

SOCIO-ECONOMICS OF FREE-RANGE POULTRY PRODUCTION AMONG AGROPASTORAL WOMEN IN GIWA LOCAL GOVERNMENT AREA OF KADUNA STATE, NIGERIA

AJALA¹, M. K., NWAGU², B. I. and OTCHERE¹, E. O.

*¹Livestock Systems Research Programme, National Animal Production Research Institute
Ahmadu Bello University, Zaria, P.M.B. 1096, Zaria, Nigeria.*

*²Poultry Research Programme, National Animal Production Research Institute
Ahmadu Bello University, Zaria, P.M.B. 1096, Zaria, Nigeria.*

*Correspondence: E-mail: kofojala@yahoo.com, Tel.: 234 803 592 0264

SUMMARY

A survey of free-range poultry production by 150 agro pastoral women in Giwa Local Government Area of Kaduna State, Nigeria was conducted by means of questionnaire administration and participant observations. Results of the study revealed that most respondents owned at least one poultry specie. Local chickens were found to be the commonest followed by guinea fowls then ducks. Respondents who have mixed flocks had larger holding sizes. The structural features of poultry populations owned by the respondents indicated removal of both males and females from the flocks. Matured females averaged 30.9, 33.7 and 22.4% for chickens, guinea fowls and ducks respectively. Whereas, matured males averaged 11.1, 5.9 and 12.2% for chickens, guinea fowls and ducks respectively. Chicks, keets and ducklings averaged 42.5, 52.0 and 46.2% respectively. Mating ratio in the sampled population was 2.4 hens to 1 cock. It was observed that the flocks are not closed production units. Both males and females appeared to be removed from the flocks for sale, home consumption or gift. Most chickens' and ducks' eggs were left to be incubated. Guinea fowls were said to be poor mothers. There is a relatively much more active market in guinea fowl eggs than of chickens and ducks due to its distinct game flavor and taste. Incomes from sales of birds and eggs serve as reserve for important household expenditures. Problems with poultry production and the desired interventions were highlighted.

KEYWORDS: Rural poultry, Agro pastoral women, Management

INTRODUCTION

The poultry population in Nigeria is estimated at 104.3 million comprising 72.4 million chickens, 11.8 million ducks, 4.7 million guinea fowls, 15.2 million pigeons and 0.2 million turkeys (FLDPCS, 1992). Poultry serves as a rich source of animal protein which is crucial in human nutrition. The per caput animal protein consumed per day in Nigeria and indeed in the continent falls below the FAO recommended quantity of 35 grams (FAO, 1999). Recently, animal protein production in Nigeria is reported to be about 4.5 grams per caput per day (Atsu, 2002). Animal protein intake has

been on the decline as a result of the ever-increasing human population and the high cost of livestock production inputs. The effect of inadequate animal protein intake is felt more among the rural dwellers that make up about 85% of the extreme poor in the country (FOS, 1995). The main sources of animal protein in Nigeria include beef, chicken, mutton, eggs, fish and recently rabbit. Of all these sources of animal protein, poultry has the highest contribution to animal protein intake of the rural dwellers. This is because poultry has the highest feed conversion rate and produces the cheapest, commonest and the best source of

animal protein (Ojo, 2002).

In Nigeria, rural poultry represents a significant part of the rural economy in particular and of the national economy as a whole. According to Ajala *et al* (1997) rural households maintain the bulk of poultry in Nigeria under low-input extensive system of management. Rural poultry also constitutes 43% and 89% of the national egg and poultry meat production respectively, with an annual output of 67,000 metric tonnes of meat and 82,000 metric tonnes of eggs (Adegeye *et al.*, 1988). Besides the provision of easy accessible income for small-holders, rural poultry plays a significant role in the cultural life of rural people in the following ways: gifts to visitors and relatives; starting capital to youths and newly married maidens, and sacrificial offerings in traditional worship.

The importance of poultry as a source of meat and eggs to improve the diet of people in Nigeria has long been recognized (Adegeye *et al.*, 1988; Otchere *et al.*, 1990). The fact that local chickens are reared under extensive management system by rural households is also widely recognized. Rural poultry production under traditional management has been known to be the domain of women, most especially in Northern Nigeria.

Despite the fact that women are keepers of rural poultry under the extensive management system, little or no attempt has been made to investigate the socio-economic roles of women in village poultry production. The need to develop local poultry to supplement the ever-increasing demand for animal protein in Nigeria needs no emphasis. The need to come up with recommendations to improve the productivity of women in rural poultry production, calls for a baseline data on the socio-economics of the producers.

Therefore, this study seeks to (i) describe the socio-economic characteristics of poultry producers in the study area; (ii) identify the common problems encountered by the respondents, and (iii) suggest areas for possible interventions.

MATERIALS AND METHODS

Study Area

The study was conducted in Giwa Local Government Area of Kaduna State, Nigeria. The area is about 3,350 km² and lies between 11° 00' - 11° 30'N and 7° 00' - 7° 45'E. It is located north-west of Zaria, in the Northern Guinea and Southern tip of the Sudan Savannas (Otchere *et al.*, 1987) and about 640 m above sea level. The average annual rainfall is 1100 mm and this spreads from late April or early May to late October (wet season). The mean maximum ambient temperature varies from 27 - 35°C depending on the season while the average humidity during the wet season is between 72 and 21% during the period of dry cool weather of November to January known as the 'harmattan' (Oyedipe *et al.*, 1982).

Data Collection

The collection of data was by means of personal interviews and participant observation of 150 agro pastoral women selected at random. Bi-weekly visits were made to the households throughout the period of study which lasted for six months (May, 2004-October, 2004) to collect information on the socio-economic characteristics of respondents, production records; problems encountered by pastoral women in rural poultry production and desired management assistance by the women.

Analytical Techniques

Tools of analysis include simple descriptive statistics such as percentages, means, modes and ranges employed to report the socio-economic characteristics of respondents, types of poultry owned, holding sizes, structure of the flocks and desired management assistance.

The problems confronting poultry keepers were measured by constructing a scale for each of the selected seven major aspects of rural poultry production, namely, feeding of brood, feeding of adults, veterinary assistance, predators, death of brood, stealing of birds and poor hatching. The respondents (women) were asked to indicate the degree to which they perceived any of the statements as a problem. The responses and their weighted scores were; Much = 2; Little = 1, and Not at all = 0. The mean problem score for each

of the seven aspects of poultry production was computed. Based on the computed mean problem scores, the problems facing the poultry keepers were ranked.

RESULTS AND DISCUSSION

Personal and Socio-economic Characteristics of Respondents

The result in Table 1 revealed that the modal age range of the respondents was 31-40 years. About 77% of the respondents in the study area were 40

years and below. This implied that most of the respondents were young women. Majority (89%) of the respondents were non-literate while only 11% of the respondents had formal education. However, 40(26.67%) of the respondents indicated that they had attended Quranic school. The low level of literacy found among the respondents was not surprising because of the nature of the pastoral household enterprise (cattle keeping), which entailed movements in search of pasture for animals.

TABLE 1: Percentage distribution of some selected socio-economic characteristics of respondents

Detail	Frequency	%
Age of respondents (years)		
≤ 20	16	10.67
21-30	47	31.33
31-40	52	34.67
41-50	23	15.33
>50	12	8.00
Total	150	100.00
Mean: 37 years		
Marital status		
Married	146	97.33
Single	4	2.67
Total	150	100.00
Educational level		
No formal education	133	88.67
Primary education	17	11.33
Secondary education	-	-
Tertiary education	-	-
Total	150	100.00
Mode: No formal education		
Household size		
Small (1-5 persons)	53	35.33
Medium (6-10 persons)	87	58.00
Large (11-15 persons)	10	6.67
Total	150	100.00
Mean household size = 6 persons		
Poultry keeping as the only occupation		
Yes	18	12.00
No	132	88.00
Total	150	100.00
Poultry keeping experience (years)		
≤ 5	12	8.00
6-10	40	26.67
11-15	48	32.00
16-20	30	20.00
> 20	20	13.33
Total	150	100.00
Mean keeping experience = 12 years		
Motivation for keeping poultry		
Income only	40	26.67
Consumption only	32	21.33
Hobby	3	2.00
Income and consumption	75	50.00
Total	150	100.00
Sources of parent stock*		
Inherited	9	6.00
Neighbours	48	32.00
Gift	6	4.00
Market	120	80.00
*More than 100% because of multiple response		
Earnings from sales of either birds or eggs		
≤N1,500 and less	57	38.00
N1,501-N2,000	75	50.00
N2,001-N2,500	15	10.00
>N2,500	3	2.00
Total	150	100.00

Source: Field survey, 2004

Only 12% of the respondents were full-time poultry keepers, while the majorities (88%) of the respondents were part-time poultry keepers. Hence rural poultry production was essentially a part-time activity, with respondents' major occupation being sales of dairy products. Results in Table 1 also revealed that majority (67%) of the respondents had less than 15 years poultry keeping experience. The mean poultry keeping experience was 12 years. Majority of the respondents acquired their foundation stock from the open market while others acquired theirs through neighbours, gifts (from friends and relations) and inheritance. The primary reason for keeping poultry given by 50% of the respondents was for both income and consumption purposes. About 27% of the respondents raised poultry mainly for income whereas 21% of the respondents raised poultry for consumption only. Only 2% of the respondents kept poultry as a way of life (hobby). Thus women use local poultry as secure investment that can later be converted when cash is needed. The eggs and the birds, apart from yielding income almost on a regular basis, served as sources of protein for these women and their children.

Respondents reported to have earned from the sales of birds and eggs between N2, 235 in the last 12 months with mean revenue of N1, 650 per woman. The actual responses were categorized into four groups. Category one comprised of those respondents who got N1, 500 and less from sales of either birds or eggs. Those who earned between N1, 501 N2, 000, N2, 001 N2,500 and more than N2, 500 were grouped into the second, third and fourth categories respectively. The results of the study showed that 38% of the respondents fell in the first category while the second, third and fourth categories were responsible for 50%, 10% and 2% respectively of the total samples income derived from the sales of both birds and eggs.

Ownership patterns and holding sizes

Most respondents owned one poultry specie or the other. Local chickens were the commonest followed by guinea fowls and then ducks. Table 2 shows the distribution of poultry and mean holding sizes of respondents. Respondents who had mixed flocks had larger holding sizes. It was observed that none of the women owned pigeons. The reason advanced by them was that pigeons were only owned by children. Majority (68%) of the women owned single specie while the remaining (32%) owned mixed flocks. Mixed flock owners had larger holding sizes.

Demographic structure

The structural features of poultry populations owned by the respondents indicated removal of both males and females from the flocks. Adult females averaged 30.9, 33.7 and 22.4% for chickens, guinea fowls and ducks, respectively. Whereas, adult males averaged 11.1, 5.9 and 12.2% for chickens, guinea fowls and ducks respectively. Chicks, keets and ducklings averaged 42.5, 52.0 and 46.2% respectively. These results are consistent with results of a similar study by Otchere *et al* (1990) on local poultry production in the same study area. Ajala et al; (1997) also reported that keets were all fostered by chicken hens since respondents do not allow guinea fowls to hatch their own eggs. Guinea fowl hens have poor mothering ability hence their eggs were hatched by local chicken hens.

TABLE II: Distribution of poultry holdings and mean flock size.

Poultry type	No. of respondents	% of Total Respondents	Mean flock Size
Chickens only	78	52	18.2
Guinea fowls only	20	13	9.0
Ducks only	5	3	12.1
Chickens and guinea fowls	30	20	33.3
Chickens and ducks	7	5	21.4
Chickens/guinea fowls/ducks	10	7	49.3
Mean chicken holding size	-	-	22.1
Mean guinea fowl holding size	-	-	22.24
Mean duck holding size	-	-	5.6

Source: Field survey 2004.

It was observed that the flocks were not closed production units. Both males and females appeared to be removed from the flocks for sale, home consumption or gift. Table 3 shows the average percentage number of birds said to have been disposed of by respondents over the last 12 months, while Table 4 shows the average percent number of eggs said to have been disposed of by the women.

The result showed that most chickens' and ducks' eggs were left to be incubated. Guinea fowls were not allowed to hatch their eggs because they were said to be poor mothers. Guinea fowls are seasonal breeders, laying mainly during the rainy season (April-October) (Nwagu and Alawa, 1995). Most of the guinea fowl eggs were sold or consumed by the households while few were hatched by local chicken hens. Chickens lay throughout the year while ducks lay only in the rainy season. Hatchability of chickens and ducks in this study are slightly higher than values obtained by Otchere *et al* (1990) for same species in the same study area.

Mating ratio in the sampled population was 2.4 hens to one cock. Only 38% of the women had a 'resident' male. There was a relatively more active market in guinea fowl eggs compared to that of chickens and ducks. This is probably due to its distinct game flavor and taste.

Management Practices

It was observed that poultry are raised under a free range system and are sheltered in barns or farmers' houses at night. They scavenged in gardens, village alleys and surrounding farms, feeding on crop residues, seeds, insects, worms, green forage and household wastes as they roamed about village precincts. Clean water is not usually provided despite the hot, dry and humid climate. The non-conventional feeds used routinely or as supplements to local poultry feeding include maize, millet, guinea corn, rice and soybean offals. Women offer supplementary feeds in handfuls occasionally.

TABLE III: Percent number of birds disposed of by women over the last 12 months.

Species	Sold	Home consumption	Gift
Chickens	66.2	25	8.8
Guinea fowls	64.8	23	7.2
Ducks	78.0	20	2.0

Source: Field survey, 2004.

TABLE IV: Percent number of eggs disposed of by women over the last 12 months.

Species	Sold	Home consumption	Gift	Incubated	Hatched	Hatchability (%)
Chickens	19.5	22	15.0	43.5	37.7	86.7
Guinea fowls	45.8	26	10.5	17.7	11.4	-
Ducks	15.3	20	4.7	60.0	43.0	71.7

Source: Field survey, 2004.

There are many problems associated with these management practices. Table 5 shows the list of problems encountered (by the women producers) and their mean scores. Analysis revealed that respondents ranked predators (snakes, hawks, dogs, etc.) as a major constraint. Prevalence of diseases and poor hatching ranked second and third respectively. Rural poultry suffer losses from diseases caused by viruses, bacteria and parasites. Common poultry diseases reported by the women are Newcastle, Gomboro, fowl pox, fowl typhoid, fowl cholera and coccidiosis. A considerable proportion of mortality in rural poultry is also due to predators. Obviously a

high mortality rate can reduce the number of birds being raised. Again if the problem of poor hatching of guinea fowl eggs could be overcome, the producers are likely to have greater returns.

Desired Management Assistance

The types of assistance desired by agro pastoral Fulani women in order to overcome many of their problems are presented in Table 6. Veterinary assistance is the most important intervention the women desire to have at their disposal. This assistance is expected to help overcome mortality due to diseases.

TABLE V: Mean scores and ranking of problems associated with poultry production in Giwa Local Government Area of Kaduna State

Problems	Mean (\bar{x}) score	Ranking
Predators	8.49	1 st
Diseases	7.08	2 nd
Poor hatching	6.38	3 rd
Death of brood	5.45	4 th
Feeding of brood	4.10	5 th
Stealing of brood	3.32	6 th
Feeding of adult	2.07	7 th

Source: Field survey, 2004.

Provision of credit/loan to women producers ranked second in the order of importance. This is expected to help them provide any form of

housing in order to keep the birds safer (from predators) than they were on the free-range management.

TABLE: VI Order of importance of various interventions desired by respondents

Interventions	Importance (%)	Ranking
Veterinary assistance	31	1 st
Credit (loan)	22	2 nd
Fertile egg to hatch	18	3 rd
Adult layer	14	4 th
Day old chick	10	5 th
Adult male	5	6 th

Source: Field survey, 2004.

Another desired intervention is availability of fertile guinea fowl eggs for hatching. This is in line with poor hatching as one of the problems identified in Table 5. Fertile hatchable eggs would help reduce the poor hatching problem of guinea fowl eggs. These desired interventions should be given adequate consideration if women producers would continue to contribute to the protein requirements of the Nigerian populace.

CONCLUSION AND RECOMMENDATIONS

The study concludes as follows:

1. Women poultry keepers in the study area can be regarded as small-scale, part-time producers.
2. Incidence of diseases and predators are the most pressing problems of the agro-pastoral women poultry keepers.
3. There is need for veterinary intervention in order to help the women overcome losses due to predators and diseases.
4. Women's educations on feeding of brood and simple disease control programmes are possible short-term methods to improve rural poultry production in the study area.
5. Credit facilities should be extended to the women poultry keepers in order to enable them provide shelter for the birds to keep them safe from predators.
6. Technical know-how for improving production should be made available to women poultry keepers through extension service. Thus the extension workers have a major role to play in improving rural poultry production.

REFERENCES

- ADEGEYE, A.J., IKPI, A.E., AKINYODOYE, V.O., DITTOH, J.S., OLUYEMI, J.A. and AMAKIRI, S.F. (1988): Second national poultry survey. A study commissioned by the Federal Livestock Department, Federal Ministry of Agriculture, Water Resources And Rural Development, Ikoyi, Lagos.
- AJALA, M.K., NWAGU, B.I. and OSUHOR, C.U. (1997): Socio-economic of free-range guinea fowl production among agro pastoral Fulani Women in Giwa Local Government Area of Kaduna State, Nigeria. *Inter. J. Trop. Agric.*, **15**(1): 37-44.
- ATSU, D.W. (2002): Contributory role of animal production in national development. Proc. 7th Ann. Conf. Anim. Sci. Ass. Of Nig. (ASAN), Sept. 16-19.
- FEDERAL DEPARTMENT OF LIVESTOCK AND PEST CONTROL SERVICES (FLDPCS, 1992). Nigerian National Livestock Survey, Abuja, Nigeria.
- FEDERAL OFFICE OF STATISTIC (FOS, 1995). Abstract of Statistics, 1995 (Edition).
- FOOD AND AGRICULTURAL ORGANIZATION (FAO) (1999): Statistical Database. www.fao.org. Food and Agricultural Organization of the United Nations. Rome, Italy.
- NWAGU, B.I. and ALAWA, C.B.I. (1995): Guinea fowl production in Nigeria. *Wild. Poult. Sci. J.*, **51**: 261-270.
- OJO, S.O. (2002): Analysis of the risk factors in commercial poultry production in Osun State, Nigeria. in: increasing household protein consumption through improved livestock production. V.A. Aletor and G.E. Onibi, Eds. Proceedings of the Nig. Soc. for Anim. Prod. **27**: 342-344.
- OTCHERE, E.O., AHMED, H.U., ADENOWO, T.K., KALLAH, M.S., BAWA, E.K., OLORUNJU, S.A.S. and VOH, A.A. (Jr.) (1987): Sheep and goat production in the traditional fulani agro pastoral sector of Northern Nigeria. *Wild Anim. Rev.*, **64**: 50-55.

OTCHERE, E.O., ADEOYE, A.T., GEFU, J.O. and ADEWUYI, A.A. (1990). Preliminary Observations on Village Poultry Production in North-Central Nigeria. In: Sonaiya, E.B. (Ed.) "Rural Poultry in Africa." Proc. IWRPDA Thelia House, Ilfe-Ife, Nigeria. 13th 16th November, 1989; 196-200.

OYEDIPE, E.O., BUVANENDRAN, V. and EDUVIE, L.O. (1982). some factors affecting the reproductive performance of White Fulani (Bunaji) Cattle. *Trop. Agric. (Trinidad)*, **59**: 231-234.