

RURAL PRODUCTION AND PHENOTYPIC VARIATIONS AMONG INDIGENOUS DUCKS IN IMO STATE NIGERIA

¹Kadurumba, O.E., ¹Okoli, I.C., ¹Okere, P.C., ¹Ikpamezie, L.C., ²Nwogu C.M., ¹Egenuka, F.C. and ¹Ngezelonye, I.F.

¹Department of Animal Science and technology, Federal University of Technology Owerri PMB 1526 Imo State, Nigeria

²Department of Animal Science, Imo State Polytechnic Umuagwo, Nigeria

Corresponding Author: kadurumbaoe@yahoo.com

ABSTRACT

Rural production system and phenotypic variation among indigenous duck population in Imo State Nigeria was investigated. Three agricultural zones were selected purposively and a total of 36 households were randomly selected for the study. Structured questionnaires and participatory rural appraisal methods were adopted. Qualitative traits measured include plumage color, eye color, breast color and carbuncle colour. Data was analyzed using descriptive analysis of frequencies and percentages. The results reveals that all the farmers kept only Muscovy ducks, managed their ducks on free range system only and provide supplementary feeds to their ducks. Women were the major keepers of ducks accounting for 55.56% of total duck farmers. Majority of the farmers are literate (29.63%), main reason for keeping ducks is for commercial purpose (41.67%) and ducks were sold in response to farmers need. A large number of the farmers also kept chickens (83.33%) alongside ducks while 75% of all eggs laid are hatched but only 8.33% survive to adulthood. The qualitative trait results showed that black feather color (44.4%) in ducks dominated the others and the brown eye color (58.3%) dominated other colors. Breast colour was dominated by white colour (90.28) while carbuncle colour was only red in colour (100%). Low level of survivability to adulthood was recorded in the study and these calls for further studies to aid in preservation, conservation and exploration of indigenous stocks.

Keywords: indigenous knowledge, ducks, rural production, phenotype.

Introduction

The poultry industry is one of the most important aspect of the Nigerian economy contributing substantially to the sector Nations Gross Domestic Product (GDP) (Ambaliet *al.*, 2003). The genetic resource of poultry are mainly represented by domestic local chicken (*Gallus gallus domesticus*), guinea fowl and ducks (*Carina spp*) (Youssaouet *al.*, 2010). These local avian species are bred under traditional breeding system. They also serve as a means of providing additional income to the generally resource poor small holder farmers (Gueye, 2004). Chicken dominate the poultry egg and meat sector in several parts of the world, although ducks represent the second largest population in Africa

after chicken. Oluyemi and Ologbobo, (1997) reported that the local ducks in Nigeria constitute about ten percent of the local poultry population Ferdus (1999) reported that increased duck rearing would be a great addition to total poultry output since they do not interfere with chicken production due to different rearing and scavenging venues. In Nigerian, local ducks are raised on the free range alongside with domestic chicken and though ducks are hardier and more resistant to disease and environmental hazards, they are fewer than the chicken due to basically cultural belief which tends to portray dusks as mystique dirty birds (Obinne, *et al.*, 2000). Although the duck is well known in Nigeria, it is not intensively utilized in the country as it is in the Asian countries where ducks constitute major source of meat and eggs for the populace. Hence this study was undertaken to find out level of rural duck production among farmers and also identify and describe various breeds of ducks kept by farmers in Imo state to ascertain the level of production in the state and provide data for further research work.

Materials and Methods

The study was carried out in Imo State, Nigeria. Imo State falls within the rainforest agro-ecological zone, and is found between latitudes $4^{\circ} 45' N$ and $7^{\circ} 25' N$ and longitudes $6^{\circ} 50' E$ and $7^{\circ} 25' E$ with an area of 5,100sqkm. Purposive sampling technique was used in the study. A total of 36 duck farmers (12 duck farmers each) from the three agricultural zones in Imo State were purposively selected. The choice is based on the number of ducks farmers found in these areas as duck rearing was not popular among poultry farmers in the State. Data were collected from both primary and secondary sources. The primary data was collected using structured questionnaire which was distributed to duck farmers. The primary data collected included information on Socio-economic characteristics of duck farmers (such as age, sex, and educational level etc), and qualitative traits (such as eye colour plumage colour, body colour etc). The secondary data was collected from published and unpublished literatures, thesis journals magazines, proceedings and bulletins. Data on Socioeconomic characteristics of duck farmers and qualitative trait were subjected to descriptive analysis using frequencies and percentages.

Results and Discussion

Table 4.1 shows the socio-economic characteristics of duck farmers in Imo State. The result indicates that a larger number of farmers (52.78%) engaged in full time farming as their source of livelihood. The majority of farmers who keep ducks were women and they accounted for 55.56% of the total duck farmers in the State. This result indicates that women are responsible for rearing poultry as full time farmers and supports the findings by Ogah and Momoh, (2013) that reported that women participation in indigenous duck production is greater than the male farmers in Northern Nigeria. Gueye (1998), Mcanishet *al.*(2004) and Mogesse (2007), also reported that in a number of African countries

poultry flocks are largely reared by women. Also this finding contradicts the work of Banga-Mbokoet *al.*, (2007) that reported that duck keepers were mainly men (80% versus 20% of women) in Congo-Brazzaville. Literacy level amongst the farmers indicates that 58.33% of total respondent got secondary education, 13.8% reached the tertiary institution and only 11.1% did not achieve any formal education. This result contradicts the report by Ogah and Momoh (2013) that reported that a greater percentage of indigenous duck farmers in Northern Nigeria could not read or write.

Table 4.1; Socioeconomic Characteristics of Duck Farmers in Imo State.

Parameter	Frequency	Percentage
Nature of practice		
Full time farmer	19	52.78
Part time farmer	17	47.22
Sex		
Male	16	44.44
Female	20	55.56
Educational level		
Primary	6	16.67
Secondary	21	58.33
Tertiary	5	13.89
No formal education	4	11.11

4.2 Duck Breeds and Production performance

The breed of ducks kept by farmers and their production performances is shown in Table 4.2. The result showed that Muscovy duck was the only breed kept by farmers in the sampled areas (100%). 41.67% of the farmers kept ducks for commercial purpose, 27.78% home consumption, 16.6% pets and 13.8% for other reasons. The reason for this could be that most duck farmers in the rural communities keep this duck to earn income to take care of pressing needs. The study also reveal that 83.33% of the duck farmers also kept chicken aside ducks while 11.11% kept other breeds of poultry. The results showed that duck keeping is not popular in Imo State when compared with rural chicken production. This result agrees with Ogah and Momoh (2013) who reported duck rearers do not keep them alone but alongside with other poultry birds particularly chicken, as the play a complimentary role in provision of egg and meat to the rural people. Sick bird were consumed (55.56%) while 27.78% treat their birds with orthodox medicine. From the study average clutch size ranges from 10- 14 per clutch at 83.33%, a comparatively high number of ducklings (75%) were hatched and only 8.33% of ducklings survived to adulthood and was as a result of predators like snakes

and hawks e.t.c. this is not surprising as they are popularly called "street birds" in the area, this agrees with the finding by Banga- Mbokoetal. (2007) that reported high mortality rate for duckling as More than 80% of newly hatched ducklings up to 8 weeks old died. This is one of the constraints towards duck production in the state.

4.3 Management of Ducks

Results for duck management practices by farmers is shown in Table 4.3. The result indicated that almost all farmers provided shelter in either kitchen 27.78%, duck house 13.89% and in other places. It was further indicated that ducks were managed at free range 100% during the day and shelter provided during the night. 72.22% of farmers cleaned the duck shelter daily and 27.78% cleaned them once or twice a week. 44.44% of ducks were fed with kitchen waste and 69.44% were indicated as others which included feeding with leaves, grains. All the farmers provided their ducks with water daily (100%). In case of any sickness, 55.56% of the farmers consumed the ducks, 27.78% treated with orthodox medicine like tetracycline while 16.6%, sold them off.

Table 4.2 Duck Production Characteristics

Parameters	Frequency	Percentage
Duck type		
Muscovy	36	100
Purpose for keeping ducks		
Home consumption	10	27.77
Commercial purpose	15	41.67
Source of manure	5	13.89
Pets	6	16.67
Other breeds of poultry kept		
Chicken	30	83.33
Guinea fowl	2	5.56
Others	4	11.11
Av. No of eggs per clutch		
5-9	2	5.56
10-14	30	83.33
15-20	4	11.11
Av. No of egg per brood		
5-9	6	16.67
10-14	27	75.00
15-20	3	8.33
Av. No. of ducklings Hatched		
5-9	6	16.67
10-14	27	75.00
15-20	5	8.33
Av. No. reaching Adulthood	3	8.33

Table 4.3 Indigenous Duck Management Practices

Parameter	Frequency	Percentage
Type of duck management		
Free range	36	100
Type of night shelter		
Kitchen	10	27.78
Duck house	5	13.89
Others	21	58.33
Cleaning of shelter		
Once/ twice a week	10	27.78
Daily	26	72.22
Type of feed		
Commercial feed	5	13.87
Kitchen waste	16	44.44
Others	25	69.44
Provision of water	36	100
Have you ever had any sick Duck		
Yes	36	100
No	0	100
What do you do to sick ducks		
Sell them	6	16.66
Treat with orthodox medicine	10	27.78
Consume them	20	55.56

4.4 Qualitative Traits of Indigenous Ducks

The qualitative traits measured for indigenous ducks is shown in Table 4.4. The wide variation of plumage color of indigenous population of ducks in Imo State indicates the existence of genetic variability. This study, shows that the indigenous ducks in Imo State consist of seven phenotypes, the black phenotype predominated (44.44%) black and white and brown and black colour had 13.89% respectively, brown and khaki black colour 11.11% each, brown and white colour had 4.16% while the white was the least populated (1.38%). The wide variation of feather colour of indigenous ducks could be as a result of genetic variation accumulated through domestication of species over the years (Crawford, 1990). The description of the qualitative trait were varied not only by plumage colour, but by the breast, eye, and the caruncle colour. The breast colour varied from black, (6.94%) brown (2.78%) and white colour

which predominated by (90.28%). The predominant eye colour is brown (58.33%) followed by black colour (23.61%) and grey (18.06%), while only the red colour was observed for the caruncle colour (100%).

Conclusion

This study identified the socio economic characteristics of rural duck farmers, the type of breeds kept and the production and management systems they practice. Phenotypic variations among indigenous duck population were also investigated by identifying qualitative traits among indigenous ducks kept by farmers. In conclusion rural duck population in Imo state are very small compared to the local chickens partly because less farmers are involved in the business and the low level of survivability to adulthood recorded in the study.

Table 4.4 Qualitative Traits of Indigenous Ducks

Parameter	Study Zones							
	Owerri		Okigwe		Orlu		Overall	
	N=(24)	%	N=(24)	%	N=(24)	%	N=(72)	%
Plumage Colour								
Black/White	0	0	6	25.00	4	16.67	10	13.89
Black	13	54.17	9	37.50	10	41.67	32	44.44
Brown	3	12.50	2	8.33	3	12.50	8	11.11
Brown/White	2	8.33	0	0	1	4.17	3	4.16
White	0	0	0	0	1	4.17	1	1.38
Khaki/Black	4	16.67	3	12.50	1	4.17	8	11.11
Brown/Black	2	8.33	4	16.67	4	16.67	10	13.89
Eye Colour								
Grey	5	20.83	4	16.67	4	16.67	13	18.06
Brown	14	58.33	14	58.33	14	58.33	42	58.33
Black	5	20.83	6	25.00	6	25.00	17	23.61
Breast Colour								
Black	2	8.33	0	0	3	12.50	5	6.94
Brown	1	4.17	0	0	1	4.17	2	2.78
White	21	87.50	24	100	20	83.33	65	90.28
Caruncle								
Red	24	100	24	100	24	100	72	100

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