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Donkey utilisation in sub-Saharan Africa: recent changes and apparent needs

by

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Abstract

The use of donkeys by farmers is changing rapidly in many African countries. Most developments result from farmer trial-and-error and farmer-to-farmer diffusion of ideas and animals. Some movement of animals and innovative techniques have resulted from the initiatives of projects and extension services. Few changes have been documented, due partly to the low status of donkeys and the limited research and development interest in these animals. The author reports some specific observations and general impressions based on visits to more than 20 African countries in the past ten years.

Donkeys have been used for generations in the Ethiopian highlands and the pastoral rangelands of the Sahel and East Africa. In these situations donkeys remain important pack animals, with few apparent changes in the technology. In parts of Ethiopia, single donkeys are being used to pull simple, locally-made carts, based on a triangular frame, supported by the back of the donkey. In some coastal areas of East Africa, where donkeys have long been known, but disease has been a constant constraint, the transport of coconuts and other produce in donkey panniers has tended to be replaced by human-powered transport using well-laden bicycles.

Throughout West Africa, the range of donkeys has been extending southwards progressively during the past decade. In the zone of transition, from Senegal and Guinea in the West, to Tchad and Nigeria, it is possible to identify a boundary zone, where donkeys are moving southwards, from village to village each year. Their main role is cart transport, but they also undertake light tillage, seeding and weeding. In the past twenty years in The Gambia, donkeys have replaced oxen as the main draft animals. Donkeys are increasingly being used for transport and tillage in areas where they were uncommon just ten years ago, including parts of southern Senegal, Guinea Bissau, southern Mali, Burkina Faso, Niger and Tchad and northern Ghana, Togo, Benin, Nigeria and Cameroon. Lightweight carts with two shafts, suitable for use with single donkeys, exist in the region. They are often copied and locally-produced in areas of introduction. Breastband harness made of webbing, sacking or rubber are widely used, and collars are very rare.

In eastern and southern Africa, donkeys are increasingly used for transport, tillage and weeding. Drought conditions and overgrazing by cattle have increased their popularity, notably in Namibia, Zimbabwe and parts of South Africa. In some areas they act as pack animals, carrying grain and water. Donkeys are generally worked in pairs. They pull carts with long shafts (ox carts) either yoked like oxen or with bands around their necks. The lack of suitable donkey harnesses causes inefficiency and suffering, and could be changed easily. In a few areas, including Tanga, Tanzania, projects have successfully introduced 2-shaft donkey carts.

Women have benefited from the increased use of donkeys. In general, while cattle tend to be a masculine commodity, donkeys have few traditional gender associations, and can be owned or used by women without social problems. In many communities, donkeys have allowed a change from laborious headloading of water by women to the carting of water by donkeys controlled by children, who may perceive it as recreational.

Introduction

There seems to be an unfortunate shortage of published information relating to donkey use in sub-Saharan Africa. In the past ten years, the author has probably had a unique opportunity to observe the ways in which donkeys are being used in more than 20 countries in sub-Saharan Africa. He has visited animal traction research, development and extension programmes as part of his work as an international consultant and Technical Adviser to the West Africa Animal Traction Network (WAATN) and the Animal Traction Network for Eastern and Southern Africa (ATNESA). In most instances, the visits have involved working closely with national experts on animal traction and reviewing their programmes, whether at national, regional or district level. In all cases, there has been much travel within the rural

areas and many discussions with smallholder farmers as part of informal "rapid rural appraisal" surveys.

In the course of numerous professional visits to sub-Saharan Africa, the role of donkeys was often observed and specifically discussed with farmers, extension workers and the local agricultural authorities. The various observations were sometimes reported in mission reports, but only a few of these have been widely circulated.

This paper will attempt to draw on the country-specific experiences and observations, in order to identify some common processes and trends. The possible danger of making wide generalisations from disparate data of uncertain reliability is acknowledged from the outset. In few, if any, countries visited were there any reliable statistical information relating to donkey utilisation by smallholder farmers. Indeed, in most countries published literature relating to donkey use is minimal or non-existent. Thus, in most cases the only sources of information used in the reports were the personal field observations and informal discussions with project staff, farmers, extensionists and researchers. In all countries attempts were made to ensure the information being gathered was reliable, reasonable and representative (through broad geographical coverage and cross-checking interview questions with farmers, researchers and other sources). Nevertheless, there were no formal randomisation or stratification procedures, and geographical coverage tended to be limited by logistical constraints and the areas of major interest to the host organisations. In such circumstances, any assessments of the proportion of farmers using donkeys for particular purposes were merely educated "guestimates".

While fully acknowledging the limitations and shortcomings of the information gathering methods employed, this paper will try to draw on the many field visits and country-specific reports and attempt to describe and analyse the current trends.

West Africa

To help understand the changes taking place in animal traction in West Africa, it is helpful to consider the region as comprising four broad agro-ecological zones, running approximately east-west. Of course, there are no distinct boundaries between zones and the transitional areas have some characteristics of those on either side. Within each broad zone, the rainfall increases from north to south, with variations due to mountains and the coast. This greatly influences the agricultural practices, the disease environment and the uses of animal traction in general and donkeys in particular.

Saharan zone

The most northerly zone, including the south of the Sahara desert and its arid fringes, there is little or no tillage for crop cultivation. There has been a long history of using work animals, notably camels, donkeys and horses, for riding and for pack transport. Donkeys are ridden by some traditional pastoralists (men, women and children) and by traders and they also carry goods. Water is a major constraint in this zone and donkeys may be used to pull water from wells, and to transport it in leather bags, in containers held in traditional panniers or increasingly in carts.

Sahelian zone

South of this zone, there is the Sahel region where annual rainfall is 400-1000 mm. This runs from Senegal and The Gambia in the west, to northern Nigeria, northern Cameroon and central Tchad in the east. This zone encompasses southern Mali, southern Niger and much of Burkina Faso.

In the north of this zone donkeys have been important transport animals for some ethnic groups for many years, and have been used for riding and/or for carrying a wide range of goods. Donkeys have also been important for carrying water, both in rural areas (domestic requirements fetched mainly by women and children) and towns (commercial distribution often operated by men). Lightweight carts suitable for donkeys and horses were introduced many years ago, and proved very popular, particularly in Senegal. The carts had two shafts and any weight on the shafts was borne by a saddle on the back of the donkey. Thus in West Africa (unlike southern Africa) there has been a clear difference between ox carts (with a single shaft) and carts for equines (with two shafts). In recent years they have also had pneumatic tyres and tapered roller bearings, and so have been quite easy to pull (in contrast to the heavy steel-wheeled ox carts introduced in Tchad and some other countries). The provision of suitable donkey carts, combined with traditional riding and pack uses, has allowed the donkey to have a great importance in facilitating trade within local economies. This is clearly visible at most markets in the region.

In West Africa, there was little or no traditional use of oxen for plowing or cart transport. In most countries this use of animal traction was introduced and promoted in the first half of this century by governments, companies or projects developing the production of cotton and groundnuts. Ox-drawn mouldboard plows were introduced (ridgers in northern Nigeria and The Gambia) and relatively heavy ox-carts. The pr ocess has continued and even in the past twenty years, the active promotion of oxen for plowing has been seen in most countries in the region, including Senegal, The Gambia, Guinea-Bissau, Mali, Burkina Faso and Tchad.

As donkeys became increasingly used for cart

transport, they slowly spread southwards. Donkeys also started to be used for direct seeding (notably in Senegal) and for light tillage. Breastband harnesses made of webbing, sacking or rubber have generally been used, but in areas of introduction and innovation, donkeys have often been expected to work using simply a rope round their neck (perhaps covered in cloth). The provision of relatively light weeders, such as the *Houe Occidental* and *Houe Sine*, allowed farmers to experiment with the use of donkeys for tine tillage (*grattage* in French), which became increasingly popular in dry areas with light, sandy soil.

The southwards spread of donkeys throughout the zone has been accelerating in the past thirty years, and is continuing. It appears to have been due to a variety of factors. The successful reproduction of donkeys in the southern Saharan and northern sahelian zones ensured a good supply of donkeys at low cost. Donkeys were (and are) very much cheaper than oxen, and were (and are) less likely to be stolen. The fact that donkeys are seldom consumed by humans makes them less attractive to thieves (as, unlike oxen, they cannot be easily converted into marketable meat). The low cost and low risk of theft may have encouraged innovative traders and farmers to buy donkeys and move them south, mainly for transport purposes. There was (and is) considerable mortality at the southern extent of their range. Nevertheless, the low cost of donkeys allowed farmers and traders to afford them, even when they have had to be replaced every two years or so, because of mortality.

At the early southern fringe of expansion, the survival rate of donkeys appears to have improved. This is probably associated with several inter-related agro-ecological conditions, associated with lower rainfall and more cleared land. Donkeys started reproducing in areas (such as The Gambia and Guinea Bissau) where they had been rare a few years before. The process continued and still continues. Indeed, in some countries (including Senegal, Guinea, Guinea-Bissau, Mali and Tchad) it would probably be possible to draw a “donkey-line” on the map, and plot its movement from village to village, or district to district over the past twenty years. The movement has been generally southwards, as well as westwards in Gambia, Guinea and Guinea-Bissau.

An example of the way donkeys have been moving south and have become increasingly used for cultivation as well as transport has been seen in The Gambia. Before the 1950s, there was little, if any use of animal traction for cultivation in The Gambia. In much of the country, donkeys did not thrive, and the national population of about 7000 donkeys were probably only used for transport. In 1955, there started a major extension programme to promote the use of oxen for cultivation. Within ten years, work oxen had been introduced into almost all areas of The Gambia, through Mixed Farming Centres. While the extension campaign concentrated on oxen, farmers having learned the principles of using animals for cultivation and carting increasingly started obtaining donkeys, and using them for both transport and tillage. The numbers of donkeys grew rapidly from 10,000 in 1975 to about 30,000 in 1985. Donkey survival gradually apparently improved over the years, although mortality remains quite high (27% in one survey in 1987). Reproduction also improved (29% foaling in the 1987 survey) but the donkey populated continued to have to be sustained through importation from Senegal. Today donkeys are the main work animal in The Gambia (Starkey, 1986; 1987; Sowe et al, 1990).

A more recent example can be seen in Guinea Bissau, where animal traction has also spread rapidly in the east and north of the country in recent years. It is generally assumed that there was little animal power used in Guinea Bissau prior to independence in 1975, but by 1991 there were estimated to be about 18,000 N'Dama work oxen, 5000 donkeys and 1000 horses employed (Starkey, 1991). Throughout the 1980s, the official extension programmes promoted the use of oxen for tillage and transport. For example, in the eastern zone the main development project sold 3700 relatively heavy implements (*Arara*), mainly through credit arrangements. Lightweight implements suitable for donkeys were not readily available on credit, but farmers purchased about 1500 *Houe Sine* and *Houe Occidental* implements with cash, initially from Senegal, and subsequently from the projects. While the number of ox-carts in the east rose slowly over about 15 years to 350 (almost all sold on credit), the number of donkey carts increased rapidly to about 4000 (nearly all purchased with cash). Although the credit provision for the ox-drawn equipment was very attractive, an increasing proportion of farmers opted to buy lighter donkey-equipment for cash (Starkey, 1991).

The gradual movement of donkeys has also been seen in southern Mali. Initially all the extension effort of the cotton company related to the use of oxen, but more recently research has been undertaken on the use of donkeys for cultivation and transport (Starkey, 1988).

Semi-humid zone

South of the semi-arid zone is the semi-humid agro-ecological zone that runs eastwards from southern Senegal and Guinea, through the northern parts of Sierra Leone, Côte d'Ivoire, Ghana, Togo, Benin and Nigeria to southern Tchad. The higher rainfall in this zone is associated with thicker bush than is found in the semi-arid zone. The de-stumping of farms to

allow plowing can be a constraint to the spread of animal traction and the thick bush growth near village paths can restrict the utility of carts. Historically neither zebu cattle nor donkeys have flourished in the more humid parts of this zone and the dominant animals have been humpless trypanotolerant cattle. However, the boundary of this agro-ecological zone has been moving southwards, and zebu cattle are increasingly used for work. At the same time, some farmers are attempting to use donkeys, mainly for transport, but sometimes for cultivation. Breeding herds are seldom established and animals that die are replaced by animals brought into the region by pastoralist cattle herders or traders. Examples of the southward movement of donkeys in the semi-humid zone have been reported recently in Guinea (Starkey, 1991) and southern Tchad (Starkey, 1993). From discussion with professional colleagues, the author has the impression that similar processes of gradual southward donkey movement have been occurring in Burkina Faso, Ghana, Togo, Benin and Nigeria.

Humid zone

Further south in West Africa, in the coastal regions of Sierra Leone, Liberia, Côte d'Ivoire, Ghana, Togo, Benin, Nigeria and Cameroon, there are very few cattle and few, if any, donkeys. Animal traction is almost non-existent, although it does appear that the range of trypanotolerant cattle may be gradually extending into this area. There have been some attempts to introduce donkeys into the humid zone (including a recent attempt in Sierra Leone) but such projects have generally experienced high levels of mortality.

Southern Africa

The colonial history of southern Africa has greatly affected the way animal power and has spread and how it is now perceived. The early European settlers in South Africa, Namibia and Zimbabwe used a variety of work animals for transport and tillage including oxen, horses, donkeys and mules. In most areas, oxen were the main draft animals for plowing and heavy farm transport. Smallholder farmers also used oxen for plowing and transport. At this time, animal traction was widely accepted as an appropriate technology. Then the large-scale (predominately "white") farmers rapidly mechanised, but this was not an economic option for most small-scale (predominantly "black") farmers. However, the dual nature of the agricultural economies, combined with colonialist attitudes, created a strong impression among many types of people that animal traction was a second-class, backward technology. This poor image of animal traction is widespread in agricultural and educational institutions in the region.

South Africa

In South Africa, the early colonialists used European style wagons (with wooden-spoked wheels) and when horses, donkeys or mules were employed, they were generally fitted with leather harnesses. Donkeys were mainly used for light transport, and breeding mules for heavier work. They played an important part in the development of the mining industry. Some large teams of donkeys were used for plowing and transport.

As the large-scale ("white") farming sector adopted motorised machinery, donkeys became uncommon, unless used by farm labourers for transport. However, donkeys continued to be very important in some small-scale ("black") farming systems, and they remain so today, with perhaps 150,000-200,000 donkeys in the country. In several areas, the use of donkeys has increased markedly in recent years, despite being actively discouraged by the authorities.

The main use of donkeys is for pulling carts, either 4-wheel trailers or 2-wheel carts made from old vehicles. The longstanding use of wooden-spoked wheels appears to have died out, and pneumatic tyres appear almost universal. The carts almost invariably have a single dissel-boom, and the weight of this is taken on the necks of the animals, using a variety of materials including canvass webbing, tyre rubber and leather. With 4-wheel wagons, this is not a problem, as the weight of the beam is small, but with badly-loaded 2-wheel carts, the weight placed on the dissel-boom can be significant. Donkeys are fitted with breastband harnesses, made of rubber, belting material and occasionally leather. Donkeys are worked in pairs and carts are usually pulled by 2-8 donkeys, in various different arrangements (eg, four pairs in tandem, four donkeys abreast or two followed by four). In some areas, donkeys are used for plowing and in several areas, the numbers of farmers using donkeys for plowing is increasing. Teams of 4 to 8 donkeys (sometimes more) are used for plowing in some areas, using breastband harnesses. There are no implements available that have been specifically designed for donkeys.

Among agricultural authorities and extension workers, the image of the donkey is very poor. During a recent survey, extension workers in several different areas stated that donkeys fed 24 hours a day, ate far more than an ox and were responsible for erosion and the degradation of the pasture. The frequency that such dubious statements were repeated suggests they may have come from some elementary text. In extreme cases agricultural authorities have tried to reduce donkey numbers, as if they were vermin. In one area of KwaZulu, a major sale of donkeys was arranged. Large numbers of trucks arrived to take away the donkeys, but because it was voluntary and farmers wanted to keep their

animals, almost no one brought their animals for sale. At various times in Lebowa and KwaNdebele, there have been schemes to impound or compulsory purchase donkeys, following which their meat was fed to lions or crocodiles. In Bophuthatswana, a large-scale donkey shooting policy was adopted and numerous donkeys were killed.

The authorities have argued that there has been severe **over-stocking** of donkeys, that there were more donkeys than necessary and they were responsible for overgrazing. This issue has political implications (did the smallholder African farmers have too many donkeys or too little land?). Farmers interviewed in recent surveys in Kwandebele, Lebowa and Venda were adamant that there were too few rather than too many donkeys. There were not enough donkeys to meet the needs of everyone. Furthermore, they stated that 20-30 years ago oxen were the main animals used for plowing, but cattle started dying due to the drought. It became increasingly difficult to maintain cattle, and that was why farmers started to use donkeys for plowing. The donkeys were brought in *because of* the environmental problems: they were not the primary cause of them. Farmers stressed the survival characteristics of donkeys, which were able to live through spells of drought and seldom appeared to suffer from illness (Starkey et al, 1994).

Namibia

In most of Namibia, rainfall is low and agricultural activities are based mainly on the ranching or herding of livestock (cattle, sheep and goats). Like South Africa, the country has a strongly dual agricultural economy, with many large-scale farmers engaged in ranching or irrigated farming. These large-scale farmers seldom, if ever, use animal power.

However, work animals are important for the smallholder sector. In Kunene, Erongo and Omaheke (in areas that used to be known as Kaokoland, Damaraland and Hereroland) crop production is minimal, but donkeys are extremely important for rural transport. Although reliable statistics are not available, observations suggest that the great majority of homesteads have one or even two donkey carts parked outside. Animal-drawn carts are seen as complementary to motorized vehicles, and it is common for families owning a car or pick-up to also have a donkey cart. The donkey carts are mainly used for water collection, transport of wood and materials, and for local personal transport and trade. Carts are invariably made from old vehicle components, and are commonly pulled by two or four donkeys. Some donkeys are used for packing and for riding. Yokes are seldom, if ever, used on donkeys. Bridles and bits are quite common and backstraps are normally used. Donkey harnesses tend to be made from hard rubber (old tyres or machine belts), although some leather harnesses are in use.

Most smallholder crop production takes place in the north of the country, near the Angola border, in the regions of Omusati, Oshana, Ohangwena, Oshikoto (together known as Owambo), Okavango and Caprivi. Although agriculture is important in these areas, most households benefit from income from other sources, including employment, pensions and remittances. Rainfall of about 500-800 mm restricts most crop growing to millet and maize production.

Donkeys appear to be absent from Caprivi and they are not yet common in Okavambo (a recent census suggested just 500) but they are increasingly used and the donkey population seems to be growing. Most donkeys are used for pulling carts and pack transport. The area is one where the use of oxen is more common, and donkeys are generally harnessed using ox yokes.

Owambo is the most populated rural area, and the majority of farmers appear to use draft animal power for transport and for cultivation. Historically oxen were the main draft animal in Owambo, and about 50,000 oxen are used for plowing and for pulling carts. However, in recent years donkeys have become the most numerous draft animals, and there are about 120,000 donkeys in Owambo. The donkey population has increased dramatically in recent years. Donkeys are generally hitched in fours for plowing and for pu lling carts. Some carts are pulled by single pairs and a few farmers harness their donkeys using ox yokes. Simple breastband harnesses made from industrial belting, tyre rubber or rope are more common, and full leather harnesses (with backstraps and cruppers) are very rare. There are no implements available that have been designed for use with donkeys; most are based on the “Safim” range normally used with oxen.

Donkeys are widely used as pack animals, and commonly carry two water containers, connected by a simple, wide material strap over the donkey's back.With this system, there is no packsaddle to protect the spine of the donkey. Donkeys are sometimes ridden, using bridles, bits and leather donkey saddles. Both male and female donkeys are used. From the increase in population, it would seem their reproductive rate is high, although farmers still report bringing in animals from the south. In a recent survey, no one interviewed suggested that donkeys suffered from serious disease problems, but many people commented on the lack of grazing. Some people said that donkeys were simply too weak to work, as a result of the drought.

One survey of over 700 households in rural Owambo in 1990 found that 34% cultivated by hand, 24% with oxen, 37% with donkeys and 6% with tractors (Cogill

and Kiugu, 1990). There was considerable variation, with one area reporting that 73% of farmers used donkeys for plowing. Around the main urban centres, 37% of farmers used tractor power, 44% used hand labour and only 19% used animal traction. The high-level of tractor use by peri-urban farmers has given rise to a general "impression" by agricultural authorities that animal traction use is dying out. Farmers away from the urban centres did not give this impression.

In much of northern Namibia, the population of large animals and the location of people are greatly influenced by water scarcity. Where water is available, human and animal population pressures are high, and environmental degradation is becoming evident. This is particularly true of Owambo. The overgrazing and pasture degradation in Owambo have worsened in recent years. The donkey population has increased in recent years. Some people try to link the two in a cause and effect relationship. One possibility, is that the pasture degradation is caused by the donkeys. Another is that the donkeys have become popular, because they can survive better than cattle in a degraded, overgrazed environment. Staff of agricultural institutions tend to cite the former explanation, but farmers interviewed tended to suggest the latter, saying that donkeys only became common because of the drought and the death of cattle.

Zambia and Zimbabwe

In Zimbabwe, oxen have been the main work animals, with donkeys used mainly for packing and cart transport in the more arid areas. However, recent observations suggest that donkeys are increasingly being used for plowing and weeding in many parts of the country and farmers are bringing donkeys into new areas. The severe drought of the early 1990s is likely to accelerate the process, for not only did farmers lose many cattle, they saw that the donkeys tended to survive better than the oxen. In areas where donkeys are being introduced, they tend to be worked with yokes.

In Zambia, there are relatively few donkeys (about 2000), but informal observations suggest that their use in the southern and western areas appears to be increasing. They are mainly used for pack and cart transport. As harnesses are not readily available, donkeys are sometimes yoked for work. A recent attempt to introduce donkeys to the more humid north has experienced animal health problems (Starkey, Dibbits and Mwenya, 1991).

East Africa

Historically, donkeys in Tanzania were mainly kept by pastoralists for pack transport. Pack donkeys were also used in some coastal and inland areas. There are now about 250,000 donkeys in the country, but until recently there were few attempts to promote their use.

As in most other countries in the region, oxen have been promoted for plowing and carting, and until a few years ago, there were no lightweight donkeys carts. Farmers themselves started using donkeys to pull ox carts, with a single long beam, and often used wooden yokes to harness the donkeys. Animals are worked in pairs, and carts may be pulled by 2-6 animals. Sometimes pairs of oxen and yoked pairs of donkeys work together to pull a cart. In recent surveys, farmers have reported that the use of donkey carts is increasing. In several areas farmers have attempted to use donkeys for cultivation, but have not found this very successful, perhaps due to the lack of an adequate breastband harnessing system or the unsuitability of the implements. A development project in Tanga, in the north-east of the country, has started to introduce lightweight donkey carts and the use of breastband harnesses to allow donkeys to cultivate (Starkey and Mutagubya, 1992).

There are similarities between the donkey situation in Kenya and that in Tanzania. In both countries the use of pack donkeys has had a long tradition, and is quite widespread in the more arid areas. There is little use of donkeys for cultivation, and specialised donkey drawn implements are not widely available. Carts used for donkeys have been based on ox-cart designs with a single dissel boom. The weight of this is generally taken by a band around the neck, and seldom on the back. Work on harnessing and cart design has been undertaken at the University of Nairobi, but the innovative designs have yet to become commonplace.

In Ethiopia, donkeys are very widely used as pack animals, but there seems little, if any, use of donkeys for tillage. The number of donkey carts is also small, but in one area, an innovative design of cheap cart has been adopted. These have two converging shafts that attach to a packsaddle on the back of the donkey.

Conclusions

In West Africa, the various agro-ecological zones that influence animal survival and animal traction use are not static, but in recent years have gradually been moving southwards. This may be associated with regional changes in climate, increased deforestation and human population density and decreased disease challenge. The southern limits of donkeys seem to be extending southwards year by year, and in some areas donkeys have replaced oxen as the dominant work animals.

In eastern and southern Africa, similar agro-ecological zones do exist, but because they are more fragmented than the clear bands in West Africa, the

pattern of change is not so obvious. Nevertheless, similar changes seem to be taking place, and the range of donkeys appears to be increasing.

Although donkeys seldom have a good image with agricultural authorities, their use in sub-Saharan Africa is increasing. In most cases, the move towards donkeys has been a farmer-led innovation. In many countries the agricultural authorities only recognised the value of donkeys after they had become quite common, and in some countries, notably in South Africa and Namibia, donkeys still have a very poor image among agriculturalists. In recent years development projects in a few countries have been actively introducing and promoting donkeys. Projects introducing donkeys into semi-humid and humid tropical areas have generally had disappointing experiences.

The main reasons given by farmers for their increased use included survival and drought resistance, low cost, ease of management and low risk of theft. Donkeys are particularly valued for convenient transport and they are easily handled by men, women and children. They have many fewer gender-related traditions than do cattle.

The main reasons given by agriculturalists for not promoting donkeys is that they may cause environmental damage through over-grazing, and that they are not as agriculturally productive as cattle (as their meat and milk is seldom consumed). They are perceived as too weak for conventional plowing.

Increasing use of donkeys is having a major impact on rural transport. Donkey carts are used to carry people and a wide range of goods including crops, manure, water, firewood, building materials and market produce. At the farm level, carts allow crop residues to be collected and stored and allow animal manure to be transported to the fields. Women are among the main beneficiaries. In general, while cattle tend to be a masculine commodity, donkeys have few traditional gender associations, and can be owned or used by women without social problems. Pack donkeys and donkey carts have allowed some daily transport operations (notably laborious water collection) to be take over by donkeys controlled by children, who often enjoy the task.

In southern and eastern Africa, there appears much scope for improved harnessing systems for donkey carts. With improved design and availability of suitable carts and harnesses, the use of donkey yokes and carts that bear on the necks of donkeys is likely to decline rapidly. Work is also needed to make available light implements designed specifically for use with donkeys. These include implements suitable for tine tillage and weeding. Weeding is a major labour bottleneck, and the indications are that animal-drawn weeders could be adopted quite rapidly. The provision of donkey weeders should assist greatly. Some objective research is required to determine the actual environmental impact of donkeys at different population levels. Attention should be given to possible interventions that would allow farmers to retain the numbers of donkeys they require without adverse environmental impact.

References

Cogill B and Kiugu S, 1990. *Household health and nutrition in Namibia*. Report on a survey in Katutura and selected areas of northern Namibia in April - May 1990. UNICEF, Windhoek, Namibia. 1 95p.

Sowe J, Bai G, Sumberg J and Gilbert E, 1990. Foaling and mortality of equines in The Gambia: a national survey. pp. 315–321 in: Starkey P H and Faye A (eds). *Animal traction for agricultural development*. Proceedings of workshop held 7-12 July 1988, Saly, Senegal. Technical Centre for Agriculture and Rural Cooperation, Ede-Wageningen, The Netherlands. 475p.

Starkey P H, 1986. Strengthening animal traction research and development in The Gambia through networking. Consultancy Mission Report. Gambia Agricultural Research and Diversification Project (GARD), Banjul, The Gambia. 30p.

Starkey P H, 1987. Brief donkey work. *Ceres* 20, 6: 37-40.

Starkey P H, 1988. *Animal traction research in Southern Mali*. Consultancy report for Division de Recherche sur les Systèmes de Production Rurale (DRSPR), Sikasso, Mali. Animal Traction Development, Reading, UK. 30p.

Starkey P H, 1991a. *The revival of animal traction in Kindia Region of Guinea Conakry* (Relance de la traction bovine dans la région de Kindia, Guinée Conakry). Report of evaluation of project ONG/78/89/B Guinea Conakry. Commission of the European Communities, Brussels, Belgium. 43p.

Starkey P H, 1991b. *Animal traction in Guiné-Bissau: status, trends and survey priorities*. Report of a consultancy mission carried out from 22 February to 5 March 1991 in association with Pan Livestock Services, Reading University and Gaptec, Lisbon Technical University. Animal Traction Development, Reading, UK. 22p.

Starkey P H, 1992. *Animal power in Namibia: present status and programme requirements.* Overseas Development Administration, London UK and Ministry of Agriculture, Windhoek, Namibia. 59p.

Starkey P H, 1993. *Animal traction in Tchad: policies and approaches*. Report of consultancy mission. Oxfam, Oxford, UK. 57p.

Starkey P H, Dibbits H J and Mwenya E, 1991. *Animal traction in Zambia: status, progress and trends.* Ministry of Agriculture, Lusaka in association with IMAG-DLO, Wageningen, The Netherlands. 105p.

Starkey P H and Mutagubya W, 1992. *Animal traction in Tanzania: experience, trends and priorities*. Ministry of Agriculture, Dar es Salaam, Tanzania and Natural Resources Institute, Chatham, UK. 51p.

Starkey P H, Njobe F, Lake T and Hanekom D, 1994. *Animal traction in South Africa: current use, key issues and implications.* Development Bank of Southern Africa, Halfway House, South Africa. (in preparation).