

**NSAP****47th Annual
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(JOS 2022)****CONFERENCE
PROCEEDINGS**THEME
**SECURING ANIMAL
AGRICULTURE AMIDST
GLOBAL CHALLENGES****AN APPROACH ON DROMEDARY CAMELS (*Camelus dromedarius*) IN NORTHERN NIGERIA**¹Ghude, M. I., ²Alkali, H. A., ³Maigandi, S. A. ⁴N.A. Alassan and ⁵Bello, B.¹Veterinary Section, Agric Department, Nassarawa LGA, Kano state²Department of Animal Science, Federal University, Kashere, Gombe State³Department of Animal Science, Usmanu Danfodiyo University, Sokoto, Sokoto State⁴Department of Animal Production, INRAN, Maradi, Niger Republic⁵Department of Animal Science, Bayero University, Kano**Corresponding author:** elghudemusa@yahoo.com 0803 615 9450**INTRODUCTION**

Dromedary Camels in Nigeria are concentrated in the Semi-arid Northern part of the country. The introduction of the camels in the Northern Nigeria can be linked to the caravan trade between the Sahara and Sokoto, Katsina, Kano and Borno provinces Legge, (1986). Camels have been an important domestic animal for many countries including Nigeria. Different breeds / strains have been developed for various purposes to suit different climatic conditions. There are almost 14 million camels in Africa and about 90,000 in Northern Nigeria DRA, (2018) which supplies quality protein in form of meat and milk. However, apart from these products, camels are kept for hardy work and means of transportation. There were many factors that are responsible for poor productivity of camel in Nigeria and these includes poor nutrition, disease and parasites FAO, (2008). However, the importance of Dromedary to the economy and wellbeing of Agro–Pastoralists of Northern Nigeria that the present study is registered.

FEED AND NUTRITION IN DROMEDARY

Dromedaries are herbivores and they eat primarily thorny plants, dry grasses and in fact, almost everything that grows on the desert. Dromedaries also browse on shrubs and forbs comprising up to 70% of their diet. About 8–12 hours/day is spent grazing with equal times spent ruminating. When foraging, Dromedaries tend to cover large area and select only a few leaves from each plant. This type of feeding behaviour reduces stress on the plant communities and eases competition with other arid region herbivores. For the Dromedaries, this kind of foraging may reduce the effect of toxic plants intake. Dromedaries browse or stripped off the leaves in one movement while browsing, they use their lips to grasp the food, and then chew each bite 40–50 times. The mouth is kept open while chewing thorny food. Anatomical adaptations such as the mobile and prehensile split upper lip, long tongue and the thorny nature of the inside of the mouth means that browsing rather than grazing is most suitable for the Dromedary. Some Dromedaries nonetheless, obtain almost all their food from grasses and herbs. In reality, as one might expect from the seasonal movements which are the norm for Dromedaries, the diet is rarely constant for a very long period of time. Dromedaries are selective feeders not only with regard to plants but also in respect of the parts of the plant they consume FAO, (2008).

DROMEDARY SYSTEM OF MANAGEMENT

Compared to other species of livestock, Dromedary production system is simple. It does not need much capital to invest and the equipment needed as a tool of managing the Dromedary can be sourced locally. Unlike the other species of livestock (ruminants and poultry) where there is much need of various types of equipment, however, the level of requirements in Dromedary production and management could only be environmental–friendly. In the traditional pastoral production system, Dromedary herders keep

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their animals under traditional system of management where there is no guarantee of availability of feed and water and adequate medication Ghude *et al.*, (2013). During wet season, majority of the pastoralists are facing problem of grazing area because of crop cultivation on most of the available grazing lands. This necessitated the Dromedary owners to migrate to an area where there is suitable grazing land that is not cultivable Ghude, (2017).

REPRODUCTION IN DROMEDARY

Like all other mammals, Dromedary produces younger ones through the process of mating, conception, nursing of the pregnancy and parturition. The reproduction in Dromedaries as reported by Yagil, (2006) is physiologically linked with its specific behavioral, anatomical and endocrinological peculiarities. Despite the extreme heat and un-conducive environment in which dromedary exists and also inhabit the most extreme climates on the globe, their process of multiplication is still guaranteed. It is however determined by the availability of food and protection for the newborn and consequently their reproduction is governed by these factors Yagil, (2006). In another development, it has been reported that in nomadic herds the male become sexually matured between 3–5 years old Ghude, (2017) but the situation may be improved if the herds are better controlled Wilson, (1998). Likewise female are also reported to become fully matured at 4 years and remains fertile for over 20 years Yagil, (2006). This age reduced as the husbandry practices improve and if the animals are kept under adequate access to feed and water. Other unusual reproductive characteristics of the Dromedary is that cows usually reaches puberty at the age of 3–4 years, but in some pastoral communities the animal will not be bred until at the age of 5-6 years as reported by Wilson, (1998). Male Dromedary reach puberty at about 3 years, but full reproductive activity is not develop until they are 6-7 years old Yagil, (2006). However, with traditional system of management, breeding started at an early age of 3 in both male and female and successful conception were recorded Ghude *et al.*, (2010a).

PREGNANCY IN CAMELS

Pregnancy occurred after a successful mating. Dromedaries are seasonal breeders and produces single calf at a birth. However, the gestation length of Dromedary is between 365–395 days. The camel has many unusual reproductive characteristics that contributed to making it a most unique animal Wilson, (1998). One of those unusual features is that pregnancy is almost exclusively carried in the left horn of the uterus and the live birth of twins is only rarely reported Yagil, (2006). There are many reasons why the pregnancy occurred in the left horn of the uterus among which various authors reported that it is bigger than the right although both the left and right ovaries discharged equal physiological functions.

SEASONS OF BREEDING AND CALVING

Dromedaries possessed unique system of reproduction. The breeding season in accordance with the gestation period, Dromedary calve mostly in the cold dry season and early hot dry seasons respectively. Environmental factors may lead to a change in the breeding periods from one place to another but certainly, these geographical variations may not necessarily bring a wider seasonal gap. Reports from Kalla *et al.*, (2008) indicated calving season from November to February among the pastoralists of Komadugu–Yobe River Basin in North–Eastern Nigeria. However, the reports of Ghude, (2017) from North–Western Nigeria is in agreement with that report in which all the breeders interviewed indicated cold dry season (November–February) as the appropriate time of breeding. The report also revealed that in a herd of 40–50 camels with at least 15–20 Dromedary heifers and cows, one bull can serve them in a breeding season without showing any sign of distress. Similarly, the same bull can be used

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in another herd with approximately equal number of females to be served similar to the bull's herd depending on the age, management, sexual vigor and health status.

CALVING AND DROMEDARY CALF

Dromedary-cows calve regularly within an interval of 2–3 years with an average of calving after every 3 years and gestation length ranges from 12–13 months with average length of 12 months respectively. However, a Dromedary-cow with a life span of 30 years would produce about 6 to 8 calves in her lifetime Ghude, (2017). Calf form the foundation stock of a Dromedary herd and also form the replacement stock without which the herd cannot grow and neither would milk be available for the pastoralists. However, rearing of Dromedary calves under traditional pastoral production systems is faced with several challenges that resulted in retarded growth and high death rates which pose a serious threat to the growth and development of a herd. The newborn calf has no natural protection against diseases and there is no technology of antibody transfer from the mother during fetal development. This may lead to loss of calves soon after parturition. The simplest way a calf can obtain immediate immunization soon after birth is only through the colostrum, which has a very high concentration of antibodies. In most pastoral communities, there is a common belief among many pastoralists that colostrums causes diarrhoea and, consequently, is unsuitable for the newborn calf. This wide spread practice of withholding the colostrum from the newborn calves, depriving them of essential antibodies, is certainly a crucial factor in the frequently reported high calf mortality in pastoral production systems FAO, (2008).

PRODUCTS AND PRODUCTION POTENTIALS OF DROMEDARY

Milk: One of the most important products from camel is milk. It's being characterized as a valuable food for people living in marginal land of both Africa and Asia. Pastoralists from around the world cherish and utilize camel milk as a staple food FAO, (2008). However, camels have an outstanding milk production in harsh environmental conditions in which they are kept. Milk production by camels when compared with cattle, sheep and goat under the same harsh environmental conditions recorded a significant variations and its lactation persists well into the dry seasons and rarely ceases even during extended drought periods Yagil, (2006). In the North–Western Nigeria, camels recorded a minimum of 1.66litres and maximum of 2.61litres par animal par day with respect to parity and seasons of the year respectively Ghude, (2017). That quantity produced is mostly under one milking regime and calves also utilizes the milk for their survival. However, pastoralist in the region utilizes camel milk for consumption as raw milk and serve as staple food that sustain them nutritionally. Good management of calves will reduce mortality and enhance milk production. Therapeutically, camel milk is being utilized as medicinal.

Meat: On daily basis, in Kano main abattoir of Kano State, an average of sixty (60) camels are slaughtered. The same slaughtering is in practice concurrently in the main abattoirs of Sokoto, Maiduguri, Bauchi, Katsina and other major towns in the North with an average of forty (40) camels daily. Camel meat is also called beef. The texture and colour is similar to that of cattle beef. This, made camel beef to be sold in disguise of cattle beef as only the butchers and experts can differentiate the two. The taste of camel beef is similar to that of cattle beef. In preferences as a result of cost of cattle beef, consumers turned to camel beef as an open alternative especially during festivities when the demand of meat is high Ghude, (2014).

Agriculture: The increasing human population and shortage in food production in Northern Nigeria needs an urgent attention to optimize the utilization of rangelands through appropriate livestock production systems among which Dromedary production is certainly the most sustainable. Agricultural

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production is one of the mainstay economy of the Agro-Pastoralists of the region. Dromedary performs wonderfully when it comes to agricultural practice in which one Dromedary out-performed a pair of oxen. With marginal lands and high cost of farm-power machineries, the animal will play a key economic role to sustain the situation Ghude *et al.*, (2010b). With increase of desert encroachment in the far Northern region, adapting Dromedary production will sustain the system.

Production potentials: With potential of utilizing poor quality feed with low nutritive value in which other species of livestock are not capable of utilizing, Dromedary utilizes. In the peak of dry season when it is evident that animals like goat and cattle ceased to produce milk due to feed shortage, Dromedary produces substantial quantity of milk that sustain families. There is none or limited emaciation during that period and hence guarantees meat production Ghude, (2014).

CONCLUSION:

The present study confirmed that for future prospects of Dromedary, more research should be conducted to address the management and nutrition requirements for the camel to improve the milk yield, meat production, and agricultural activities for a prosperous and secured economic growth of the pastoralists.

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