

ASSESSMENT OF PERFORMANCE AND PROFITABILITY OF SOME EXOTIC STRAINS OF TURKEY IN BOKKOS LOCAL GOVERNMENT AREA, PLATEAU STATE, NIGERIA

SIR, S.M.; HARUNA, U; *KALLA, D.J.U. & SORO, J.Y.

School of Agriculture and Agricultural Technology,
Abubakar Tafawa Balewa University P.M.B 0248 Bauchi, Bauchi State.
Postcode 74004 *Corresponding Author

ABSTRACT

This study was conducted to assess the performance and profitability of exotic strains of Turkey in Bokkos Local Government area of Plateau State. Data used were collected from U.T.C. Farm Nigeria PLC, Tenti Bokkos covering one production period in 1999 (January - May). A total of 2,275 Nicolas white and 2300 BUT - 8 poults were used for the study. Parameters considered were feed intake (FI), cost of feed intake (CFI), Weight gain (WG) and Mortality on weekly basis. Data were analyzed using analysis of variance (GLM) and farm budgeting technique. No significant differences were observed between strains in all the parameters considered except feed intake and weight gains that showed significant differences ($P < 0.01$). With BUT-8 having higher FI and WG of $1,960 \pm 223\text{kg}$ and $9057 \pm 13.89\text{g/bird}$ than Nicolas white which $1,785.0 \pm 202\text{kg}$ and $8,459 \pm 12.14\text{g/bird}$ respectively. Examination of the enterprises showed that it is more economical to raise BUT-8 - than Nicolas white as each naira invested on BUT, 8 -- yields ₦2.87 which was higher than the ₦2.68k obtained from Nicolas white. Therefore farmers should be encouraged to embark on the commercial production of exotic strains especially BUT-8 strains of turkey or they should be advised to cross - breed it with indigenous strains of turkey so as to explore its potentials.

Key words: Turkey, Strains, Performance and Profitability.

INTRODUCTION

Turkey production is a popular enterprise in many parts of the world. This is because the bird is adaptable to a wide range of climatic conditions and could be successfully raised if good management practices are adhered to such as adequate feeding and protection against predators, pests, disease and adverse weather conditions (Behrends, et, al, 1997). The bird is raised primarily for meat purpose, as it grows faster than broiler chicken and have a slaughter weight that is about double or more than that of the broiler chicken at the age of 12 weeks (Emmans, 1984). Although much have been discussed about the contribution of turkey in meeting the dietary requirement of Mankind (Gordon, 1995; Peter, 1996; Leeson and Summers, 2001), in Nigeria however its production is some how restricted. According to Haruna and Hamidu (2004) apart from a few specialized institutions where the birds are intensively managed for research purpose, the bulk of turkeys are traditionally raised under free range system, where they are allowed to

roam about seeking for feeds with occasional feed supplements and minimal veterinary care. Commercialization of turkey production in Nigeria though recently introduced, could be improved and sustained if the enabling environment and incentives could be provided to the farmers. This will serve as basis for achieving self-sufficiency in protein rich food production, especially of animal origin. Improved or exotic strains of turkey could be procured and managed well with readily available resources at farmers disposal, so as to meet the above mentioned goal. This study therefore, assessed the performance and profitability of some exotic Strains of turkey commercially managed by the UTC Farms Limited at Tenti Village in Bokkos Local Government Area of Plateau State, Nigeria. Specifically, the objectives of the study are to:

- (1) Evaluate the performance of the turkey strains under the system of management adopted at the UTC farm.
- (2) Compare the profitability of the exotic strains of turkey raised on the farm.
- (3) Draw policy implications raised by the study.

MATERIALS AND METHOD

The Study Area

The study was conducted at UTC Farms Limited in Bokkos Local Government Area of Plateau State, Nigeria. The LGA is located between latitude 10°71 North and longitude 9°491 East with an altitude of 920.2 meters above mean sea level. The average annual temperature of the area ranges from 13.7°C to 29.1°C. The climate of Tenti village is characterized by two distinct wet and dry seasons. The wet season commences between April/May up to September/October while the dry season starts from September/October to March/April (PSADP, 1994). The vegetation of the area is guinea savannah with some trees growing up to 10 metres or more in height.

The trees occur singly or in clusters and the space in between is occupied by herbaceous, non-woody species growing up to 3 metres tall (PSADP, 1996).

The soil type originates from basement complex and is characterized as water-logged free, sandy loam, moderately deep and ideal for cultivation.

Strains of Turkey Used:

The strains of turkey used were British United, Turkey -8 (BUT-8) and Nicolas white. They were imported from United Kingdom as commercial strains.

DATA COLLECTION

Data were collected weekly throughout the production period for the two strains of turkey. A total of 2,300 BUT-8 and 2,275 Nicolas white were used. The collected data consisted of records of feed intake (FI), weight gain (WG), Mortality, costs of acquisition of poults, feeds, medication and labour as well as income realised through sales of slaughtered and live birds.

DATA ANALYSIS

Simple descriptive statistics and analysis of variance (ANOVA) with Minitab in 1996 was used to analyse the data in order to determine the effect of strain and weeks on feed consumption, weight gain, cost of feed intake,

mortality and other important production indices. To capture the profitability of the enterprises for comparison of the two strains of turkey, a farm budgeting model was used.

Specification of the Models

(a) Analysis of variance (ANOVA)

Data on performance were analyzed using the general linear model (analysis of variance) procedure of the statistical analysis system (SAS, 1987) with strain, FI and WG being main effects.

(b) The Farm Budgeting Techniques

This technique was employed to record the costs and return structure of the turkey enterprise aimed at capturing the profitability level. The model for estimating the profitability using the farm budgeting technique is the net farm income (NFI). According to Haruna et al (2007) it is mathematically expressed

$$NFI = \sum_{i=1}^m P_{yi}Y_i - \sum_{j=1}^m P_{xi}X_j - \sum_{k=1}^n F_{xi}$$

Where

- NFI = Net farm Income
- Y_i = Quantity of the product
- P_{yi} = Unit price of the product
- X_j = Quantity of the variable inputs
- P_{xi} = Price per unit of variable input
- F_{xi} = Cost of fixed inputs
- Σ = Sumation sign

RESULTS AND DISCUSSION

Feed Intake and Weight Gain

The average mean of weekly FI for BUT-8 and Nicolas white were 1,960 ± 223kg and 1,785.0 ± 202kg respectively (Table 1). Weekly FI was significantly (P<0.001) affected as the birds grows, however strain difference in FI was not significantly affected. The weekly FI also increases progressively as the weeks progress up to week 18 with mean of 2,777.6 ± 14.4kg (Table 2). Although non significant strain differences was recorded on FI, but BUT-8 recorded higher FI than Nicolas white. The difference in intake rate could probably be due to differences in size of the birds at the arrival of the birds. Peter (1996) reported that the

consumption rate of birds is proportional to their weight gain. It has been established that But-8 requires more feed for fat deposition than other strains of turkey (Nestor and Brown, 1999); they also observed that the size of the beak for BUT-8 is larger than other breeds of turkey, therefore, contributing to higher feed intake.

Table 1: Effect of Strain on feed intake, weight gain, Cost of feed intake and mortality

Parameters	BUT 8	Nicolas white	Level of sig.
Weekly weight gain (g)	9057±1389	8459±1214	0.01
Weekly feed intake (kg)	1960±223	1785±202	NS
Cost of weekly feed intake (N)	49009±5583	44674±5042	NS
Mortality	2.708±0.74	1.833±0.423	NS

Table 2: Effect of weeks on weight gain, feed intake, cost of feed intake and mortality

Parameters	6	12	18
Weekly weight gain (g)	21550±15.0	8310.0±10.0	13915±10.05
Weekly feed intake (kg)	824.0±50.0	2182.0±50.0	2777.6±14.4
Cost of weekly feed intake (N)	20600±667	54550±12.50	69437±363
Mortality	Withd	1.500±050	Nicolas

Strain significantly ($P < 0.01$) affected the weekly weight gain in the strains of turkey used in the present study; the variation in strain difference in weight gain could probably, be due to genetic variation in feed conversion efficiency in the two strains and in the environment as reported by Nilipour (1998) and also differences in weight of the strains on arrival of the poults.

The average mean of weekly weight gain/bird for BUT-8 and Nicolas white were found to be $9,057 \pm 13.89$ g/bird and $8,459 \pm 12.14$ g/bird respectively (Table 1). The weekly weight gain increased progressively from week 1-18 (Table 2). Similarly Hardin, (1991) reported that weather of a place contributes to either weight gain or loss. Ideally Nicolas white are mostly reared effectively at temperature lower than BUT -8 Costs/returns and Profitability Analysis

The average values of costs and returns of the

two strains of turkey managed at the UTC Farm Tenti are shown in Table 3. Variable costs comprised of costs of acquisition of poults, feeds, medication, electricity and labour. Fixed cost components were based on depreciated values of feeders and drinkers.

Table 3: Cost, Returns and Profitability differentiable between BUT-8 and Nicolas white strains of Turkey.

Cost/Return	Values in Naira But-8	Nicolas white
(i) Variable cost		
(a) Chicks	720,000(33.5)	720,000(31.9)
(b) Feeds	1,072,186(49.8)	1,176,225(52.2)
(c) Medication	5260(0.2)	4,760(0.2)
(d) Electricity	115,000(5.3)	115,000(5.1)
(e) Labour	153,600(7.1)	153,600(6.8)
Total variable cost	2,066,046(96.0)	2,169,585(96.2)
(ii) Fixed Cost		
(a) Depreciation on equipments	85,000(4.0)	85,000(3.8)
Total fixed cost	85,000(4.0)	85,000(3.8)
Total cost	2,151,046(100)	2,254,585(100)
Returns:		
(a) Total returns	6,165,000	6,048,000
(b) Net returns	4,013,954	3,793,415
(c) Gross margin	4,098,954	3,878,415
(d) Returns/Naira invested	2.87	2.68

Note: Values in parenthesis represent percentages of the total cost of production

Table 3 shows that BUT-8 strain of turkey has less cost of production of about N2.15 million than Nicolas white strain with more than N2.25 million giving a difference of about 5% between them. Also, higher revenue was generated with BUT-8 than Nicolas white with a net returns of N4,013,954 and N3,793,415 respectively. Detail analysis of the costs indicated that cost of feeding alone constituted about half of the total costs of production for raising the two strains of turkey on the farm. This is in agreement with the findings of Nwajiuba et al; (2002). Also increasing dependence on imported feedstuffs by developing countries to supply their expanding livestock industry is a big disadvantage to poultry production.

Further analysis of costs shows that more than 30% of the total cost of production represent the cost of acquisition of breeding stock. This is because of the high cost of importing the exotic strains from the United Kingdom.

However, the turkey enterprise is very profitable as revealed by the result of this study; as each naira invested on BUT-8 yields ₦2.87, while if the same naira is invested on Nicolas white will give ₦2.68. Thus, it will be economical to produce BUT-8 strain of turkey in the area because of the higher profit level generated within a short period of time than the Nicolas white. Haruna and Hamidu (2004) also indicated that turkey production is a very profitable enterprise among the farmers in the Western agricultural zone of Bauchi State.

CONCLUSION AND POLICY IMPLICATION

Turkey production in the study area is a profitable venture and there is significant difference in weight gain between the two strains. BUT - 8 recorded higher feed intake and weight gain when compared with Nicolas white this was probably due to genetic variation in feed conversion efficiency, higher beak size and weight of the poult at the beginning of the study. Also close examination of the enterprise shows that it is more economical to raise BUT-8 than Nicolas white in the study area due to its potential advantages, as revealed by this study. Thus, as a policy implication, farmers should be encouraged to try the commercial production of turkey especially BUT -8 strains or they should be advised to crossbreed it with the indigenous strains of turkey so as to explore its potentials. In this line, reliable breeding centers should be established in the area to ensure adequate supply of the improved strains of day old poults to the farmers. Also the establishment of feed mills should be encouraged to ensure easy supply of standard poultry feeds to farmers at lower price since cost of feeding constituted above half of the cost of production.

REFERENCES

- Behrends, D.R.; Clayton, G.A and Jones, D.R. (1997). Turkey Production and husbandry. Her Majesty's Stationary Office London.
- Emmans, R.D. (1984). Generic Resistance of Turkey to New Diseases. *World Poultry*. 15(6): 43-45
- Gordon, H.N. (1995). Tips on Profitable Turkey Production. *Journal of Animal Science* 14 (6) 12-22
- Hardin, P.E. (1991). The Effect of Environmental Requirements on Poultry House Design. Paper to 2nd Australian Poultry and stock feed conversion Sydney.
- Haruna, U and Hamidu, B.M. (2004). Economic Analysis of Turkey Production in the Western Agricultural Zone of Bauchi State, Nigeria. In Ogunji, J.O., Osakwe, I.I.; Ewa, V.U; Alaku, S.O.; Otums, M.O. and Nweze, B.C. (eds) *Self Sufficiency of Animal Protein in Nigeria. A Reality or a mirage* Pp 166-168.
- Haruna, U; Jibril, S.A; Kalla, D.J.U. and Suleiman, H (2007): Evaluation of egg production in Jos North Local Government Area, Plateau State, Nigeria. *International Journal of Poultry Science*. 6(8):604-607.
- Leeson, S. and Summers, J.O. (2001). Production and Carcass Characteristics of the large turkeys. *Poultry Science* 61(4):2456-2464
- Nestor, K.E. and Brown, K.J. (1999). "Origin and History of Poultry". *Poultry Breeding and Genetics* (Elsevier New York 3-18.
- Nilipour, J.J. (1998). Effect of light intensity and Source on Toms Production. *Poultry Science* 16(17): 123-136.
- Nwajiuba, C.U., Ekenyem, B.U. and Nwoke, E.G. (2002). Profitability of peri-urban poultry enterprises in Owerri. *Proceeding of the 27th Annual Conference of the Nigerian Society of Animal Production* Pp 365-368.
- Peter, T.J. (1996). Studies on the Economical of Turkey Production. *British Poultry Science*. 17(2): 179-184.
- PSADP (1994). Meteorological Station Yearly Report. Plateau State-Agricultural Development Programme, Jos, Nigeria.
- PSDP (1996). Meteorological Station Yearly Report Plateau State Agricultural Programme Jos, Nigeria.