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“The Dromedary in the East African Countries”

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Introduction: The Dromedary in the East African Countries:

Its virtues, present conditions and potentials for food production

Tegegne Teka

The Camelus

The Old World genus of Camelus is generally accepted to comprise two species: Camelus dromedarius, the Dromedary, one-humped or Arabian camel; and Camelus bactrianus, the Bactrian or two-humped camel. The habitat of the dromedary is Northern Africa (the Mediterranean littoral, the Sahelian states of West Africa, Sudan, Ethiopia, Somalia and northern Kenya), the Near East and West-Central Asia. The Bactrian camel occupies the colder areas of southern Russia, Mongolia, east-central Asia and China (Wilson, 1984). The dromedary is more numerous than the bactrian camel and represents almost 90% of the genus Camelus in the World. For more information on the origin and development, refer to (Mukasa-Mugerwa, 1981; Wilson, 1984; Bornstein, 1989).

The camel originated in North America and was domesticated by secondary nomads primarily for transport and labour rather than as a producer of meat, milk or clothing (Zeuner, 1963 quoted in Wilson, 1984:4). The approximate time of domestication for camel is around 4000 years before present (BP), and was first domesticated in South Arabia (Wilson, 1984). It is thought that the dromedary could have come down to the East African countries from Arabia as a beast of burden.

The dromedary or the one-humped camel is the only camel species that is found in the East African countries, and therefore, wherever camel is mentioned in this publication, we mean only the dromedary. Moreover, the geography of the East African countries in this issue includes: Djibouti, Ethiopia, Kenya, Somalia and Sudan, sometimes referred to as the Horn. These five countries contain the largest camel population in Africa. Table 1 on the next page shows the proportion of camel concentration in the different regions of the world and the share of Africa. From the table we can see that Africa contains 75% of the World camel population.

Table 2 shows the distribution of estimated camel population of the five East African countries compared to the rest of Africa. Accordingly, Djibouti, Ethiopia, Kenya, Somalia and Sudan together have 4.3 times the camel population than the rest of Africa. Somalia alone has 1.4 times the camel population than the four East African countries, and 2.5 times the number of camels than the rest of Africa.

Table 1. Number of camels by regions and the world (1000 head) for 1979/81 and 1988

AREA/NO and YEAR	1979/81		1988	
	No.	%	No.	%
Africa	12,405	(b) 74	14,166	75
Asia	4,058	24	4,533	24
Others (a)	235	2	265	1
World	16,698	100	18,964	100

Source: FAO, Production Year Book, Vol. 42, 1988:244-245. (a) and (b) are my extracts

Table 2. Number of camels in the East African countries compared to other African countries (1000 head) for 1988

East African Countries		Other African Countries	
Djibouti	58	Algeria	130
Ethiopia	1,060	Burkina Faso	5
Kenya	790	Chad	509
Somalia	6,680	Egypt	70
Sudan	2,850	Libya	185
		Mali	241
		Mauritania	810
		Morocco	54
		Niger	417
		Nigeria	18
		Senegal	8
		Tunisia	184
TOTAL	11,438		2,631

Source: Extracted from the FAO Production Year Book, Vol. 42, 1988: 244-245. Except for Algeria, Burkina Faso and Chad all the above figures are estimates by FAO.

Taking the absolute numbers of livestock in the five East African countries (Table 3), cattle is the most populous (33%), followed by sheep (31%), goats (29%) and camels (7%). But if we consider the uses and economic significance of these animals to the nomadic population, camels would definitely take second place to cattle in general, but would be equally important or more important than cattle in other places. Despite this, camels have been neglected both by governments and development planners either as an economically productive animal, or as an animal with potential for food production in the arid and semi-arid regions of Africa, and particularly in the East African countries.

Table 3. Number of camels compared to other livestock in the East African countries (1000 head) for 1988

	Cattle	Sheep	Goats	Camel
Djibouti	70	414	500	58
Ethiopia	31,000	23,400	7,500	1,060
Kenya	9,800	7,300	8,500	790
Somalia	5,000	13,500	20,000	6,680
Sudan	22,500	18,500	13,500	2,850
TOTAL	68,370	63,114	60,000	11,438
(%)	33	31	29	7

Source: Extracted from the FAO Production Year, Vol. 42, 1988: 244, 247. All the above figures are estimates by FAO.

Camel and its Habitat

The natural habitat of camels in the arid and semi-arid areas of the East African countries is generally all parts of Djibouti and Somalia, the eastern, northern and southern lowlands of Ethiopia, the eastern and northern lowlands of Sudan, and the northern lowlands of Kenya. Camels and camel pastoralists move freely between national boundaries. We can see camels and camel pastoral movements in groups of countries in East Africa. In group I, we have Ethiopia, Djibouti and Somalia; in group II, we have Ethiopia and Sudan; in group III, we have Kenya and Somalia; and in group IV, we have Ethiopia and Kenya. Camels and camel pastoralists move within political boundaries.

The major ethnic groups owning camels in Ethiopia are the Beja, Rashaida, Afar, Somali and Borana. In Kenya, the Somali, Rendille, Gabbra, Borana and Turkana. In Somalia, the Somali. In Djibouti, the Afar and Somali. In Sudan, Beja. Camel owners in this region usually ignore political boundaries. What is important for them is the social networks, trade contacts, production activities, and the camel environment which exists in the region. In this regard, the camel owners have a role to play in improving international relations between the East African countries.

The Virtues of Camel

The dromedary has been exploited by man in the arid and semi-arid regions of Africa and Asia for not less than 40 centuries. It has traditionally been used as a beast of burden. Its historical significance as an animal of transport in the most inhospitable areas of the world has very much been recognized. The great caravan trade routes in the deserts of Africa, the Middle East and Asia, are still in the minds of many merchants and economic historians. As much as the camel was used to help trade and industrialization to prosper, it is still the only animal that guarantees movement and trade activities for the nomadic and semi-nomadic population of the arid and semi-arid areas of Africa.

The camel is a multi-purpose animal. The other uses of camels for the nomadic population include the production of milk, meat, wool, hides, and a potential for traction. The love, affection and admiration the nomadic people have for the camel is very deep. The folklore is inexhaustible. It is the standard of measurement of the nomadic people against which nearly everything is weighed. Wealth and status are measured by it. Sustenance and subsistence are also based on it. The camel's endurance in the hottest regions of the world, with less water consumption and feeding on thorny bushes is some its peculiar characteristics. One may ask, how is it that the camel has these special and superior qualities to other domestic animals? Here, it is in order to mention some of the virtues of the camel. The following discussion is based on Wilson (1984), Mukasa-Mugerwa (1981), Bornstein (1989) and Getachew (1989).

The dromedary camel has very special anatomical and physiological characteristics. In terms of physiological adaptation to heat and water deprivation, it surpasses every other large animal. None of the adaptive mechanisms to cope with the environmental stresses are unique to the Arabian camel, but the efficiency of its adaptation is superior. At high temperatures the camels adapt to the scarcity of water by reducing their faecal, urinary and evaporative water losses. During dehydration, the kidneys reduce water-loss by decreasing filtration rate and by increasing the tubular reabsorption of water. Also, their ability of regulating their body temperature from 84.5–41.7°C, conserves a lot of water when most needed.

The camel is a large animal whose surface area per unit volume is relatively small. This gives it a substantial advantage in reducing heat gain. In a well-watered camel, the body temperature varies only by 2°C, whereas in a dehydrated camel the variation could be as high as 7°C, from 34°C in the morning, to 41°C in the afternoon. This contributes to a storage of heat without the use of water. The camel uses only 1.1 litres of water/100kg body weight (B.W) for evaporative cooling, whereas the donkey and man use 4.7 and 7.0 litres of water/100kg, respectively (Schmidt-Nielson, 1957 quoted in Getachew, 1989). Thus, the camel uses substantially less water for regulating its body temperature, and successfully manages to survive in the deserts of the world.

The large size and height of the camel is of great advantage both in heat regulation and when competing for food. Its large size allows it to use less food and water per unit mass. The adult dromedary camel's head is about 2.5 meters above the ground, but with the neck stretched upward, it can reach the twigs and leaves 3.5 meters from the ground that are inaccessible to most other animals. This characteristic makes the camel an excellent complement for multi-species herding in different kinds of rangelands, increasing the productivity of the land without really competing with other livestock.

The dromedary camels can be watered once a week, or once every two weeks, and could go without water for one month in very severe conditions in the dry season. The kidneys in the camel control water-loss by producing a concentrated urine and by reducing the urine flow. When water becomes available camels drink more than 25% to 33% of their body

weight within a short period of time. For instance, the highest drinking rates observed were 135 litres in 13 minutes (Mukasa-Mugerwa, 1981).

Camels are endowed with anatomical adaptations which enable them to feed on thorn bushes of the desert. They can utilise a wider variety of local plants sometimes considered unsuitable for other herbivores, and rarely receive supplementary feed. The plants used as food by camels differ in different rangelands, but they grow well under arid areas with scanty and unreliable rainfall. Species of *Acacia*, *Indigofera*, *Dispera*, *Salsola*, *Atriplex*, and *Balanites Aegyptiaca* are commonly used. Some of these are hard and thorny plants with the highest content of moisture and electrolyte, and are not eaten by other animals. Camels are generally economical grazers, unlike goats that graze to the roots. The camel is also unique in that it has an appetite even under severe dehydration. It can survive on diets well below maintenance requirement and compensate rapidly when conditions improve. With these flexibilities in its physiology and anatomy, the camel has several advantages over the domesticated animals.

Camels produce milk in great quantity and with comparable nutrition content to that of cattle. Again, the uniqueness of camels is not that they produce milk, but produce adequate amounts in the arid and semi-arid, or in drought-prone regions. The recorded milk production of a camel per day is between 2.8 and 11 litres. The average lactation in the camel is 12 months but it may vary from 9 to 18 months depending on the management and improvement in grazing.

The vitamin C content of camel milk is superior to that of cow milk. This is very important from the nutritional side in regions where fruits and vegetables are scarce. Moreover, the fat content is lower than cow's milk making it easily digestible; and, as it does not sour as quickly as cow milk, it is ideal in high temperature regions.

Meat is the other product of the camel. With its large size, the meat off-take is quite substantial. Camel meat is not regularly consumed by those people who live in the arid and semi-arid areas for various reasons. To begin with, there is some form of resistance to consuming camel meat because of taste and preference, which could be more psychological than real. Secondly, it could be economic reasons, i.e. that camels are capital assets, supplement the food requirement by producing milk, and serve the household as beasts of burden.

Camel meat is consumed in the five East African countries mentioned above, though not in large quantity. The figure from Sudan on camel meat consumption is encouraging. Salih (1988) informs us that in 1983 camels represented 8.8 percent of the 7.7 million animals slaughtered in official slaughter houses, and 18 to 20 percent of the total meat consumed per year in Sudan. Camels are also exported for slaughter to the neighbouring Arabian countries and to the Gulf states. For instance, customs' figures in Sudan for the export of camels during the period 1977-1980 varied between 196,742 and 338,102 per year (Babiker, 1984).

In a comparative study of camel meat and beef (Babiker and Tibin, 1986), it was described that the quantity of meat obtained from camel carcasses ranges from 125 to 480 kg, while the dressing percentage varies from 55 to 70 percent. Camel meat also resembled beef in taste, appearance, colour, texture and palatability. The proportion of edible meat in the camel body is relatively comparable to cattle, though the fat content is by far lower than in cattle meat. With this great potential, it would have been a revolution to protein-starved countries of Africa and Asia if the camel meat was put to regular use.

The camel has been used as a beast of burden from time immemorial. It is true that the development of the wheel and the revolution in the auto industry has reduced the importance of camel. Bulliet (1975) writes that the era of pack animals is very near its end. No longer can animal energy compete successfully in the world of transport economy. Wheeled vehicles

have won their long contest with pack animals. Though I do agree with the general trend, it is, however, important to recognize that pack animals, such as the camel, is very indispensable in the arid and semi-arid regions of Africa, and has continued to play a very pivotal role in trade, transport, and in the movement of the nomadic population. In fact, the rising cost of motorised transport, and the steady increase in demand for milk and meat products, as well as a need for draught animals for oasis husbandry, means that the camel has a future in Africa (Bourzat and Wilson, 1987).

Camels are also reared as racing animals. This a very lucrative business in Saudi Arabia and the Gulf States. For instance, Abbas and Musa (1986) mention that one three-year-old male camel was sold for USD 1,400, and a four-year-old was sold for USD 24,000. They also indicate that average prices of young race camels are in the range of USD 3,000 to USD 5,000.

Bulliet (1975) indicates that with the passage of time, camel nomadism will become increasingly unattractive as a way of life, and that the herding of camels is a vanishing phenomenon. Though this may be true for some countries, it can not be true for those countries where nomadism is one of the predominant systems of production, such as the countries in east Africa. In fact, Hjort (1988) argues that production systems based on camel rearing have a great potential for certain regions. The most important thing is to know the complexities involved in the camel pastoral systems, and to extend support while not destroying the existing systems.

Why a Special Issue for the Camel?

What has been said above about the camel is not a blind support for the animal. It is neither an attempt to worship the camel nor a campaign to make others worship. It is the real potentials of the camel in the arid and semi-arid areas of Africa that makes us speak out about this neglected animal. It is our recognition of its suitability in the arid and semi-arid regions of Africa and its various uses to the nomadic population in the region that attracted us most.

With the increasing trend in the desertification of sub-Saharan Africa, with successive droughts, famine and food shortages in Africa, and more particularly in the Horn of Africa, on the one hand, and the potentials for food production of the camel, on the other hand, there is a need for researchers and institutions to focus and highlight the potentials and contributions of the camel in sustained food production. With these kind of challenges and prospects to develop the dry lands, it is sad to report that the International Livestock Centre for Africa has closed its research unit.

This special issue is dedicated to the camel—an animal with much potential, but least exploited by man. The contributors of this publication present their research encounters about the camel. Some have given more of their research time to camels than have others, but all speak of the camel pastoral life from their field experiences. The opinions expressed in the papers are reflections of concrete realities. We hope that these ideas will not only receive due attention from policy makers and international organisations in helping the nomadic population harness the potentials of the camel in food production, but will also help to sensitize the world community at large in discovering the camel.

The papers in this publication have tried to look at issues, problems and prospects of the camel and its environment, and of the camel herders from different angles. Nevertheless, they all have one thing in common, i.e. the camel production system supports a large proportion of the arid and semi-arid areas of East Africa and has a potential to bring about food security in the same region. This can be realized if all those concerned understand the camel pastoral complex, work very closely with the people at the grassroots, and help the

people to harness the potentials of camel pastoralism with the view to better manage the arid lands and achieve sustained food production.

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