (23.7 per cent). Hiring labour for poultry enterprises was comparatively common (Figure 1). Forty eight per cent claimed to hire labour. While a majority hired one or two workers only, the 134 farms in the sample provided employment for 158 workers. Figure 1 shows the relationship of total flock size to mean number of hired workers employed per production unit. Farms within size categories varied markedly in the number of staff employed; however, as can be seen from Figure 1, the number of workers increased exponentially with total flock size. The result clearly underscores the importance of small-scale poultry keeping in the livelihoods of these peri-urban dwellers. Downstream, marketing of eggs and poultry provide employment for women.

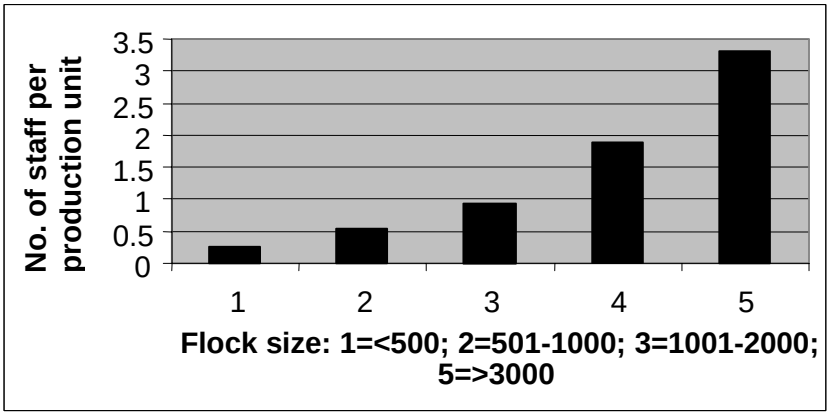

Figure 1 *Mean number of hired workers per production unit by flock size category (total number of birds)*

Respondents kept various populations and combinations of chickens types (Figure 2), including layers, broilers and cockerels (males of layer lines). A majority of respondents kept laying birds, and most producers kept more than one class of poultry. Over a third of respondents (36 per cent) kept all three classes of poultry. Very few producers (10 per cent) were without laying birds, whereas an appreciable proportion (28 per cent) had no meat birds and specialised in egg production.

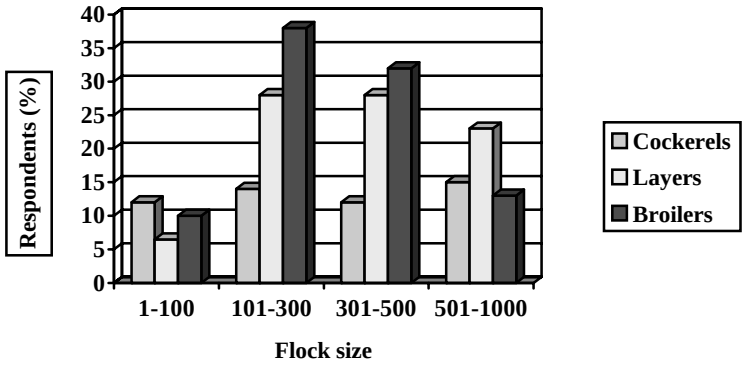

Figure 2 *Flock sizes*

Significantly larger bird populations occurred in Kumasi area compared to Accra (Chi square=12.3, P=0.03).

Record keeping and business decision making

In order to examine the basis of business decision making a number of questions were asked on the collection and use of records. One-hundred-and-three out of 127 respondents (81 per cent) claimed to keep written records. However, the number increased when farmers were asked if they kept production records and financial records, with 96 and 95 per cent, respectively, answering positively. Farmers were asked if they kept a series of both production and financial records. The numbers answering positively are shown in Table 1.

Table 1 *The number of farmers (out of 127 respondents) keeping specific production and financial records*

Record	Number of keeping records
Production records	
No. of eggs produced	107
Weight of birds produced	32
Feeds/drugs/vaccines given	84
Mortality	101
Inventory of birds	69
Financial records	
Income from sale of eggs	103
Income from sale of birds	107
Expenditure on feed/feed ingredients purchased	107
Expenditure on drugs/vaccines	102

Most records were apparently kept by a majority of farmers, although not all records were relevant to all farmers. However, comparatively few farmers (32) kept records of the weight of birds sold, and the amounts of feeds, drugs or vaccines given. Record keeping and its use were investigated further with a series of questions about the frequency with which farmers collected, inspected, analysed and referred to records.

Most farmers collected records on a daily basis but tended to refer to them on a weekly or monthly basis (Figure 3). Thus records were not likely to have an immediate influence on the daily business decision making process. Twenty per cent of farmers claimed never to analyse or refer to the records (Figure 3).

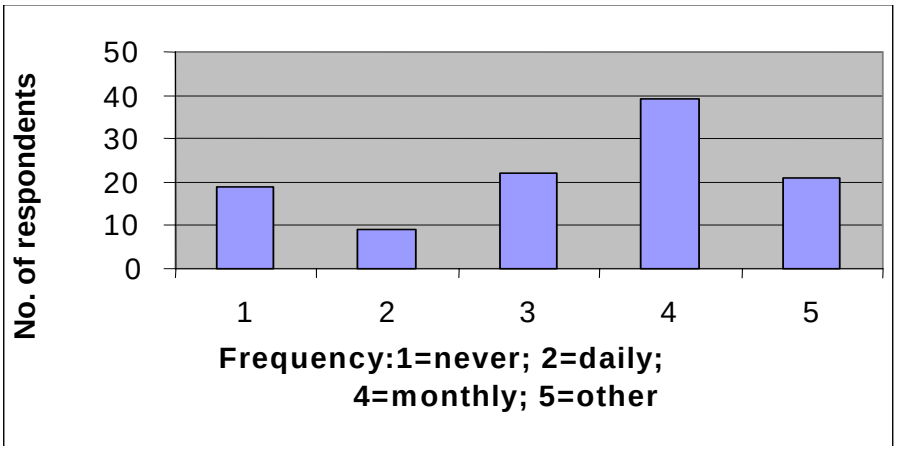

Figure 3 *Number of respondents (n=110) referring to records daily, weekly, monthly or never*

When asked how they determined the profitability of their poultry enterprise, the majority of the farmers identified the option of deducting the cost incurred from the income. Thus while record keeping was widespread, it was not the basis for business decisions. Motives relating to income generation appeared the more important basis for business decisions. Participatory exercises involving budgeting and a longitudinal survey reported elsewhere suggested that the majority of farmers either did not keep records or, if they did, did not use them for calculating profits, or in planning and evaluation of their businesses (Aboe *et al.,* 2003).

Farmers were asked about their motives for keeping different classes of poultry, broilers, layers or cockerels. A number of options were proposed and farmers were asked to give a score for each poultry class (Figure 4). Not surprisingly, producers keeping broilers, layers and cockerels identified all three classes of poultry as a means of supplementing their income and there were no significant differences between classes of poultry (Chi square = 10.98, df=8, P=0.203). However, while producers keeping broilers and cockerels identified keeping such stock as being a means of providing a quick income, producers with layers recognised that egg production was a longer-term investment (Chi square = 119.638, df=8, P<0.001).

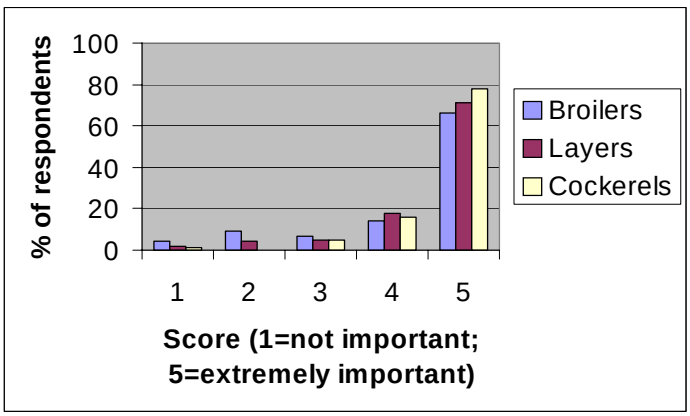

Figure 4 *Percentage of respondents awarding scores 1-5 for the importance of keeping broilers, layers and cockerels as a means of supplementing income*

There were differences between producers of different classes of poultry in their attitude towards supplying seasonal markets (Chi square = 138.162, df=8, $P<0.001$). Whereas broiler producers recognised the need for marketing to coincide with a major festive season, this was not important to the producers of cockerels. Keepers of laying birds showed some acknowledgement of the importance of seasonal festivals. However, it is likely that the importance was related to the disposal of spent hens rather than eggs.

The three groups of producers also differed in their attitudes to the importance of their product being easy to sell (Chi square = 57.793, df=8, $P<0.001$). Keepers of laying birds were generally in agreement that the ease of selling eggs was important in influencing their decision to keep layers. Broiler producers were generally ambivalent about the question, there being no clear opinion, apart from the fact that very few respondents ranked the reason as worthy of score 5. On the other hand, there did seem to be some consensus among keepers of cockerels, with 54 per cent of respondents awarding scores 4 and 5 to the question.

Clearly three types of chickens: broilers, cockerels as well as layers were kept. Layer production appears to be the core poultry activity and a long-term, steady business where the product can be marketed with reasonable assurance of making a profit.

The large-scale production of cockerels is an interesting development. Elsewhere in the world, males of layer strains are usually killed at birth. Such day-old chicks can, therefore, be bought very cheaply. A further advantage is that husbandry of cockerels is more or less like that of free range indigenous chickens (Aboe *et al., 2003*) and less exacting. The fact that cockerel production seems to be a year-round activity, with little emphasis on seasonal production for festivals, suggests a steady demand for this type of bird.

Constraints

Constraints were identified in the areas of husbandry, feeding and health, availability of inputs, information and credit. Small-scale poultry farmers also encountered problems in marketing produce (Okantah *et al.,* 2003). In this paper attention is focused mainly on the feed constraint. Farmers were asked a series of questions related to problems associated with feeding chickens. The perception of respondents was that the cost of feed was high (65 per cent), its quality changed frequently (50 per cent) and it was sometimes not available (55 per cent). A majority (60 per cent) of respondents claimed to purchase compound feed while 34 per cent mixed their own. The remainder did both. The relationship between the percentage of producers practising home-mixing, buying compound feed, or doing both, and total flock size is shown in Figure 5. No particular trend emerges, except that producers with between 2001-3000 birds seem to favour home mixing to a greater extent than other categories of total flock size. Chi square analysis (where 'home-mix' and 'both' categories were pooled) confirmed that this is a significant difference (Chi square = 13.143, df = 4, $P=0.011$).

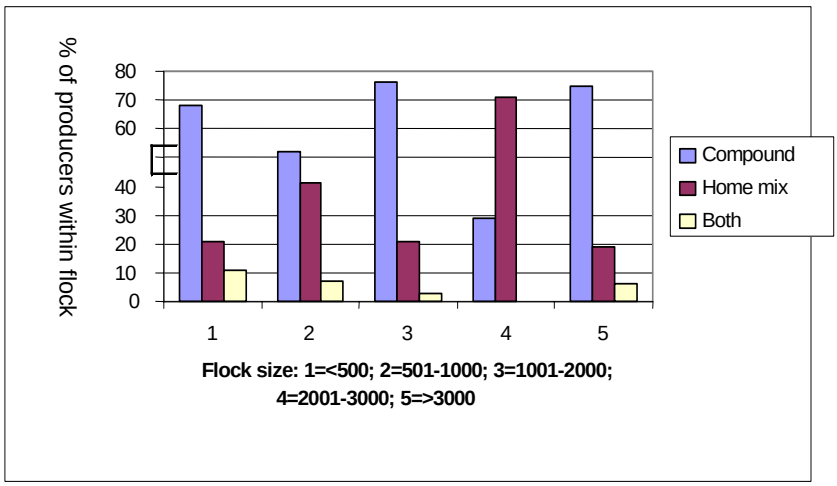

Figure 5 *The percentage of producers buying compound feed, home mixing or doing both within flock size categories (total number of birds)*

Possible differences in the use of home-mixing between the Accra and Kumasi study sites were also investigated. The percentages of producers practising home-mixing, buying compound feed or doing both in Accra and Kumasi are shown in Figure 6. As can be seen, home-mixing was more frequently found in the Accra compared to the Kumasi study site. A chi square test (where 'home-mix' and 'both' categories were pooled) shows the difference to approach statistical significance (Chi square = 3.569, df=1, *P*=0.059).

When asked about ration formulation, 50 respondents, in addition to those claiming to home mix admitted to adding a purchased concentrate to other feed ingredients. Therefore, the numbers of producers that practice home-mixing rises to 104, or 78 per cent of respondents.

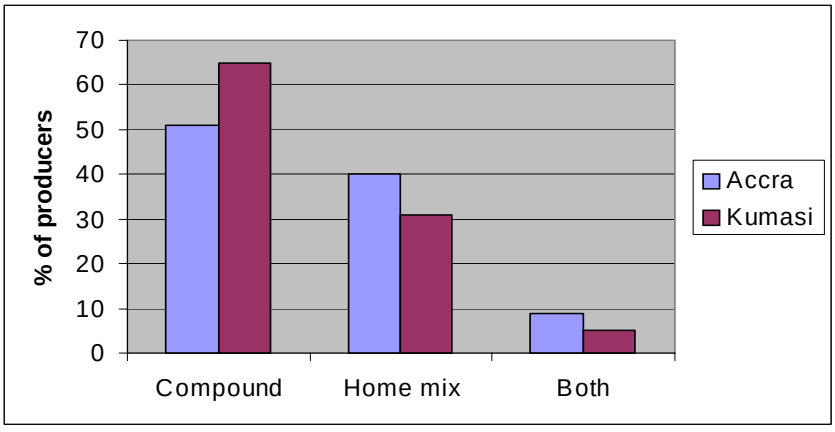

Figure 6 *The percentage of producers buying compound feed, home-mixing or doing both within the Accra and Kumasi study sites*

Few respondents were prepared to disclose the sources of ingredients used in home-mixing. However, seven out of 11 respondents providing answers bought their ingredients on the open market. A greater number of respondents were prepared to

disclose the source of feed formulations used for home mixing (Figure 7). About 2 per cent of respondents calculated their own diet formulations, while approximately the same percentage relied upon friends. Less than 20 per cent of respondents obtained feed formulations from agricultural extension agents.

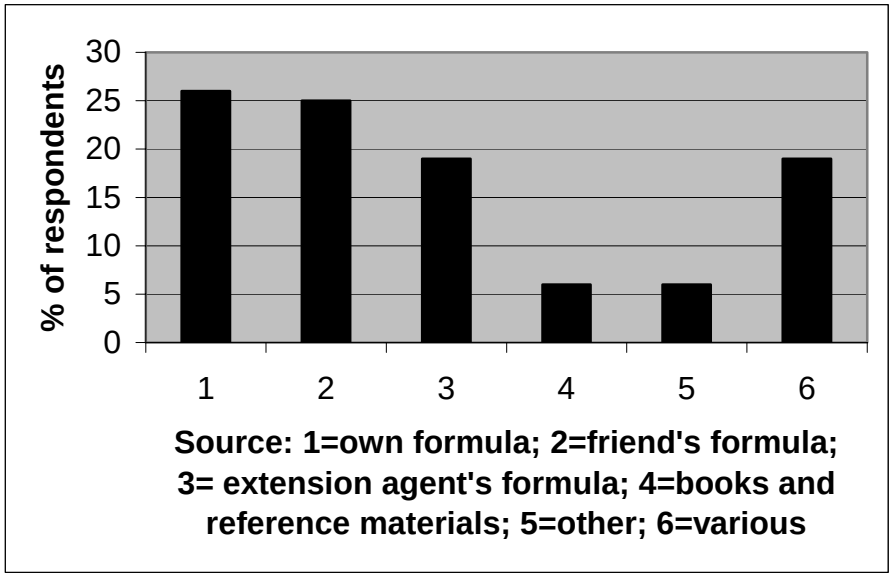

Figure 7 *Source of feed formulations for home mixing poultry diets (n=53)*

The ingredients used in home-mixed diets are shown in Table 2. All respondents, for broiler, layer and cockerel diets, used maize as the main ingredient. Wheat bran was also used in most diets. A large percentage (79, 72 and 81 per cent of respondents mixing broiler, layer and cockerel diets, respectively) used a commercial concentrate. Thus a simple diet given to broilers, layers and cockerels by a number of producers was 50 parts maize, 25 parts wheat bran and 25 parts commercial concentrate. Locally available sources of vegetable protein (copra cake and groundnut cake) were not favoured. Cassava was used infrequently and in very small amounts.

Table 2 *The number of respondents volunteering information on various ingredients included in broiler, layer and cockerel diets*

Ingredient	Broiler	Layer	Cockerel
Maize	61	78	54
Wheatbran	58	78	50
Fishmeal	15	22	9
Copra cake	6	10	3
Groundnut cake	2	5	3
Soya bean	4	7	2
Spent malt	0	1	1
Premix	10	20	8
Cassava	3	2	1
Salt	12	20	7
Shell	9	16	6
Concentrate	48	56	44
Other	7	8	12

Almost all respondents offered feed as a mash. A majority (82 per cent) fed their chickens twice daily, the remainder feeding once or three times per day. Surprisingly, only 53 per cent of farmers fed their chickens *ad libitum*. In general, respondents were satisfied with the service and quality of feed provided by commercial feed mills.

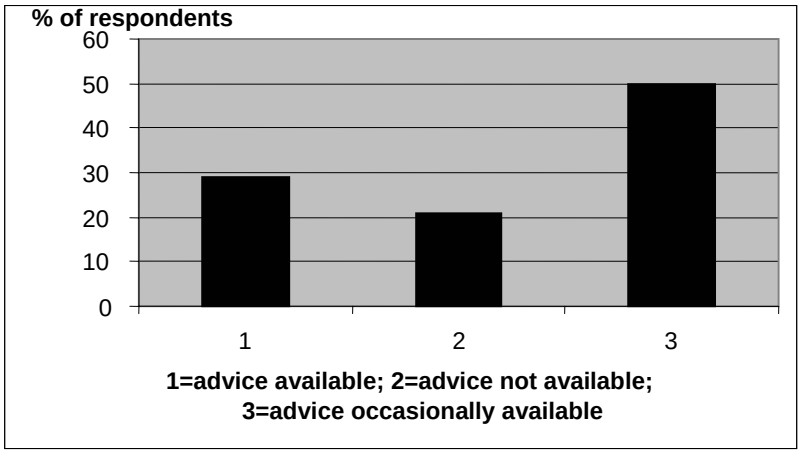

Figure 8 *Respondents' (n=124) perceptions of the availability of advice on feeding*

Responses to questions about the availability of feed confirm previous findings. Few farmers found feed to be unavailable but a majority (55 per cent) experienced occasional difficulties in obtaining supplies. Rather predictably, a majority (65 per cent) of respondents found feed to be expensive or to rapidly escalate in price (29 per cent). While few farmers complained about the quality of feed (again confirming previous findings), 50 per cent considered feed quality changed frequently. However, 45 per cent of farmers were satisfied with feed quality. When questioned about the availability of

advice on feeding poultry, 21 per cent said that advice was never available while exactly half considered that advice was occasionally available (Figure 8).

As advice on feeding was only 'occasionally' available it can be inferred that backyard chicken producers may lack access to vital information for efficient and sustainable production. Relatively few producers who were home-mixing obtained feed formulations from their agricultural extension agent. About 50 per cent had their own formulation or used a friend's. Clearly, the limited range of feed ingredients, lack of feed advice and farmers' limited knowledge or access to ration formulation would result in poor feeding of chickens and poor productivity

Availability of day old chicks (DOC) from seven different sources was affirmed by 47 to 100 per cent of respondents. The high quality of DOC was affirmed by 61 to 100 per cent of respondents. The three most important diseases mentioned by respondents were gumboro (infectious bursitis), coccidiosis and Newcastle disease. Access to public extension service support was only 58 per cent overall and varied significantly between Accra and Kumasi sites (Chi square=14.6, P=0.001). Similarly, just 52 per cent of respondents belonged to a local poultry producers association. More respondents in Accra belonged to associations than in Kumasi (Chi square =4.1, P=0.04). The poor extension coverage and low patronage of associations imply limited access to information, goods and services for peri-urban poultry producers.

Marketing, Extension and Producer Associations

The marketing concerns of the producers were clearly identified as the low prices offered by middlemen and the competition offered by imported products. A very large percentage (83 per cent) of farmers sold from the farm gate. Marketing is clearly an area that deserves attention from producers. Studies of marketing broilers in Accra that form part of this project confirm that caterers and supermarkets are the most promising outlet for home-produced birds (Ameleke *et al,* 2003). Farmer associations (Okantah, 2003) would seem to be a way forward to improve farmer share of the final product price, replacing the present middlemen. There was evidence of the availability of limited extension advice, including health care, from government sources, private practitioners, and farmer co-operatives. Difficulties with marketing, particularly marketing poultry meat, have already been referred to. Farmer associations should be a means of empowering small farmers, giving them greater influence not only in obtaining inputs but also in terms of obtaining satisfactory prices for their products. Extension services and non governmental organisations (NGOs) could well play a part here, helping associations to develop the necessary skills to undertake this important role.

Conclusions

Perhaps one of the most important changes that could be achieved by small-scale poultry producers is to organise themselves effectively into producer associations and to acquire the skills required to effectively market their products, thus achieving a greater share of the final product price. Such organisation might also lead to improvements in the supply of inputs such as vaccines and day-old chicks, both of which are a concern to some of the farming community. Large, powerful associations may also be able to hire specialist advisors, or provide the incentive for the development of private practitioners. The state sector is perhaps best placed to encourage and hasten this development by advising and helping small farmers to set up and organise such associations. Given that such

associations have not always been successful in the past, firm guidance from the state sector would seem to be essential.

Backyard poultry production plays an important role as the main or secondary occupation for the peri-urban farmers participating in this survey. Small-scale poultry producers are confronted with several problems. Constraints associated with inputs such as availability of day old chicks, feed availability, cost and quality and marketing of produce among others, post a gloomy and uncertain future for the industry. It is important to assist farmers with training and information. In particular, empowerment through training in the areas of feed formulations, formation of marketing associations and business management information would go a long way to sustain small-scale production of commercial poultry as a backyard activity in peri-urban environments. Other aspects of this Project R7631 (Yates *et al., 2004)* addressed some of these needs.

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