

An overview of donkey utilisation and management in Ethiopia

by

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Abstract

Ethiopia is a country with one of the highest donkey populations in the world. The total number ranges from 4-5 million. Four recognized donkey types exist, unevenly distributed in all agro-ecological zones and the two landscape patterns. The small scale farmers and the Highlands have the largest share with 2-3 animals per family, and with female donkeys being most common (70%). Weaning and breeding ages were established to be between 4-5 years for places like Awassa, Gondar and Dire Dawa. In the country as a whole donkeys provide pack services, carrying over fifteen kinds of commodities weighing 60-100 kg and covering distances of 15-20 km for a duration of 4-5 hours. Observations undertaken along the main roads to and from Addis Ababa revealed that the use of donkeys is directly related to the distance covered. On the Gojam and Dessie roads more donkeys carried goods than people while on the Ambo road more people carried goods than donkeys.

The role of donkeys in the diversification of sources of income in rural areas is highlighted. In Tigray and the Rift Valley areas their contribution in terms of firewood trade to the family income was found to be in the range of 156 to 1404 Ethiopian Birr (ETB) annually (US\$ 1 \cong ETB 6.3). In Ejersa, sand is transported in 20 litre containers fitted on the back of a donkey. Each day a donkey makes 80 shuttles from the river basin to the roadside transporting a volume of sand amounting to 4 m³ and costing ETB 90. Constraints to improved donkey use discussed, include health problems, nutrition and policy issues.

Introduction

Number and Distribution

Various sources have given different figures for the donkey population in Ethiopia. According to FAO it was 3.9 million (FAO, 1985), 3.9 million (FAO, 1989) and 5.2 million (FAO, 1994). Jahnke (1983) and Fielding (1991) cited the 3.9 million estimate. As shown in Table 1, donkeys are found unevenly distributed in all the zones of the country (Admassie, Abebe, Ezra and Gay, 1993). Whatever the overall figure may be it is necessary to deduct the 128,700 donkeys that now belong to Eritrea.

Table 1: Donkey populations and densities in the different zones of Ethiopia

Zone	Donkey population (1000's)	Highland area (1000 km ²)	Density of donkeys (number/km ²)
Arsi	363	24.6	14.7
Bale	125	34.5	3.6
Gamo Gofa	12	20.9	0.6
Gojam	394	58.1	6.8
Gonder	491	54.9	9.0
Harerghe	226	59.8	3.8
Ilubabor	16	15.3	1.0
Kefa	43	32.6	1.3
Shewa	959	72.9	13.2
Sidamo	125	54.1	2.3
Tigray	468	19.0	24.6
Welega	159	44.2	3.5
Welo	390	38.5	10.1

The majority of the donkeys are found in the Highlands, with Shewa, Gonder, Tigray, Gojam, Welo and Arsi having the largest populations. The density of donkeys is highest in Tigray, Arsi and Shewa. Areas with middle range densities are Gojam and Gonder, with low densities in all other regions. The Central Statistics Office (1995) reported that 44%, 34% and 19% of the donkeys are found in Oromia, Amhara and Tigray Regions respectively (Table 2).

Table 2: Number and percentage distribution of horses, donkeys, mules and camels used for draft power by type and region for private holdings (1000's).

	Horses		Donkeys		Mules		Camels	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Tigray	0	0	138	19	4	18	4	66
Afar	0	0	<1	0	0	0	0	0
Amhara	114	49	252	34	10	40	1	17
Oromia	97	41	324	444	4	17	1	17
Benshangule	0	0	<1	<1	0	0	0	0
Separ	22	10	12	2	6	24	0	0
Gambela	0	0	<1	<1	0	0	0	0
Addis Ababa	0	0	4	<1	<1	1	0	0
Dire Dawa	0	0	5		0	0	0	0
All regions	233	100	736	100	24	100	6	100

Source: Central Statistics Office (1995)

Even though it is difficult at present to suggest the critical minimum donkey density required per unit of population (Fielding, 1991) to initiate and launch promotion interventions as part of a national livestock policy, according to FAO (1989) there are 27 donkeys per 100 people in Ethiopia, which is one of the highest ratios in the world.

Types of donkeys

The domestic donkey traces its ancestry to the wild asses found in Egypt, the Sudan, Somalia and Ethiopia. The two recognized races of the wild ass are: *Equus asinus africanus* and *Equus asinus somaliensis*. About 2500 wild individuals are present in the Danakil Depression and Nogal Valley in the horn of Africa (Clark, 1974). Based on average size and coat colour four types of donkeys are recognized in Ethiopia: Jimma, Abyssinian, Ogaden and Sennar (Dreyfus, 1976).

Ownership pattern

In the Highlands of Ethiopia farmers own an average of 2-3 donkeys per family. The following is a review of various survey samples:

The Shewa sample: Of the 120 households surveyed by Wilson (1991), 102 (85%) owned or kept donkeys. The average number of donkeys per household was 2.72 of which 66% were born on the farm and 30% were acquired by purchase.

The Tigray sample: This study was also conducted by Wilson (1991). A total of 277 households were sampled in two areas of central Tigray. Of these, 135 (49%) kept donkeys. The average number of donkeys per owning household was 1.52.

The Dire Dawa and East Oromia sample: Of the 40 households surveyed in Dire Dawa by Feseha and Yoseph (1996), 28 (70%) owned a single donkey, 6 (15%) owned two, 4 (10%) had three, and 2 (5%) had five. Whereas the picture in East Oromia, which is located in the Highlands showed that 30 (75%) owned one, 6 (15%) owned two and 4 (10%) owned three donkeys.

The Gonder sample: A total of 400 households around the city of Gonder was included in this study which was conducted by Feseha and Aweke (1995). In terms of standard of living 83% of the households were found to be in the categories below average and poor. They owned a single donkey and one or two ruminants. The donkey ownership profile amongst the above average (17%) was between 2 and 4 donkeys per family.

The Rift Valley sample: A study revealed that donkeys constitute about 90% of the equine population. Seventy percent of the smallholders in the area own one or more donkeys making them the third most kept livestock species after cattle and goats.

Sex and Age structure

In the Shewa sample, of the 277 donkeys, 76 (27%) were males and 201 (73%) were females. In the Dire Dawa sample, of the 30 donkeys differentiated into their respective sexes, six were males and 24 were females. In East Oromia 28 were males and 2 were females.

Biology, nutrition and uses

Breeding

Various observers have asserted that donkeys breed all the year round. High foaling periods registered in the Debre Brehan area were in the months of March, April, June, July and August (Wilson, 1991). In Gonder it was noted that breeding as well as parturition periods coincide in most of the cases with the onset of the rainy season (May/June). According to Mohammed and Teketel (1991) most foalings in Awassa occur in February and March.

Growth

Donkeys reach mature weight at between two and three years of age. The average weight of donkeys, males and females combined, transporting goods into Debre Brehan, was approximately 105 kg (Wilson, 1991). Breeding age for female donkeys is four-five years in Awassa, three-four years in Dire Dawa (Feseha and Yoseph, 1996), and five years in Gonder (Feseha and Aweke, 1995). For males it is four years in Dire Dawa, and four years in Gondar (Feseha and Aweke, 1995). Weaning age has also been monitored in some areas. It is 10 months in Wolisso, between 8 and 10 months in Gonder and 10-12 months in Dire Dawa (Feseha and Aweke, 1995).

Nutrition

Numerous observations confirm that in almost all cases donkeys are left to forage for themselves when not working. For most of the time they generally maintain good body condition with the exception of the months of March and April (Feseha and Aweke, 1995). In a study conducted in Gonder, 60 donkeys were examined in March and another 60 in April in order to determine their body condition. In the findings obtained, 29 and 32 respectively were placed in the poor body condition category. In the area, donkey husbandry is characterised by inputs which range from very limited to nil. Feeding of donkeys is entirely based on grazing on communally owned grasslands as well as roadsides that are overgrazed and where forage growth is poor. Donkeys, whose feeding is often neglected, survive due to their tremendous capacity to utilise foods of low quality.

Uses of donkeys

In small scale farming operations donkeys are used for transport and work as follows:

- grains from fields to farmsteads
- grains to local markets or pick-up-points
- agricultural inputs from distribution centres to farmsteads
- fuel wood, animal dung and charcoal for the rural and urban sectors
- water for the rural as well as the urban sector
- relief supplies from distribution centres to farmsteads
- cash crops such as khat, potatoes, onions and other vegetables from fields to local markets or pick-up points
- sick, aged, dead and disabled persons
- threshing cereal crops and beans by trampling
- building materials such as stones, sands, tree poles and teff straw
- earthenware such as pots and plates
- animal food such as hay, teff and wheat straw
- war hardware and ammunition
- weeding in maize fields
- plowing of land in association with oxen.

Loads and activity patterns

Most donkeys are used as pack animals. Along the Koka-Awassa route a considerable number are seen pulling carts. Table 3 shows the results of studies of load and activity patterns of donkeys at four sites. A study by ILRI in 1988 as cited by Crossley (1991) has revealed that donkeys are utilised an average of 39 hours/year (h/y) in the Debre Brehan area for transport of crops from field to farmstead, plus 46 h/y for threshing (with other equines), plus 40 h/y for hay transport giving a total of 125 h/y. Transport to market occupies 308 h, bringing the grand total to 433 h/y (average 8.3 h/week). According to Crossley (1991) these figures are undoubtedly above the national average, but still represent a relatively low utilisation.

Table 3: Activity patterns and load size for donkeys at various sites in Ethiopia

Site	Frequency of use per week	Distance covered per use (km)	Duration per use (hours)	Load (kg)
Wolliso	-	20-30	4-6	70-100
Gonder	3-4	15	4-5	60
East Oromia	7	-	3-4	-
Dire	4-5	10-20	4-5	60-100
Dawa				

Source: Feseha and Yoseph (1996)

Another study focusing on counting the number of persons and donkeys entering the city of Addis Ababa to sell produce such as firewood, leaves, hay and dung was conducted by Boswall in 1984. Donkeys entering Addis Ababa from the suburbs carry seven types of load, these are: eucalyptus, hay, straw, dung, charcoal, teff and maize. The results obtained are shown in Table 4.

Table 4: Comparison of numbers of human and donkey loads in June 1984 on the main roads leading into Addis Ababa

	Gojam road			Dessie road			Ambo road		
	Mon	Wed	Fri	Mon	Wed	Fri	Mon	Wed	Fri
Donkey	326	1026	1112	304	870	1182	102	320	411
Human									

Source: Boswall (1984)

On the Gojam and Dessie roads significantly more donkeys carry goods than do people, while on the Ambo road significantly more people carry goods than donkeys. The most likely explanation for this is that donkeys can carry goods longer than humans and therefore further. So if there was a greater use of donkeys it would suggest that more of the goods were coming from a greater distance. In an observational study undertaken by Wilson (1991) of the 1130 pack loads being transported by donkeys along the south eastern route out of Addis Ababa, 49% were sacks of grains, 19% were firewood, 8% were water and 4% were charcoal. In the Dire Dawa zone, charcoal, fuelwood and water were the most frequently carried commodities while grains, khat leaves, potatoes and onions dominated the loads in East Oromia (Feseha and Yoseph, 1996).

Income generation

In countries such as Mexico, India and Ethiopia, it is difficult for most farmers to afford horses and mules. In fact in the latter two countries some low income people are wholly dependent on donkeys for sustenance. In Tigray a 160 km journey is travelled by heavily laden caravans, which include donkeys, from the salt plain to the main town in four days. Donkeys transport 49 kg of salt per animal per trip (Wilson, 1991). Excise duty of ETB 0.75 was levied on donkeys and over three Ethiopian fiscal years, from 1971 to 1974, revenue from this source averaged ETB 60,680 (US\$ 1 \cong ETB 6.3). Mules contributed 40%, equivalent to ETB 172,093. It needs to be borne in mind that without donkeys there would be no mules and, therefore, the real contribution of donkeys should be considered to be in excess of 50% (Wilson, 1991).

As for the contribution of donkeys to the household economy, Wilson (1991) reported a survey of 58 village households situated about 15 km from Mekele. Seventeen of the households earned their entire living from cutting and transporting wood to Mekele, carrying an average of nine donkey loads per week per household. The other 41 households usually transported one load per week. In addition, village consumption amounted to about 3000 kg or 2.4 m³ per week. The contribution of donkeys to the village in terms of fuel transport alone was 685.6 t or 548.5 m³, equivalent to just over 13,000 journeys. The gross revenue from commercial exploitation was ETB 30,254/year. This gave an annual earning of ETB 1404 per family for households which were commercial traders in firewood and ETB 156 for those who traded only occasionally (Wilson, 1991). According to K. Friew (Personal communication) of the Institute for Agricultural Research, sand is transported in Ejersa, which is located between Modjo and Koka, using four containers of 20 litres capacity fitted on the back of a donkey. Each day a donkey makes 80 shuttles from the river basin to the roadside transporting a volume of sand amounting to 4 m³ and costing ETB 90. In the Rift Valley donkey drawn carts are rented out at ETB 10 per day, thus helping farmers diversify their incomes.

With the production of more marketable surpluses the role of donkeys in the transport of farm produce, crop residues, and agricultural inputs is going to be even greater. The intensification of the use of donkeys as work animals needs to be promoted with much more emphasis because:

they require little attention regarding fodder and care
they are easy to train and can be handled by children
their market price makes them accessible to a large number of farmers.

Constraints to improved donkey use

Surveys to determine the constraints faced by farmers in the utilization and management of donkeys have been undertaken and the following problems identified.

Health Problems

Even though donkeys have often been described as sturdy animals, they succumb to a variety of diseases and a number of other conditions. Most important are parasites of the gastrointestinal tract such as the large and small strongyles, *Trichostrongylus axei* and *Parascaris equorum*. The worms have a debilitating effect in general, while helminths such as *Strongylus vulgaris*, the predominant one of the large strongyles, often causes severe damage in the form of a thromboembolic process of the anterior mesenteric artery and its branches. In a study conducted by Feseha, Mohammed and Yilma in 1991 quantitative and qualitative faecal examinations were done on 1075 samples from Debre Zeit and 810 from Menagesha. Only two donkeys from Debre Zeit were found to be negative for parasites. All the others were shown to harbour ova and/or larvae of large and small strongyles, ascarids, pinworms, bots, stomach worms, lung-worms, tapeworms and flukes. Out of 810 donkeys examined at Menagesha, 465 (57%) had an eggs per gram of faeces (epg) of over 2500 and 195 between 100-2500, indicating massive infestations (Feseha et al, 1991).

Cases of saddle sores (back sores) are widespread. In one study, of 2020 donkeys examined, 680 (34%) were found to have saddle sores (Yilma, Feseha, Svendsen and Mohammed, 1991). The sores were caused by the total lack of any type of saddle or protection for the donkeys' backs. Other wounds that are frequently seen include abrasions due to friction with improper harness and harnessing materials such as nylon ropes and strips of car tyres. Lacerated wounds inflicted by hyena bites, barbed wire or any other sharp object are also encountered. Sarcoids, a common skin tumor in equids, has been detected in 33 (3%) of 1090 working donkeys at Debre Zeit (Yilma et al, 1991).

Nutrition

Donkeys are not provided with any type of concentrate food. In most of the cases they are left to scavenge. It is anticipated that with systematic and better use of donkeys for pack and operations other than pack, such as carting (entailing a possible 10 fold increase in the load factor), the use of capstans for seed decorticating, oil milling, lifting water and threshing etc, coupled with the understanding of the energy requirements of donkeys for work, there will be progress towards improved care and feeding programmes.

Policy issues

Even though the donkey makes a major contribution to transport in Ethiopia there is no government policy on its use and no attention is given to its promotion. One reason for this is the fact that the donkey provides many services with no inputs or costs to its owner. In comparison with farm ruminants one of its major limitations, albeit not of its own doing, is the fact is that its meat is not eaten. Thus at the end of its life it is thrown away or left to die. In promoting its use and better care, areas that require attention and research are many. For instance, there is little use of donkeys for pulling carts, cultivation and weeding operations. Experiences from other countries in Africa have shown the usefulness of donkeys in land preparation, seeding and weeding activities, particularly in dry areas with light sandy soil, which implies the need for specialised donkey-drawn implements. In addition there is a need to launch an extension programme regarding the proper breeding, nutrition, housing and utilisation of donkeys.

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