

A critical review of Botswana's ostrich industry

J C Moreki and O A Koloka

Department of Animal Production, Ministry of Agriculture,
Private Bag 0032, Gaborone, Botswana
E-mail: jcmoreki@gmail.com

Abstract

Botswana has the world's largest population of wild ostriches, indicating that the local climate is suitable for ostrich production. However, commercial ostrich production is still in its infancy despite the good climate and the construction of an ostrich abattoir by the government of Botswana in 2002. The abattoir has the capacity to slaughter 20 000 ostriches per year but has lacked throughput since its inception resulting in frequent closures that contributed to farmers incurring economic losses.

This paper evaluates literature on the ostrich industry in Botswana with a view to highlighting the challenges and opportunities. The main constraints in commercial ostrich production are frequent closures of the abattoir, lack of access to credit and poor extension service. Despite these challenges, opportunities do exist including availability of market (locally and internationally) for ostrich meat and skins, as well as, strong veterinary support. To revive the industry, vertical integration (contract farming) is suggested and feed subsidy is critical.

Key words: Commercial ostrich production, DOMU, meat and skins, ratites, vertical integration

Introduction

Ostriches (*Struthio camelus*) are indigenous to Africa. Together with emus, rheas, cassowaries and kiwis, ostriches belong to a family of flightless birds called ratites. In the wild ostriches live an estimated 20 to 30 years (Jefferey 1996). The ostrich is the largest bird on earth and the weight of its egg ranges from 1 to 2 kilograms. It produces a plume of high quality feathers, high quality skins bearing a distinctive and highly valued quill pattern, and 30 to 35 kg of red meat.

Commercial ostrich farming started in the Republic of South Africa (RSA) since the mid 1800s (Westendorf 1997). Originally, ostriches were hunted for their prized feathers, which were used in hats, costumes, and feather dusters (Westendorf 1997; Huchzermeyer 2002); later for the leather and meat. The skin is the product for which an established market exists, especially in the Far East, for the manufacture of luxury goods. In RSA, Jefferey (1996) reported that ostriches are farmed mainly for their meat, which is promoted as a low cholesterol red meat because of its red colour, beef-like texture and low fat content. Therefore, the ostrich is a credible competitor in the red meat market as it produces lean meat. However, in Southern Africa the market for ostrich meat has never developed other than as a local specialty in RSA and Zimbabwe.

Ostriches are hardy and can easily adapt to a wide range of climatic conditions. For this reason, ostriches are ubiquitous. As a result of a long history of domestication, farmed ostriches are classified as domestic stock in most countries. At present, the ostrich industry in

Botswana is performing unsatisfactorily. This paper describes ostrich production in Botswana and highlights the industry's challenges and opportunities.

Ostrich in the global context

Ostrich production is an international industry with RSA being by far the largest producer, while Australia, Israel, China, Namibia and Zimbabwe are other producers whose industries are fairly well established compared to Botswana. In 2003, the world's ostrich population was estimated to be about 500 000, giving a yield of about 15 000 tons of meat. During the same period RSA accounted for 70% of the world's domesticated ostriches (Botswana Institute of Development and Policy Analysis (BIDPA), 2005). However, the destruction of about 25 000 ostriches due to avian influenza outbreak in 2004 in the Eastern Cape resulted in RSA holding (63%) of the global flock followed by Australia (8%), Israel (5%) and China (5%), Namibia and Zimbabwe (2-2.5%), whereas Botswana holds less than 0.2% of the global flock (BIDPA 2005).

The development of ostrich farming in Botswana

In Botswana, agricultural production is based on the traditional, subsistence-oriented systems, with limited commercial activities for both crops and livestock (Ministry of Finance and Development Planning (MFDP) 2009). As mentioned earlier, commercial ostrich production in Botswana is at its infancy despite the fact that it has been in existence since the late 1980s. Presently, domestic ostriches in Botswana are estimated to be 6000. Compared to RSA, Namibia and Zimbabwe, Botswana has lagged behind in developing the commercial potential of the ostriches (BIDPA 2005). However, Botswana boasts the world's largest population of wild ostriches, indicating that the country's climate is ideal for ostrich production. Unlike Namibia and Zimbabwe, Botswana has failed to take advantage of its proximity to RSA, the world's largest ostrich producer.

Currently, the ostrich industry in Botswana is not performing well as evidenced by low production levels and the increasing number of farmers that exit the industry. Low production is attributable mainly to lack of access to funds to purchase feeds, which constitute over 70% of the production costs. The number of ostrich farmers across the country declined from 49 (BIDPA 2005) to approximately 14 currently, indicating a decline of 71.43%. Despite the decline, ostrich population increased from approximately 2500 in 2008 to 6000 in 2010. This represents an increase of 140%. The main contributors to the increase are Dibete Ostrich Multiplication Unit (DOMU) and Talana Farms.

In an effort to boost ostrich production in Botswana, the government set up Dibete Ostrich Multiplication Unit (DOMU) which according to the Department of Animal of Animal (2010) keeps about 1300 birds (640 breeders, 418 juveniles and 262 chicks). DOMU produces hatching eggs which are hatched into chicks and offered to farmers for sale at various ages. At one day old, a chick sells for P100 (equivalent to US\$14). Hatching eggs are also sold to individual farmers for P60 (equivalent of US\$8.6) an egg. In the future, DOMU will also serve as a training facility for ostrich farmers.

Production systems

The main ostrich production systems in Botswana can be broadly categorized into semi-intensive and intensive systems (European Commission 2001). A brief description of these systems is given below.

Semi-intensive system

About 40 hectares of land is required for 80 birds at a ratio of one male per two females (a trio). Eggs may be hatched naturally or artificially. In this system, birds derive their nutrition from natural vegetation and are supplemented with complete feeds and/or feedstuffs such as maize (Viljoen 1993). The chicks are also fed broken maize, bone meal and soya oil cake mixed with lucerne. This formula is fed in the morning and afternoon while in between chicks are allowed to graze.

Intensive system

Birds are fed complete diets and eggs are artificially incubated. A breeding pair is raised in a pen measuring 0.2 to 0.5 hectares. The breeder farmer should either own a hatchery or sign a contract with a hatchery to supply hatching eggs.

Production process in the ostrich industry

Ostriches are produced by individual farmers and companies in Botswana. The ostrich enterprises may be started by either purchasing breeding birds from other farmers or chicks/growers from a commercial hatchery and raising them to slaughter age. As soon as birds slaughter age is attained they are transported to the abattoir for slaughter. This is usually at 10-14 months of age. However, Jarvis (1996a) reported that slaughter at 10 months instead of 14 months of age should save the farmer 327 to 372 kg of feed per bird. It was observed (Jarvis 1997) that from the meat production point of view the optimum slaughter age might be 7 to 8 months. It would appear that the younger slaughter age makes sense from a feed intake point of view though this might affect the quality of the skin.

Some farmers keep breeding stock to produce hatching eggs, which are set in the hatchery to produce chicks. Chicks are then used to stock the farms and the remainder is sold to individual farmers to rear. Usually, a feed mill forms part of the commercial ostrich enterprise. However, this is not the case in Botswana as farmers purchase feeds directly from the feed mill or feed dealers. Currently, there is a feed mill located about 70 km and 35 km from DOMU and ostrich abattoir, respectively.

Marketing

Ostrich products are mainly leather (which is soft and durable) and meat with some demand for feathers and eggs (Jarvis 1996b). Currently, the potential for market overseas is vast, especially in Europe and the Far East. Ostrich meat is being advertised as a low fat and low cholesterol (Jefferey 1996; Wilson 1998). In the opinion of Benson (2002) the Bovine spongiform encephalopathy (BSE) problems in Europe, combined with the consumer move to low fat foods, have presented the industry with a golden opportunity. Jarvis (1996a) in RSA reported that local producers would probably be able to export ostrich meat to many overseas markets for many years to come.

Like RSA, ostrich meat producers in Botswana appear to have been captivated by the high prices obtained from exported meat. Consequently, the local market has been almost totally ignored as presently ostrich meat can hardly be found in the market. Local market is undeveloped because of lack of coordinated marketing and promotion. Therefore, this calls for evaluation of local market potential and promotion of meat consumption locally through print media, television and radio.

Major constraints in ostrich farming

Some constraints that ostrich farmers in Botswana are facing include:

- ***High start-costs***
Setting up an ostrich enterprise requires large sums of money (Anon 2008), which is currently not available due to lack of support from financial agencies such as Citizen Entrepreneurial Development Agency (CEDA). According to Johnson (2010), the price of a breeding bird has increased from P1700 (equivalent of US\$242) in 2000 to P3000 (equivalent of US\$430) currently.
- ***High feed costs and unreliable supply***
Ostrich feeds are expensive, making feed costs a major challenge in ostrich farming (Department of Animal Production 2009). According to Jarvis (1997), the cost of raising an ostrich is 80% feed cost. Therefore, the growing of lucerne and feeding of silage will significantly reduce feeding costs and render the enterprises profitable.
- ***Inadequate stock***
Currently, fewer birds are reared up to slaughter age leading to low throughput. BIDPA (2005) estimated that 570 and 1115 ostriches were slaughtered at the ostrich abattoir in 2003 and 2004, respectively. This clearly indicates that it is uneconomical to operate an ostrich abattoir given that it has the capacity to slaughter 20 000 birds per annum.
- ***Location of farms***
Production sites are located hundreds of kilometres from the abattoir and feed mill resulting in high transport costs and high mortalities (especially chicks). High transportation and high inputs costs (i.e., feeds, birds etc.) hamper the development and growth of the industry.
- ***Inadequate extension service***
The extension service or advice rendered to the farming community is inadequate because staff is poorly trained and insufficient. Inadequacy of extension service may also be attributable to the large size of the area covered by extension agents, as well as, shortage of transport. Hallam (2004) ascribed the poor performance of the ostrich industry to lack of farmer training and experience in ostrich farming.
- ***Lack of research support***
Currently, there is no or little scientific research being carried out to support ostrich farmers. As a result, this has contributed to the poor performance of the industry.

- ***Lack of capital***

The majority of ostrich projects were funded through CEDA and the then Financial Assistance Policy (FAP). However, CEDA no longer support ostrich projects due to closure of the abattoir giving rise to the collapse of the majority of projects across the country.

- ***Delayed and inadequate land allocated for ostrich farming***

Land Boards take time to allocate land and when allocation is done farmers are not allocated the land they applied for. Instead, farmers are allocated little land that cannot afford the intended ostrich production activities leading to few birds being reared.

- ***Limited infrastructure***

Lack of services such as electricity and water at project sites increases production, thus hampering the development and growth of the industry.

Opportunities

- There is market for ostrich meat and skins internationally (especially in the European Union) and to some extent locally. However, the size of the local market needs to be investigated.
- There is strong veterinary support as evidenced by regular disease surveillance in the case of Newcastle disease.

Proposed model for raising ostriches

There is a need to develop the ostrich industry of Botswana along the lines of vertical integration, which is common in poultry operations (particularly chickens) in the developed countries. This practice is common in broilers than layers. Dozier III et al (2001) observed that vertical integration has developed because it is an effective and practical way to produce broilers. Vertical integration provides the orderly flow of hatching eggs, chicks, feed and other supplies necessary for the efficient production and supply of processed birds into market channels. According to Begum (2005), vertically integrated contract farming is potentially a way of overcoming credit constraint, minimizing transaction costs and gaining market access.

In vertical integration, birds are produced and marketed by firms, which own or control breeder flocks, hatcheries, broiler flocks, feed mills, processing plants, and market arrangements. While there are some company-owned farms, typically, birds are managed by farmers under contract and under the supervision of the company. The term “contract” refers to agreements between farmers and the nature of the integrator that specify conditions of producing and marketing broilers (Begum 2005). In the vertically integrated enterprises the farmer provides land, labour, houses, litter, equipment, equipment, taxes, utilities, and insurance while the company supplies birds, feed, vaccines, drugs and supervision.

The suggested model for ostrich farming in Botswana is presented in Figure 1. This model is derived from the broiler model practised mainly in developed and some developing countries across the globe. According to Figure 1, farmers in the villages adjacent to Dibete are to be encouraged to set up outgrower farms, i.e., within a 100 km radius from DOMU. The maximum capacity of each farm will be 500 ostriches. The major benefit to farmers is that

they have a reliable source of chicks from DOMU. A contractual agreement is required between DOMU (the contractor) and the outgrower farms. DOMU will supply these farms with inputs and the farms will in turn raise birds to slaughter age. Thereafter, birds will be collected and ferried to the abattoir for slaughter. The model below assumes that DOMU is run by a private operator.

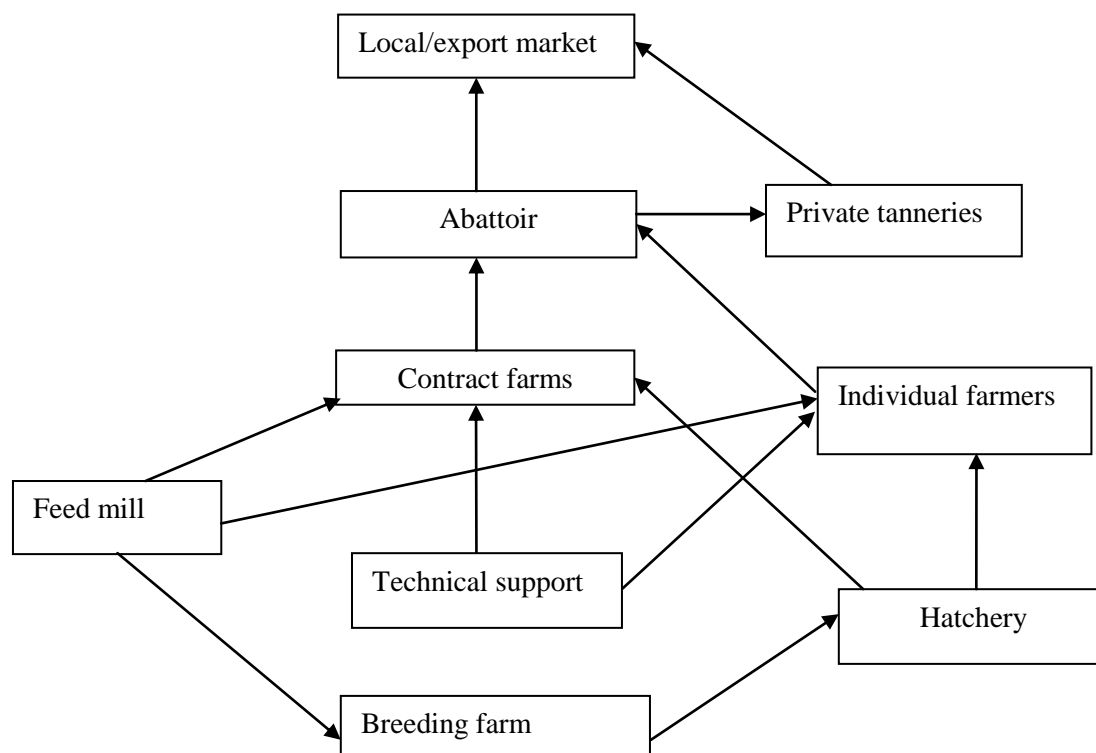


Figure 1. The vertical stages of a proposed ostrich enterprise at Dibete

About 5000 breeders are required for the ostrich industry in Botswana to be economically viable. Currently, there are about 1200 breeders in the country. DOMU breeding facility is planned to accommodate 450 breeders (300 hens and 150 cocks) instead of 640 breeders kept on the farm at present. An additional 50 breeders will be kept as reserve stock resulting in breeding stock increasing to 500. This implies that DOMU has to be developed further to accommodate additional breeders while at the same time encouraging 4 to 5 farmers to produce hatching eggs. To minimize disease outbreaks on the farm strict biosecurity measures should be put in place. As the hatchery at DOMU is not yet operational, the hatching of eggs is outsourced to a private hatchery on agreed terms from time to time.

Recommendations

In order to develop the ostrich industry in Botswana the following are recommended:

1. An ostrich production belt should be established with the ostrich abattoir as the reference point. To this end, new ostrich enterprises should be located no more than 100 km from the abattoir to minimize costs and mortalities due to transportation.
2. The ostrich abattoir should be leased out as a matter of urgency as its continued closure has detrimental effects on the performance of the industry in its entirety.

3. There is need to benchmark in countries that have successful ostrich enterprises such as RSA and Zimbabwe.
4. Extension service is inadequate; hence an urgent need to train ostrich extension staff in all aspects of ostrich production.

Conclusion

1. In order to develop the ostrich industry, an aggressive approach is required. It is apparent that contract farming is likely to radicalize the ostrich industry. In contract farming, farmers establish their farms while the contractor supplies feeds, vaccines and extension service. The contractor collects birds at 10 months of age and ferry them to the abattoir for slaughter.
2. Extension service is inadequate due to lack of staff training; hence the need for specialized training in poultry science, with emphasis on ostrich production.

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