A Survey on Turkey Rearing in Rural Areas of Kwara State, Nigeria

Research Article

O.J. Amao[1], K.L. Ayorinde[1] and T.R. Fayeye[1*]

[1] Department of Animal Production, University of Ilorin, P.M.B. 1515, Ilorin, Kwara State, Nigeria

*Correspondence E-mail: fayetiro@unilorin.edu.ng

ABSTRACT

A participatory rural appraisal technique (PRAT) was used to obtain information from 132 randomly selected turkey farmers in two out of four agricultural development zones in Kwara state, Nigeria. Data were obtained on socio-occupational status of farmers, their production objectives, experience, flock structure, management practices, marketing and consumption of turkey eggs. The results showed that there was more male turkey farmers (52.27%) than females. The average age of farmers was 52.6 years and was either Christian or Muslim (43.18% *vs*. 56.82%). Most of the farmers were literate and relied solely on the local breed for their production. The mean flock size was 13 birds per farmer. The observed plumage colours were black, white and lavender. Over 90% of the birds were kept either extensively or in a semi-intensive system using locally available food wastes and grains. The mean mating ratio was 1: 1.66. Birds were selected mainly for body weight, while most of the sale of turkey occurs during Christmas (65.15%). About 79% of farmers consume turkey eggs meant for hatching because of their love for the taste of the eggs or due to the inability of the hen to incubate all eggs at once. Results indicate that turkey production is still at subsistence level characterised by poor breeding, feeding, housing and marketing. Improved turkey production will require a more vigorous public extension services. It also calls for the introduction of improved local or crossbred turkeys with a higher genetic potential.

KEY WORDS breeding, extension service, housing, plumage colour, turkey.

INTRODUCTION

Village poultry production systems which are practiced in low income food deficit countries (LIFDCs) have been described (Gueye and van't Hooft, 2002; Adebayo *et al.* 2013). Although birds under traditional village conditions are subject to high mortality due to accidents, predation or diseases, it is still very important in LIFDCs, especially when we consider the huge foreign exchange implication on importation of exotic stocks and genetic-environment interaction which often lead to loss of fitness of the exotic birds (Ibe, 1990). Turkey production is an important and highly profitable agricultural industry with a rising global demand for its products (Anandh *et al.* 2012; Yakubu *et al.* 2013). Nigeria produces 1.5-2 million tons of turkey annually (Mbanasor and Sampson, 2004). Most of the turkeys produced in Nigeria are raised under the village or subsistence production system. Yakubu *et al.* (2012) suggested the need for both genetic improvement and better management practices to enhance the performance of indigenous stock. However, effective breeding strategies and management practices to achieve improvement in turkey production cannot be achieved without basic information on flock structure and current rearing practices. Knowledge of flock structure and its dynamics help in the identification of the age and number of birds to be maintained within the breed-

ing population (Okeno *et al.* 2012). Information on village turkey production in Kwara state is limited. Hence this study was aimed to identify the flock structure, scope of production, management and marketing practices involved in turkey production among rural poultry farmers in Kwara state, Nigeria.

MATERIALS AND METHODS

The study was undertaken in Kwara state, Nigeria (latitude 08. 98 ˚N and longitude 04. 56 ˚E, an annual rainfall ranging from 800-1500 mm and daily temperatures ranging from 22 to 33 ˚C).

Sampling procedures and sampling size
A purposive sampling was used to select zones C and D, with headquarters in Shao and Igbaja, respectively out of the four ADP zones in the state. Further purposive sampling was used to select four local government councils (Asa, Moro, Ilorin East and Ilorin South) out of a total of five local government councils in zone C and five local government councils (Isin, Ifelodun, Offa, Oke Ero and Ekiti) out of a total of seven in zone D. A participatory rural appraisal technique (PRAT) was used to obtain information from 132 randomly selected farmers in the two zones. Data were obtained on socio-occupational status of farmers, their production objectives, experience, flock structure, management practices, marketing and consumption of turkey eggs.

Data analysis
Data collected were summarised using arithmetic mean and percentage (Klotz, 2006).

RESULTS AND DISCUSSION

Socio and occupational background of turkey farmers
The social and occupational background of turkey farmers in the two zones as well as their rearing experience and purpose for keeping turkey are presented in Table 1. There were more adult males (52.27% at a mean age of 52.60 years) among the sampled farmers. All the turkey keepers were literate but only 20% had more than secondary formal education. There was a good mixture of the two major religions among the farmers (Christians: Muslim= 43.18%: 56.82%). There was a marked variation between the two zones in the socio-educational backgrounds of the farmers. Zone D had more female turkey farmers and those with higher education status than zone C. There were however higher percentage of males on monthly supplementary source of income among turkey farmers in zone C. Generation of income was the principal reason for going into turkey production in the two zones (76.92% and 65.67% for

zones C and D, respectively). The proportion of farmers interested in raising turkey for consumption were 23.08% and 34.33% for zones C and D, respectively. Most of the sampled farmers had over six years experience in turkey production, but zone C had higher proportion of experienced farmers than zone D.

Source of breeding tom and breed awareness
Data on the source of breeding tom and breed awareness among village turkey farmers in Kwara state is presented in Table 2. Most of the farmers in the two zones depended on personally bred toms for breeding purpose (81.06%), while other farmers depend on local toms obtained from other farmers. Majority of the breeding males were obtained as growers (63.64%). Most of the farmers were aware of exotic breeds, although the level of awareness was higher among farmers in zone C than in zone D (72.31% and 58.21%, respectively).

Flock structure and selection criteria
The results of flock structure and selection criteria used by village turkey farmers in Kwara state are presented in table 3. All the farmers in the two zones keep only local breed of turkey. Flock size was also similar in the two ADP zones with a mean of 12.70 ± 4.29 birds. The predominant plumage colour in the two zones was black, followed by white and lavender (42.87%, 35.15% and 23.68%, respectively). Most of the farmers in the two zones selected breeding stock on the basis of bird's body weight (80.00% and 70.14% for zones B and D, respectively). Only 13.64% and 11.36% selected breeding turkey on the basis of plumage colour and hatchling size, respectively.

Management practices, marketing and consumption
The results on management practices, marketing and consumption of turkey eggs in the two ADP zones are presented in Table 4. Over 90% of birds in the two zones are kept either extensively or by semi-intensive rearing. Majority of farmers relied on locally mixed feeds or food waste with grains. Most of the sale of turkey in the two zones occurred during Christmas (65.15%), while sales during other festive periods accounted for about 9.09% of total sales. About 79% of farmers in the two zones consume turkey eggs meant for hatching because of the taste or due to the inability of the hen to incubate all her eggs. The present results on gender difference in the ownership of turkey agrees with the report of Yakubu *et al.* (2013) who observed a higher numbers of male than female among turkey keepers in Nassarawa state. The observed higher numbers of female turkey keepers in zone D may be due to greater awareness and interest in turkey rearing among them than their male counterparts.

Table 1 Socio-occupational background, purpose and rearing experience of village turkey farmers in Kwara state, Nigeria

Parameters		Zone C (n=65)	Zone D (n=67)	Mean (n=132)
Sex (%) and age (year)	Male	56.92	47.76	52.27
	Female	43.08	52.24	47.73
	Age	52.20	53.00	52.60
Highest educational %	Adult	0.00	11.94	06.06
	Primary	21.54	20.90	21.21
	Secondary	13.85	34.33	24.24
	Tertiary	15.39	25.37	20.45
	Arabic	30.77	0.00	15.15
	Illiterate	18.46	07.46	12.88
Religion %	Islam	80.00	34.33	56.82
	Christianity	20.00	65.67	43.18
Marital status %	Single	10.77	08.95	09.85
	Married	75.39	86.57	81.06
	Widow (er)	13.84	04.48	09.09
Primary occupation %	Farming	52.31	74.62	63.64
	Artisan	15.39	04.48	09.85
	Salary earner	32.30	20.90	26.51
Reason for turkey rearing %	Food	23.08	34.33	28.79
	Income	76.92	65.67	71.21
Rearing experience (years)	< 5	13.84	32.84	23.49
	6-10	35.39	28.36	31.81
	11-15	20.00	32.83	26.52
	15	30.77	05.97	18.18

Table 2 Source of breeding tom and breed awareness among village turkey (*Meleagris gallopavo*) farmers in Kwara state, Nigeria

Parameters		Zone C (n=65)	Zone D (n=67)	Mean (n=132)
Source of breeding tom %	Farmers' tom	84.62	84.62	81.06
	Other farmer's tom	15.38	15.38	18.94
	Exotic	0.00	0.00	0.00
Stage of purchase %	Day old	21.54	35.82	28.79
	Few weeks	66.15	61.19	63.64
	Adult bird	12.31	02.99	07.57
Awareness of exotic stock %	Yes	72.31	58.21	65.15
	No	27.69	41.79	34.85
Source of Information on new breed %	Other farmers	57.45	61.54	59.30
	Extension officer	42.55	38.46	40.70

The average age of turkey owners in the study area was much higher than 38 years reported by Yakubu *et al.* (2013) for turkey owners in Nassarawa state. The present result showed that the farmers in the two zones recognised turkey as an important source of income and family protein. A similar observation was made by Emmah (2006) in his report on the economic importance of turkey production in Kaduna state. The mating ratio in the present study was slightly below the ratio of 1: 2.75 reported by Yakubu *et al.* (2013) for turkey raised by local farmers in Nassarawa state.

It was however at the lower limit of the continuum (1.67-3.69) reported for native turkey breeders in the state of Mehoecan, Mexico (Lopez Zavaha *et al.* 2008; Okeno *et al.* 2012). It can be concluded that mating ratio under most traditional farming conditions are below the 1 tom: 10

hens recommended by Bolla (2006). The present study revealed that information about new breeds was poorly disseminated through public extension service and majority of the farmers had to rely on information received from other farmers.

The probable reason for farmers' lack of interest in rearing exotic turkey in the study area may be due to the poor public extension service in Kwara state. The small flock size observed for turkey under village condition in this study is not peculiar; an earlier study conducted in the same state by Adebayo *et al.* (2013) showed similarly low flock size for chicken, duck and guinea fowl. The low mating ratio in the present study fell on the lowest point of the continuum when compared with the range reported for native turkey in the state of Michoacan, Mexico (Lopez Zavala *et al.* 2008).

Table 3 Flock structure and selection criteria used by village turkey keepers in kwara state, Nigeria

Parameters		Zone C (n=65)	Zone D (n=67)	Mean (n=132)
Breed of stock %	Local	100.00	100.00	100.00
Flock structure / mating ratio	Poult	2.19±1.91	2.76±2.15	2.47±2.06
	Toms	3.89±1.86	3.72±1.49	3.99±1.68
	Hen	6.59±2.19	6.60±2.31	6.61±2.26
	Total	12.45±4.00	13.03±4.49	12.70±4.29
	♂:♀	1:1.69	1:1.77	1:1.66
Turkey plumage %	Black	46.70	44.08	42.87
	White	32.05	32.24	32.15
	Lavender	26.28	23.68	24.98
Selection criteria %	Body weight	80.00	70.14	75.00
	Plumage color	2.31	14.93	13.64
	Hatchling size	07.69	14.93	11.36

♂ and ♀: ratio of male to female.
SD: standard deviation.

Table 4 Management practices, marketing and consumption of indigenous turkey in kwara state, Nigeria

Parameters		Zone C (n=65)	Zone D (n=67)	Mean (n=132)
Housing %	Extensive	49.23	37.31	43.18
	Semi-intensive	41.54	58.21	50.00
	Intensive	09.23	04.48	06.82
Feeding %	Commercial	21.54	13.43	17.42
	Formulated	40.00	50.75	45.46
	Localfood	38.46	35.82	37.12
Marketing %	Any time	21.54	29.85	25.76
	Christmas	63.08	67.16	65.15
	Other festive period	15.38	02.99	09.09
Egg consumption %	Yes	87.69	79.10	83.33
	No	12.31	20.90	16.67
Reasons for consumption %	Taste	38.60	37.74	38.18
	Size of egg	24.56	16.98	20.91
	Excess lay	36.84	45.28	40. 91

The low mating ratio obtained in this study is an indication that farmers lack knowledge of appropriate male: female breeding ratio for maximum productivity and therefore failed to control the breeding system (Zahraddeen *et al.* 2011). The present results also agree with the earlier submission of Roger (2000) that turkey is generally sold during Christmas. The management and breeding practices of the farmers in the study area promote low reproductive success with a resultant negative impact on profitability. The feeding practice which relies mainly on available grains and feed leftover cannot maximally support the growth and production performance of turkey. According to Yakubu *et al.* (2012), improvement in performance of indigenous turkey populations' can be achieved overtime through improvement in management and feeding conditions. A study by Ironkwe and Akinola (2010) on the profitability of turkey production in Ahoada East Local Government Area of Rivers State, Nigeria, showed that high cost of feed is the most significant constraint recognised by the resource poor rural farmers. This perception may be responsible for the feeding of village turkey on nutritionally poor waste foods and grains.

There is a need to strengthen public extension serve on adaptable management and breeding strategies to enhance productivity and profitability of village turkey production in the study area.

Body weight and plumage colour were two most important selection criteria in the present study. This agrees with the findings of Desta and Wakeyo (2012) who reported that selection in local chicken was mainly based on physical traits like body size. Yakubu *et al.* (2013) showed that body size, egg number, hatchability, heat tolerance, body conformation and disease resistance were the traits of utmost importance for selection purpose among rural turkey farmers in Nasarawa state.

CONCLUSION

Turkey production is still at subsistence level characterised by poor feeding, housing, breeding and marketing. Improving turkey production requires a more vigorous public extension service on management and marketing strategies. It also calls for the introduction of improved local or crossbred turkey with a higher genetic potential.

REFERENCES

Adebayo S.A., Ogunlade I. and Fayeye T.R. (2013). Scope and common diseases of rural poultry production by rural women in selected villages of Kwara state, Nigeria. *Int. J. Poult. Sci.* **12 (3),** 126-129.

Anandh M.A., Jagatheesan P.N.R., Kumar P.S., Rajarajan G. and Paramasivam A. (2012). Effect of egg weight on egg traits and hatching performance of turkey (*Meleagris gallopavo*) eggs. *Iranian J. Appl. Anim. Sci.* **2,** 391-395.

Bolla G. (2006). Raising turkeys. Available: http://www.thepoultrysite.com/articles/606/raising-turkeys Accessed Oct. 2013.

Desta T.T. and Wakeyo O. (2012). Uses and flock management practices of scavenging chickens in Wolaita zone of southern Ethiopia. *Trop. Anim. Health Prod.* **44,** 537-544.

Emmah S.A. (2006). Economic analysis of turkey production in Kaduna and Zaria towns of Kaduna state, Nigeria. MS Thesis. Fac. Agric, Ahmadu Bello University. Nigeria.

Gueye E.F. and van't Hooft K. (2002). Networking for family poultry development. *LEISA.* **18,** 36.

Ibe S.N. (1990). Utilizing local poultry genetic resources in Nigeria. Pp. 108-112 in Proc. 4th World Cong. Genet. Appl. Liv. Prod. Edinburgh, Scotland.

Ironkwe M.O. and Akinola L.F. (2010). Profitability of turkey productuion in Ahoada East local government area of Rivers State, Nigeria. *Cont. J. Agric. Sci.* **4,** 38-41.

Klotz J.H. (2006). A Computational Approach to Statistics. Department of Statistics University of Wisconsin, Madison, United States.

Lopez Zavala A., Monterrubio Rico T.C., Cano Camacho H., Chassin Noria O., Aguilera Reyes U. and Zavala Páram M.G. (2008). Native turkey (*Meleagris gallopavo gallopavo*) backyard production systems'characterization in the physiographic regions of the state of Michoacan, Mexico. *Téc Pecu Méx.* **46,** 303-316.

Mbanasor J.A. and Sampson A. (2004). Socio-economic determinants of turkey production among Nigerian soldiers. *Int. J. Poult. Sci.* **3(8),** 497-502,

Okeno T.O., Magothe T.M., Kahi A.K. and Peters K.J. (2012). Breeding objectives for indigenous chicken: model development and application to different production systems. *Trop. Anim. Health Prod.* **45(1),** 193-203.

Roger M.B. (2000). African minor livestock species Pp. 314-338 in The Origin and Development of African Livestock. M.B. Roger and K.C. Macdonald, Eds. UCL press. London.

Yakubu A., Abimiku K., Musa Azara I.S., Idahor K.O. and Akinsola O.M. (2013). Assessment of flock structure, preference in selection and traits of economic importance of domestic turkey (*Meleagris gallopavo*) genetic resources in Nasarawa state, Nigeria. *Liv. Res. Rural. Dev.* **25(1),** 18.

Yakubu A., Peters S.O., Ilori B.M., Imumorin I.G., Adeleke M.A., Takeet M.I., Ozoje M.O., Ikeobi C.O.N. and Adebambo O.A. (2012). Multifactorial discriminant analysis of morphological and heat tolerant traits in indigenous, exotic and crossbred turkeys in Nigeria. *Anim. Genet. Res.* **50,** 21-27.

Zahraddeen D., Ahemen T. and Aliyu P.I. (2011). On farm studies on breeding characteristics of turkeys (*Meleagris gallopavo*) in parts of Jos plateau, Nigeria. *Adv. Appl. Sci. Res.* **2,** 179-184.