

Challenges to Commercialization of Guinea Fowl in Africa

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Abstract: *This paper evaluated literature on challenges to commercialization of guinea fowl on the African continent. Although the origin of guinea fowl is Africa, commercialization of these birds on the continent is still in its infancy. Across Africa, guinea fowl are reared at subsistence level with low levels of inputs committed resulting in low productivity. In rearing guinea fowl, a myriad of challenges are experienced including inter alia inadequate nutrition, poor housing, high keet mortality, lack of health control and inadequate technical support from government extension services. In order to raise productivity of guinea fowl enterprises, feed improvement, hygienic and sanitary preventive programme have to be applied. It is apparent that addressing these challenges will contribute to guinea fowl production being an important supplier of high quality animal protein (meat and eggs) and a job creator for the rural populace.*

Keywords: Africa, challenges, Guinea fowl, keets, poverty, predation

1. Introduction

The name “Guinea fowl” is derived from the Guinea coast of Africa, which is where the birds are believed to have originated [1]. Although the origin of guinea fowl is Africa, commercialization of these birds on the continent is still in its infancy. In most parts of Africa, guinea fowl are reared at subsistence level with low levels of inputs committed resulting in low productivity. Dougnon *et al.* (2012) [2] in Benin observed that the development of intensive guinea fowl rearing is very little. Guinea fowl also occur in Asia and Latin America as a semi-domesticated species while in Europe, North America and Australia, large-scale commercial production occurs [3]. This indicates that guinea fowl have ubiquitous distribution. Previous study by Nahashon *et al.* (2006) [4] reported that guinea fowl as a meat bird has proved to be a viable and profitable enterprise, thus providing opportunity for commercialization in many parts of the world.

Guinea fowl are a source of protein (eggs and meat) and income. Guinea fowl meat is high in protein and low in fat content, thus it is highly prized compared to chicken meat [5]. Ayeni (1980) [6] stated that guinea fowl meat has a protein content of about 28% compared to 20% for domestic fowl. In Ghana, Teye and Adam (2000) [7] mentioned that in addition to their main use as a source of income and protein, guinea fowl play important roles in the socio-cultural lives of many tribes. For example, they are exclusively used for the annual festival by the Dagombas and Gonjas tribes; the pure white guinea fowl is used for religious sacrifices and to perform certain funeral rites, whereas the Frafras, Dagabas and Bulsas tribes use guinea fowl to welcome mothers-in-law. Guinea fowl are resistant to most poultry diseases at the adult age [7]. Sayila (2009) [8] also mentioned that guinea fowl are resistant to common poultry diseases and require less labour and management than chickens.

Although the advantages and importance of the guinea fowl have enticed many farmers to take special interest in their production, scientific information of the local guinea fowl

has been very scanty [7]. This paper examines literature on guinea fowl production in Africa and endeavours to identify challenges to commercial guinea fowl production on the African continent.

2. Rearing Systems

Several studies have shown that in most African countries guinea fowl are reared mainly under extensive (free range or traditional) and/or semi-intensive systems [9, 10]. Moreki (2007) [11] stated that the free range system is the predominant rearing method common in Africa. Konlan and Avornyo (2013) [12] in Benin showed that 98% of the farmers housed their guinea fowl in the night and offered them few handfuls of grains and allowed them to scavenge the whole day. Free range guinea fowl constitutes an important resource for resource-poor farmers in developing countries. In Botswana, guinea fowl are raised mainly under the intensive system [5] probably due to a requirement by government that domestic guinea fowl should be confined to avoid mixing with the wild ecotypes. In these systems, birds depend mainly on scavenging with no or very little inputs committed resulting in low productivity. Additionally, housing is rudimentary, indicating that losses due to predation are high. Also, health management practices are based mainly on ethnoveterinary medicine probably due to its availability in the villages. The belief that guinea fowl are resistant to diseases could be contributing to farmers not adopting preventative measures against diseases such as NCD, which devastates flocks.

3. Challenges in Guinea Fowl Rearing

Across Africa a number of challenges in guinea fowl production have been identified and these are discussed in this section.

3.1 Poor Housing

Lack of shelters [13], poor housing [9], substandard housing [10] and low level of housing [14] pose a serious challenge

in guinea fowl rearing. Sayila (2009) [8] pointed out that since most if not all rural guinea fowl growers in Botswana are small-scale farmers they prefer to breed and keep their birds free-range rather than in fenced pens. Due to poor housing predation rates are usually high, especially in smallholder guinea fowl farming. Lack of and/or poor housing also contributes to high mortalities due to unfavorable climatic conditions, increased incidences of theft, and difficulties in catching birds during vaccinations.

3.2 Inadequate Technical/Extension Service

In Botswana, Moreki *et al.* (2010) [15] cited inadequacy of extension service to be one of the major challenges in guinea fowl production, which gives rise to farmers not having adequate management skills in successfully raising guinea fowl. Gono *et al.* (2013) [13] in Zimbabwe also identified lack of technical support along with predation, lack of funds to build shelters, poor marketing and lack of shelters to be the major challenges to guinea production.

3.3 Poor or Inadequate Feeding

Guinea fowl are usually fed cereal grains, kitchen and garden wastes, and to a less extent commercial chicken diets (both broiler and layers). Because of the small populations farmed guinea fowl, compounded guinea fowl diets are not readily available in the markets; hence the use of commercial chicken diets. It should, however, be noted that guinea fowl have high protein requirements than chickens, indicating that their requirements for protein are not met by feeding diets for chickens.

In Zimbabwe, Kusina *et al.* (2012) [10] reported that feed was offered in a haphazard manner and that birds were fed mainly cereal grains such as maize, millet or sorghum. The feeding of cereal grains could be due to unavailability of compounded guinea fowl diets. In addition, Naandam and Issah (2012) [16] showed that guinea fowl breeders were fed maize (80%) and millet (20%) before they laid eggs and millet (80%) and maize (20%) during lay. According to the authors, farmers perceived maize as promoting growth and maintenance, whereas millet promoted egg production. In Ghana, lack of information about nutrient requirements of local guinea fowl was also cited as one of the challenges in guinea fowl production [7]. Gono *et al.* (2013) [13] reported that an inadequate feed supply was another challenge to Guinea fowl production. Inadequate feed supplies gives rise to poor growth rates, low egg production of guinea fowl and elevated mortalities. Losses of birds are also attributable to starvation [17].

3.4 High input Costs and Poor Supply of Inputs

High feed prices and other inputs make guinea fowl farmers in Botswana to perpetually rear their birds in the countryside and on free-range where the birds scavenge for food [8]. The study by Gono *et al.* (2013) [13] in Zimbabwe identified inadequate supply of veterinary requites to be one of the challenges in guinea fowl production resulting in birds not being protected and/or treated against infectious agents. This contributes to high mortality of keets as they have a weak immune system. Kebede *et al.* (2012) [14] reported that the

absence of well-equipped veterinary service hampered poultry production in Metema District of North-Western Ethiopia.

3.5 High keets' mortality rates and source of one-day-keets

The major challenges to guinea fowl production were identified to be high keet mortality [Ayeni and Ayanda, 1982 [18]; Teye and Adam, 2000 [7] and absence of a source of quality one-day-old keets [7]. Similarly, Dahouda *et al.* (2007) [9] in Benin found keet mortality to be a major constraint in guinea fowl rearing and estimated it to be 74%. Keets mortality is estimated to be 50% [19] in Nigeria and 80-100% in Benin [20]. The major causes of high keets mortalities are exposure of keets to bad weather [19, 20], poor feeding and worm infestation [20], diseases and parasites and poor management [19]. This indicates poor housing, poor nutrition and lack of health management due to poor and/or lack of extension support.

3.6 Lack of Health Management

Sayila (2009) [8] mentioned that guinea fowl are resistant to common poultry diseases such as Gumboro, NCD and salmonellosis while Bonkougou (2005) [21] stated that guinea fowl are more tolerant to common viral and bacterial diseases which occur in poultry but are intolerable to internal and external parasites due to their scavenging behaviour under semi-intensive production systems. Guinea fowl have better resistance to common poultry parasites and diseases which affect chickens such as NCD and fowl pox [22]. Although guinea fowl are reported to be disease resistant, Boko *et al.* (2012) [23] stated that they are affected by colibacillosis, salmonellosis and NCD. Newcastle disease most affects chickens than guinea fowl. Dahouda *et al.* (2008) [24] in Benin showed that parasitic affections were the main causes of mortality in keets. Similarly, Teye and Adam (2000) [7] found worm infestations to be one of the challenges in guinea fowl rearing. Ethnoveterinary medicine is used as a substitute for conventional veterinary support probably because of its easy access in the villages [10]. The study by Kebede *et al.* (2012) [14] in north-western Ethiopia reported that high mortality rates occurred during months of February, March, April and May. Mortality was attributable to a diarrhoeic disease syndrome locally named as Fengil.

3.7 Predation

Low egg productivity due to frequent change of laying spot in the bush leads to eggs being preyed upon or stolen. Also, picking of eggs and keets by hawks is another form of loss [18]. The study by Kebede *et al.* (2012) [14] indicated that predators were a significant cause of loss of poultry next to losses due to diseases. Furthermore, Saina *et al.*, 2005 [17] reported that few eggs are consumed while others are lost through breakage and predation by snakes, wild cats and dogs, especially eggs from hens that laid among bushes.

It is estimated [Boko *et al.* (2011) [25] the death rate of keets within the first two months of life to be >50%. This high loss of keets contributes to guinea fowl flocks not increasing over time. Dahouda *et al.* (2008) [24] attributed the main causes

of mortality to rainfall, predators, cold and the fragility of chicks.

3.8 Breeding Challenges

Along with low level of housing and feeding management, lack of improved breeds is one of the most important constraints hampering poultry production in Metema District of North-Western Ethiopia [14]. In Botswana, guinea breeding is indiscriminate giving rise to inbreeding being common [5]. Guinea fowl eggs are incubated naturally using hens (guinea fowl and/or chickens) or artificially with incubators. The study by Dahouda *et al.* (2008) [24] showed that local hens are used to incubate guinea fowl eggs and are preferred to Guinea fowl hens. Natural incubation which is common in smallholder guinea fowl production does not contribute many keets to the flocks; hence contributing to the underdevelopment of the guinea fowl enterprise across the continent.

Ogah (2013) [26] stated that increased interest in consumption and domestication of guinea fowl necessitates deliberate efforts to promote development of guinea fowl. This can be achieved by adopting breeding programmes that are common to other livestock species.

3.9 Lack of Financial Support: In Botswana, guinea fowl rearers lack support from government to start commercial guinea fowl enterprises [5]. Similarly, lack of funds to construct shelters is reported to be one of the challenges in guinea fowl production in Zimbabwe [13]. Unlike commercial chicken farmers who received government support in the form of grants through the then Financial Assistance Policy (FAP), AE10 and CEDA, guinea fowl rearers in Botswana do not receive financial support from government. However, some support was extended to resource-poor farmers in Botswana to venture into guinea fowl farming under Livestock Management and Infrastructure Development (LIMID) Support Programme as a vehicle to alleviating poverty. The support lasted for about three years. Lack of support by governments hampers the growth and commercialization of guinea fowl.

3.10 Marketing

In general, market for guinea fowl is not organized. Gono *et al.* (2013) [13] mentioned poor marketing as one of the major challenges in guinea fowl production. The market for guinea fowl in Botswana is not developed because guinea fowl farming is still in its infancy [5]. In Benin, guinea fowl are alive from 8 to 18 months of age. Sale of birds is based on cash needs and time of the year with festivities such as Christmas, New Year, Tabaski and Ramadan being peak marketing periods [9]. Likewise, in Botswana guinea fowl are sold live to individuals who possess government permits that allow them to rear guinea fowl or may be dressed for the restaurants, butcheries and hotels [5].

3.11 Lack of and/ or Inadequate Research

Little research on guinea fowl has carried out in in Africa in comparison with domestic chickens (*Gallus gallus domesticus*) [Nalubamba *et al.*, 2010] [27]. As a result, Nsoso

et al. (2003) [28] in Botswana recommended that more research on genetic improvement and nutrition to reduce age at slaughter of guinea fowl.

3.12 Other Challenges

Other challenges to guinea fowl production include difficulty in sexing guinea fowl and taming of birds [7], keet weakness, poor quality of eggs, egg losses in the bush, keets predation, poor housing and infestations [9] and low [18]. According to Moreki (2007) [11], sex determination in guinea fowl is extremely difficult, especially in keets as males and females differ so little in appearance, thus making it difficult to distinguish them from each other. Sex may be distinguished by the cry of the birds after they are about two months old and by larger helmets and wattles and coarser head of the male in adult birds. However, sex determination in keets can be performed at six weeks by the cloacal orifice [2].

In most African countries, guinea fowl are still treated as game and are hunted for meat. In Botswana, the Department of Wildlife and National Parks under the Ministry of Environment, Wildlife and Tourism (MoEWT) allows guinea fowl to be hunted from April to September, *i.e.*, six months. This arrangement discourages commercial production of guinea fowl as demand for guinea fowl meat is likely to decline during the hunting season. Furthermore, the technical expertise on guinea fowl farming lies with the Ministry of Agriculture while the issuance of permits to rear guinea domestic guinea fowl is the responsibility of MoEWT. Again, this setup appears to hinder the growth of the industry.

4. Future Scope

There is a need for African governments and non-governmental organizations (NGOs) to support guinea fowl production, especially in the rural areas where commercial chicken production has failed. Improvements in such aspects as nutrition, housing and health management will go a long way in increasing benefits to the rearers the majority of whom live in abject poverty. Provision of small grants will stimulate interest in guinea fowl production. In addition, there is a need for increased research and extension support. This should include technology development, farmers' training and provision of veterinary services.

5. Conclusion

The main challenges in smallholder guinea fowl production include inadequate nutrition, poor housing, high keet mortality, lack of health control and inadequate technical support from government extension services. To raise productivity of guinea fowl enterprises, housing improvements, feed improvement, genetic improvement, hygienic and sanitary preventive programmes have to be applied. There is also need to apply modern brooding techniques as a way of reducing keets mortality.

References

- [1] Ikani, E.I. and Dafwang, I.I. (2004). The production of Guinea fowl in Nigeria. Extension Bulletin No. 207, Poultry Series No. 8. Retrieved 23rd May 2011 from <http://www.naerls.gov.ng/extmat/bulletins/Guineafowl.pdf>
- [2] Dognon, T.J., Tobada, P., Djossa, B.A., Davito, F.E., Youssao, I. (2012). Effects of powdered peanut (*Arachis hypogea*) on the sex reversing in guinea fowl and the parameters of production and reproduction in the fowl "*Numida meleagris*". International Journal of Advanced Biological Research 2(2):209-214.
- [3] Bonds, H. (1997). Alternative farming: A United Nations alternative farming on the Mornington Peninsula. Retrieved 08 May 2011 from www.independentnewsgroup.com.au/archive/helmi/
- [4] Nahashon, S.N., Aggrey, S.E., Adefope, N.A. and Amenyenu, A. (2006). Modeling growth characteristics of meat-type Guinea fowl. Poultry Science 85:943-946.
- [5] Moreki, J.C. and Seabo, D. (2012). Guinea fowl production in Botswana. Journal of World's Poultry Research 2(1):01-04.
- [6] Ayeni, J.S.O. (1980). The biology and utilization of the helmeted guinea fowl (*N.m. galeata pallas*) in Nigeria. Ph.D. Thesis, University of Ibadan, Nigeria.
- [7] Teye, G.A. and Adam, M. (2000). Constraints to guinea fowl production in northern Ghana: A case study of the Damongo area. Ghana Journal of Agricultural Science 33:153-157.
- [8] Sayila, A. (2009). Guinea fowl farming becomes popular in Botswana. World Poultry, 25(10): 30-31.
- [9] Dahouda, M., Toleba, S.S., Youssao, A.K.I., Kogui, S.B., Aboubakari, S.Y. and Hornick, J.L. (2007). Guinea fowl rearing constraints and flock composition under traditional management in Borgu Department, Benin. Family Poultry, 17(1&2):3-14.
- [10] Kusina, N.T., Saina, H., Kusina, J.F. and Lebel, S. (2012). An insight into guinea fowl rearing practices and productivity by guinea fowl keepers in Zimbabwe. African Journal of Agricultural Research 7(25):3621-3625.
- [11] Moreki, J.C. (2007). Guinea fowl production. Retrieved 20/11/13 from <http://www.gov.bw/Global/MOA/Guinea%20Fowl%20Production.pdf>
- [12] Konlan, S.P. and Avorinyo, F.K. (2013). The effect of wetland on guinea fowl (*Numida meleagris*) egg productivity and fertility during the dry season in the guinea savannah ecological zone of Ghana. Sky Journal of Agricultural Research 2(9):126-131.
- [13] Gono, R.K., Svinurai, W. and Muzvondiwa, J.V. (2013). Constraints and opportunities to Guinea fowl production in Zimbabwe: A case study of the Midlands Province, Zimbabwe. International Journal of Science and Research, 2(3):236-239.
- [14] Kebede H., Hussen D.O. and Melaku, A. (2012). Study on status and constraints of village poultry production in Metema District, North-Western Ethiopia. American-Eurasian Journal of Scientific Research, 7(6):246-251.
- [15] Moreki, J.C., Thutwa, M., Ntesang, K., Koloka, O.A. and Ipatleng, T. (2010). Utilization of the guinea fowl and Tswana chicken packages of the Livestock Management and Infrastructure Development Support Scheme, Botswana. Livestock Research for Rural Development 22(11). Retrieved 12/12/2010 from <http://www.lrrd.org/lrrd22/11/more22210.htm>
- [16] Naandam, J. and Issah, G.B. Hatchability of guinea fowl eggs and performance of keets under the traditional extensive system in Tolon-Kumbungu District of Ghana. Online Journal of Animal Feed Research 2(3):253-257.
- [17] Saina, H., Kusina, N.T., Kusina, J.F., Bhebhe, E. and Lebel, S. (2005). Guinea fowl production by indigenous farmers in Zimbabwe. Livestock Research for Rural Development 17(9). Retrieved 22/11/2013 from <http://www.lrrd.org/lrrd17/9/sain17101.htm>
- [18] Ayeni, J.S.O. and Ayanda, J.A. (1982). Studies of the husbandry and social acceptance of guinea fowl in Nigeria. Accessed 18/11/2013 from [http://www.tanuv.ac.in/tjvas/tjvas/vol8\(1\)/29_35.pdf](http://www.tanuv.ac.in/tjvas/tjvas/vol8(1)/29_35.pdf)
- [19] Nwagu, B.I. and Alawa, B.I. (1995). Guinea fowl production in Nigeria. Journal of World's Poultry Research 51: 260-270.
- [20] Tye, G.A. and Gyawu, P. (2001). The benefits of intensive guinea fowl production in Ghana. World Poultry – Elsevier 17(9):53-54.
- [21] Bonkougou, G.F.X. (2005). Characteristics and performance of guinea fowl production under improved and scavenging conditions in Sahelian region of Burkina Faso. Master's Thesis. The Royal Veterinary and Agricultural University. Copenhagen, Denmark.
- [22] Microlivestock (1991). Little known small animals with promising economic future. Board on Science and Technology for International Development. Washington, DC: National Academy Press, Washington, pp. 115-125.
- [23] Boko K.C., Kpodekon T.M., Dahouda M., Marlier D. and Mainil J.G. (2012). Contraintes techniques et sanitaires de la production traditionnelle de pintade en Afrique subsaharienne. Ann. Méd. Vét., 156:25-36.
- [24] Dahouda M., Sènou, M., Toléba, S.S., Boko, C.K., Adandédjan, J.C. and Hornick, J.L. (2008). Comparison of local Guinea fowl (*Numida meleagris*) production characteristics in experimental station and rural area in soudano-guinean zone of Bénin. Livestock Research for Rural Development, 20(12). Retrieved 28/09/2013 from www.lrrd.org/lrrd20/12/daho20211.htm
- [25] Boko, C.K., Kpodekon, M.T., Farougou, S., Dahouda, M., Youssao, A.K.I., Aploga, G.L., Zanou, J. and Mainil, J.G. (2011). Farmer perceptions and pathological constraints in helmeted guinea fowl farming in the Borgou department in North-East Benin. African Journal of Agricultural Research, 6(10): 2348-2357.
- [26] Ogah, D.M. (2013). Variability in body shape characteristics in an indigenous guinea fowl (*Numida meleagris* L.). Slovak Journal of Animal Science 46(3):110-114.
- [27] Nalubamba, K.S., Mudenda, N.B. and Masuku, M. (2010). Indices of health; clinical haematology and body weights of free-range Guinea fowl (*Numida meleagris*) from the Southern Province of Zambia.

International Journal of Poultry Science 9(12): 1083-1086.

- [28] Nsoso, S.J., Seabo, G.M., Kgosiemang, S.G., Molatlhegi, M., Mokobela, M., Chabo, R.G. and Mine, O.M. (2003). Performance of progeny of wild and domesticated guinea fowl (*Numida meleagris*) in Southern Botswana. South African Journal of Animal Science 4: 46-51.

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