

## Ostrich Management practices in three states of Northern Nigeria

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### Abstract

The study was conducted to identify management practices associated with ostrich farming in Kano, Kaduna and Plateau States of Nigeria. Seven farms were purposively selected as units of analysis. Primary data were generated by means of a pre-tested, semi-structured questionnaire, administered to the sampled respondents. A simple inductive statistics was applied to the primary data. The result reveals a commercial production of ostrich by 86 % with all the farms engaged in production of other livestock species. Similarly, all the farms had shelter for chicks and breeders which were all erected using wire mesh and poles at above 5 feet fencing level. More over, 100 % of the farms were densely stocked (below 500 m<sup>2</sup> for a pair of ostrich) with facilities below recommended levels. The result also showed that 100 % of the farms compound feed locally using premix without providing grit and low (14 %) usage of succulent feed. About 29 % of the farms use endoparasitic and anthelmintic drugs as health management practices. On the reproductive practices, only trio (29 %) and colony (71 %) configurations were practiced. The prominent biosecurity measures include division of farm into disease control unit (100 %) and employee enlightenment (86 %).

Key Words: Farm Management, Reproduction, Nutrition, Housing pattern.

### Introduction

Ostrich belongs to the order Struthioniformes, suborder Struthionos and family Struthionida (Delhoyo et al., 1992). The birds have rounded body and are grouped under ratites (Batty, 2000). Ostriches are traditionally important for sport and source of diamonds (found in their gizzards) and regarded as vermin for tearing down fences (Davis, 1998). They are also viewed as a symbol of justice and truth in Egypt (Siegfried, 1984) while their feathers are particularly important in meeting the requirement of fashion industry in England (Davis, 1992) and arid regions of the world (Shanawany, 1994). In South Africa and other countries of the world, the significance of the birds is felt in terms of meat and hides provision (Vyver, 1992; Shanawany, 1994). The medicinal importance of ostrich was demonstrated in humans through corneal transplantation of ostrich eyes to enhance vision and use of its brain tissue to treat Alzheimer's disease (Shanawany, 1994).

In spite of the numerous economic uses of the ostrich, the supply of its products trails behind demand thereby reducing its affordability by individual consumers. This is particularly so in Nigeria despite its adaptability to tropical climates. The ostrich is remarkably tolerant to heat (Jones, 1982; Levy et al., 1990; Yagil et al., 1990; Shanawany,

1994) and may be found in a variety of open habitats and has improved vigilance – when kept with other animals (Joseph, 1992). The birds are semi – gregarious and can travel for a long distance in search of food and water (Shanawany, 1994). However, the kind of management being practiced could have a great influence on its productivity and performance. A sound management prevents infection which is better than cure (Lister, 2003). John (2006) reported that nutrition and housing are particularly important in disease assessment and are thus important for optimum health management (Dijkhuizen et al., 1994; Dijkhuizen et al., 1995). Considering the fact that economic considerations are increasingly forcing their way forward in decision making process of animal health management, controlling the cost of production is a pivotal managerial function in achieving efficient and economically rewarding production.

### Material and Methods

The Study Area: The farms are located in savannah vegetation zone of Nigeria, notably in Kano, Kaduna and Plateau States. These states are located between 9<sup>o</sup> 10' and 9<sup>o</sup> 20' North of the Equator and longitude 7<sup>o</sup> 5' and 7<sup>o</sup> 45' East of the Greenwich; with annual precipitation of approximately 900 to 1,200 mm (IITA, 1992).

Sampling Technique: Seven ostrich farms were

Table-1. Distribution of ostrich farms in northern Nigeria according to purpose, types of livestock and facilities used

Items	Frequency (Percentage)
1. Production purpose	
• Commercial	6 (85.7 %)
• Leisure	1 (14.3 %)
• Prior experience in poultry	1 (14.3 %)
2. Livestock types	
• Other domestic livestock species on farm	7 (100.0 %)
• Less than 10 chicks ageing 0 – 3 months	3 (42.9 %)
• Less than 50 adults ageing 8 months and above	5 (71.0 %)
• Above 50 adults ageing 8 months and above	2 (28.6 %)
3. Facilities	
• Provision of shelter for chicks and breeders	7 (100.0 %)
• Provision of shelter and wind breakers as chick auxiliary facility	7 (100.0 %)
• Shelter for feed pan protection	2 (28.6 %)
• Woven wire and pole as fencing materials	7 (100.0 %)
• Fencing above 5 foot	7 (100.0 %)
• Fencing with a topper	1 (14.3 %)
• Low grass as floor material for chicks	2 (28.6 %)
• Bare ground as floor material for chicks	1 (14.3 %)
• Carpet square and slip rough surface concrete	0 (0.0 %)
• Provision of alleys, sorting or restrain pens	0 (0.0 %)
• High stocking density (below 500 m <sup>2</sup> for a pair of ostrich)	7 (100.0 %)

purposely selected from the three States. of northern Nigeria. Farm managers were the respondents. The focal area of this study was on ostrich whose management system is confined.

Data Collection and Analysis: A pre-tested, semi-structured questionnaire was used as an instrument for collecting data. The questionnaires were administered to the sampled respondents by one of the authors in the year 2004. The data generated include purpose of domestication, facilities/equipment used, livestock composition, configuration of breeding group, water sources, feeds and feeding practices and other routine operations connoting general management practices. Most of these information were generated from farmers' records and supplemented with on-the-spot assessment using a check list. The information were organized, summarized and presented using a simple statistics, 's' frequency distribution tables and percentages.

#### Results

Goal of Ostrich Production: Data on the purpose of producing ostrich on farms is presented in Table 1. Of the seven farms investigated, 6 (85.7 %) kept ostrich for commercial purpose while only 1 (14.3 %) has leisure as a driven motive for production. Similarly, Table 1 unfolds a prior experience in commercial oriented poultry production on only 1 (14.3 %) farm.

Livestock Composition: All the farms combined ostrich with one bird type or the other of livestock species within one production cycle (Table 1). However, only 3 (43 %) of them had less than 10

chicks aged 0 to 3 months while 5 (71 %) and 2 (29 %) had less than 50 and above 50 adults aged 8 months and above, respectively.

Housing Pattern in Ostrich Farming: All the farms investigated provided shelter for chicks and breeders and used wind breakers as chick auxiliary (Table 1). Invariably, 100 % of them provided fences above 5 feet using woven wire and pole and had their stocking density below 500 m<sup>2</sup> for a pair of ostrich. On the other hand, none of the farms made provision for alleys, restrain pens and/or used a large carpet square or slip rough surface concrete. About 29 % of the farms used shelter (for feed pan protection) and low grass (as floor material for chicks).

#### Routine Management Practices

Feeds and feeding: All (100 %) the farms used premix as feed ingredient and compounded feed on-farm. Similarly, all of them fed their ostriches with sole grass and cereal bran. None of the 7 farms made provision for grit with only a small proportion (14.3 %) each reported to have fed their birds with succulent feeds and used multiple water source. More so, about 71 % of the farms fed their birds only once daily.

Health management and reproductive practices: While only 2 (29 %) each used in – water method of drug administration, ivermectin and fenbendazole as endoparasitic and anthelmintic drugs, respectively; none of them was reported to use neither leg band nor other means of identification of birds. On the other hand, majority (71 %) of the farms practiced colony configuration compared to only 29 % who used trio configuration as breeding groups and none was

Table-2. : Feeds and feeding, health practices and reproduction information of ostrich farms in northern Nigeria

Items	Frequency (Percentage)
1. Feeds and feeding practices	
• Local on – farm feed compounding	7 (100.0 %)
• Premix based compounded feed	7 (100.0 %)
• Once a day feeding practice	5 (71.4 %)
• More than once daily feeding practice	2 (28.6 %)
• Provision of grit	0 (0.0 %)
• Multiple water sources	1 (14.3 %)
• Single water source	6 (85.7 %)
• Use of sole grass feed	7 (100.0 %)
• Use of cereal bran	7 (100.0 %)
• Use of succulent feed	1 (14.3 %)
2. Health practices	
• Use of Ivermectin as endoparasitic drug	2 (28.6 %)
• Use of Fenbendazole as anthelmintic drug	2 (28.6 %)
• Use of in-water method of drug administration	2 (28.6 %)
• Leg band or other means of disease identification	0 (0.0 %)
3. Reproductive practices	
• Trio configuration of breeding group	2 (28.6 %)
• Colony configuration of breeding group	5 (71.4 %)
• Undertaking on-side incubation	0 (0.0 %)

identified to practice on-site incubation.

Biosecurity practices adopted by the farms are depicted in Table 3. All (100 %) the farms investigated share commonality in dividing their farms into disease control units as a disease control strategy. In contrast, only 1 (14 %) adhered to prevention of disease spread between groups as a biosecurity measure.

#### Discussion

Though ostrich production in Nigeria is still at its nascent stage, there is some growth in the industry as shown by its tendency towards commercial orientation. Evidently, there has been fragmented information unfolding the overwhelming magnitude of farmers' preponderance in ostrich farming. This assertion is accentuated by Dijikhuizen et al. (1994) whose report revealed influence of economically rewarding production on the choice of enterprise on farms.

The result revealed that only one farm (14 %) had a prior commercially oriented poultry farming experience. The implication revolves around technical and farmer related experiences in the use of farm resources. Years of farming experience as reported by Malumfashi et al (2006) equip farmers with entrepreneurial abilities for risk management on farms.

All the farms investigated combined ostrich production with one type of poultry or the other, notably including ducks, guinea fowls and domestic fowls. Even though keeping ostrich with other animals improves their vigilance (Joseph, 1992) the obvious implication of this practice is predisposition of the birds to cross transmission of parasites. It is whose age

ranges from 0 to 3 months while majority (71%) had less than 50 adult aged 8 month and above. This translates to the economies of production scales. Scaling up the production activity remains a pivotal management practice for improving return to farmer's capital and management.

Facilities provision trails behind the recommendation in modern ostrich farming. Of the seven farms, only two had incubation facility out of which one has the facility on site. This creates a reasonable time lag between breeding period and their arrival to the farm, a phenomenon responsible for increased fixed production costs. Similarly, none of the farms had a standard chick raising facility (shelter with 650F heat source), instead the chicks were usually out of their pen whose heat source is 600F when the sun is shining on the other hand, adult facility was also not in conformity with the recommended in terms of fence height (5 feet) and stocking density (0.25 to 0.50 acre pen size) as reported by McKenna (2001), instead all the farms had their fence above 5 feet and below 500 m<sup>2</sup> for a pair of ostrich. Even though ostrich is tolerant to heat (Shanawany, 1994), the practice increase the livelihood of disease transmission within a flock.

All the farms were compelled to compound feeds locally on their farms as mitigation to usurious charges from commercial services. In Nigeria feed cost constitutes about 60-80% of the total cost of production in poultry farming (Malumfashi et al, 2008, Tanko and Irgis, 2008 and Gieteman, 2001). This depresses farmers income and becomes a disincentive to scaling-up possibilities. Similarly all the farms use premixes undermining the age group and nutritional

Table-3. General management of ostriches in commercial farms of northern Nigeria

Items	Frequency (Percentage)
Biosecurity	
• Prevention of disease spread between groups	1 (14.3%)
• Basic sanitation	3 (42.9%)
• Farm divided into disease control units	7 (100.0%)
• Educating employee	6 (85.7%)
• Visitor policy	2 (28.6%)

requirements of the birds. Though limited studies were conducted on nutritional requirement of ostriches (Jeffery, 2004), absence of commercially formulated rations might not be unconnected to the farmers' reason for usage of fresh hay, spinach and lettuce as supplement.

The ostrich farms shared commonality with respect to use of in-water drug administration, use of ivermectin and fenbendazole as endo-parasitic and anthelmintic drugs, respectively. These were reported by 29% each of the farms. The result corroborates with the findings of Craig et al., (1996) and Shane (1998) which confirmed the effectiveness of fenbendazole in anthelmintic treatment; while Ivermectin efficacy against *L. douglassi* was strengthened by Pennycott and Petterson (2001) as well as McKenna (2001).

The cock to hen ratios were 1:1 and 1:2 representing colony and trio configurations and by 71% and 20% of the farms, respectively without any on-side incubation undertaken.

Biosecurity measures were practiced involving partition of farms into disease control units (100%) educating breeders, growers and brooders (85%) as priority measures; while disease spread between groups (14%) and visitor policy (29%) which shows that farmers are not enthusiastic about visitor policy.

#### Conclusion

All the farms were stocked with facilities below recommended in modern commercial ostrich farming. All the farms use premix in compounded feeds and combination of ostrich with other poultry species. The purpose of which was commercial (86%), only 2 farms use anthelmintic and endo-parasitic drugs with no defined disease identification procedure.

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