Donkey power in the context of smallholder mechanisation and agribusiness in Kenya

by

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Abstract

Smallholder mechanisation in Kenya remains forgotten in terms of support services and activities. Animal traction, particularly donkey power utilisation, has enormous but largely unexploited potential. The general agricultural and mechanisation situation as well as the policy and institutional environment have not favoured donkey utilisation. Public sector privatisation and liberalisation of the economy have produced new challenges.

Using case studies from KENDAT (Kenya Network for Draught Animal Technology) field observations and interviews with farmers, fuel-wood and water carriers, this paper reviews donkey and other animal power developments. Enhanced utilisation of the donkey will need aggressive, reoriented training and extension work. Without a reassessment of priorities at national level and business enhancement through private enterprise, little progress will be made. For donkeys, training must aim to overcome cultural biases and include farm business management and emphasis on appropriate technologies. Learning experiences and access to animals and equipment must be complemented with innovation in institutional, industrial and financial services.

Donkey utilisation could gain from increased public awareness, user organisation for ease of access to credit and many other seemingly simple but in practice difficult solutions. Failures of the past must be assessed from a farm business perspective. Only then will true independence, modernity and sustainable development be achieved.

Introduction

Due to low industrialisation and poor economic performance the countries of sub-Saharan Africa remain relatively poor. Commonly 80% of the population are engaged in agriculture. Modern agricultural machinery is not appropriate and has not been adopted by the majority of the smallholder sector. Animal traction, however, has proved itself as a viable alternative source of power for tillage and transport operations. This is due to its simplicity, relative affordability and capacity for its integration into the traditional African farming system. Despite these factors animal powered technologies have remained under-utilised or inefficiently exploited.

For the East and Southern African countries including Kenya there is an urgent need to develop and provide agricultural power on the basis of:

suitability for family ownership and operation
low energy input by humans and animals
versatility between operations and
sustainability through being profitable.

Unlike modern machinery which has been promoted in Kenya since colonial days, animal power has received little technical or veterinary support at any level. Nevertheless, the donkey has remained a versatile and dependable power source, particularly for women and children, despite the many biases operating against it.

Animal power as a component of the agricultural mechanisation system

In Kenya and Tanzania it is conservatively estimated that there are about 26 million cattle and donkeys, of which only about 7% are being used for animal traction (Starkey, 1994). At a power capacity of about 0.2 kW per animal, if 30% of the animals were put to work, about 1560 MW of power would be made available to smallholder farmers. This would be the equivalent of about 35,000 medium size 45 kW tractors.

Given the past centralised agricultural development strategies in Kenya, smallholder farmers are more likely to expect government donations of tractors rather than to experiment innovatively with draft animal or other renewable technologies. This is likely to be so even in localities where tractor power has never been given the chance to fail. In Kenya a non-government organisation representative who

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calls a field day is likely to be mistaken for yet another government worker with big promises and material gifts. At best, such a worker is seen as someone who may introduce draft animal technologies as an intermediate step to tractorisation. After all politicians promise tractors and buses, not donkeys and carts!

Agricultural policy base and influence

Kenya recorded an agricultural sector growth of 4.6% per year in 1963, soon after independence. Between 1972 and 1980 the growth rate fell to 2% per annum and rose to 4.1% between 1981 and 1988, but has been on a downward trend since. The Sessional Paper No. 2 of 1994 on National Food Policy introduced the major objectives in Kenya's Development Policy as food self-sufficiency and food security. With the same message the Government recently launched the Eighth National Development Plan covering 1997 to the year 2001 which confirms the country's dependence on the agricultural sector and its importance as a base for economic growth.

Between 1980 and 1989 some 10,427 tractors were imported into Kenya merely to replace the 10,882 units imported within the previous decade. The demand for animal drawn plows has been static at about 14,000 units a year. Large scale establishments like Mumias Sugar Company (and affiliated contractors) purchase at least 200 tractors annually. The available tractor fleet is not of much service to the smallholder farmers nationally.

Utilisation of donkeys is influenced by many factors including equipment and support services. The supply and support of carts is a major determinant of the popularity of donkeys. The manufacture of carts and their use may be further influenced by electric power and material supply, credit, terrain conditions and other socio-economic factors. Many rural areas of Kenya have no power supply. Probably the greatest limitation to the availability of animal drawn carts is their cost. Not enough work has gone into developing affordable and appropriate carts for Kenya.

Table 1: Monthly household incomes for Limuru area in 1992

Monthly income (KSh)	*Percent of households (N=160)*
<1000	15.4
1001 - 3000	45.3
3001 - 5000	14.0
5001 - 7000	8.5
7001 - 9000	4.4
9001 - 11000	1.5
11001 - 13000	-
>13000	10.6

Source: Gooding, 1996 *US$ 1 ≈ KSh 55*

Gooding (1996) presented the data shown in Tables 1 and 2 relating to Limuru which is located some 30 km outside Nairobi. In Limuru more than 90% of the population own less that one hectare of land and almost 70% own less than 0.5 hectares. Residents are therefore involved in many micro-businesses including poultry, dairy, donkey transport, casual labour and formal work. Monthly incomes as seen in Table 1 are less than KSh 5000 (US$ 90) for 75% of the population. Carts were observed to cost between KSh 8000 and 15,000 (US$ 145-270) depending on design, and donkeys between KSh 4000 and 5000 (US$ 72-90). Without adequate business generation for the donkey and cart, it is unlikely that the market for carts could boom in Limuru.

Table 2: Income breakdown of primary occupations by households in Limuru

Income Group (KSh)	*Percent of households in income group per primary occupation*				
	Farming	*Formal sector*	*Business*	*Donkey transport*	*Casual labour*
<1000	26	5	-	-	-
1001 - 2000	45	-	-	-	84
2001 - 4000	23	5	31	50	8
4001 - 10000	6	45	69	50	8

Source: Gooding, 1996 *US$ 1 ≈ KSh 55*

For Limuru, Gooding (1996) concluded that it was unlikely that an improvement in design which would make the carts 20% cheaper (even if durability and strength were improved) would increase cart supply by more than 10%.

In a different locality, at KSh 20 per drum, Kirinyaga water transporters make KSh 300 to 400 per day (about US$ 7) which could be about 4% of the price of a new cart. If a third of the earnings went to cart purchase, an ambitious transporter could purchase a new cart in about 75 days and not need another complete one, save for repairs and maintenance costs, for another ten years.

Training and development

Since colonial days the quality of the Kenyan education system has been judged against westernised standards. It has not provided training likely to address the real and immediate problems of rural communities. As early as 1969, six years after independence, those with vision and working directly with rural communities already saw the problem for Kenyan agriculture. Spurin (1969) in Bungoma encouraged Village Polytechnics. This was after seeing the shortcomings of the Farm School and Vocational Training Centres of earlier times. The latter had only helped individual youngsters to escape from their own peasant background and join the middle-class elite. Spurin, the first principal of a village polytechnic in Kenya, viewed the institution as a place to think, mainly about the farm but with three components: the classroom, the workshop and the farm.

Policy on research and development

A Kenyan Government Sessional Paper noted that ox-drawn equipment reduced preparation time to less than 40% of that required with hand tools and markedly expanded the area planted, increasing yields to land and labour (GOK, 1986).

According to the paper, development and use of improved ox-drawn equipment required efforts in research, manufacture, marketing, and extension. Rural Technology Development Units were to be the focal point for these efforts, identifying new technologies, testing them, and encouraging private manufacturers to produce and market the new equipment. A parallel extension programme was to be developed to investigate the use of different types of draft animals, train farmers in managing oxen and encourage farmers to adopt supplementary dry season feeding.

In fact, negligible research and development time and money in Kenya has been devoted to agricultural mechanisation, let alone animal power applications. Where research has taken place eg, by the Kenya Agricultural Research Institute (KARI), none has tackled animal power problems with any impact. For KARI and other research bodies such as universities, poor linkages between research and technology users have hindered the adoption process. The lack of a systems perspective, inappropriate linkage strategies and management, donor-driven development and other factors have not helped the situation.

In the adoption of the farming systems perspective by KARI, district teams were formed of researchers from regional centres which did not include farmers or their organisations. However, farmers are involved in advisory committees which review completed work at research centres. KARI also has socio-economic units at the national level which assemble baseline data for monitoring and evaluating research. These units use the systems approach and overcome traditional research approaches that focused on commodities rather than on farmers and their problems. On-farm trials are also conducted but potential benefit is limited since farmers are excluded from the planning process. The district farming systems teams represent an institutional shift to a decentralised flexible structure but they do not yet invite any substantive input from farmers.

Extension workers maintain their ‘gatekeeper’ role and do not facilitate direct research-farmer contact. They are more worried about their own poor links with research than about bringing farmers and researchers together. The recent appointment of Research-Extension Liaison Officers at each regional centre to coordinate joint activities between researchers and extensionists has not helped much as the emphasis has remained one of linkages and partnerships and not of farmer involvement.

Observations from KENDAT field visits

Isiolo Town

Isiolo is an interesting animal power district as it cuts across agricultural smallholder farmers to urban business users and pastoralists. Ewaso Ngiro North River Basin Development Authority (ENNDA) is a government parastatal charged with the development of the Ewaso Ngiro Arid and Semi-arid Lands (ASAL). After viewing a

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women's harness-making project, KENDAT had a meeting with ENNDA, at which it was noted that:

> Group involvement in harness making did not work because farmers who communally owned a harness-making project pulled out, for more individual and personalised entrepreneurship.
>
> The Rural Technology Centre had trained people in the management of donkeys and had provided them with equipment. One farmer who had been trained and showed good potential had turned to transport, not farming.
>
> Of the 39 donkey carts operated in Isiolo town, only 6 were owned by non-Meru communities. Donkeys were harnessed in the typical Meru way, using a poor system of yoke technology.
>
> Imitating practices involving oxen, Turkana and Boran users tended to pierce the noses of their donkeys to hold control straps. Unlike the case of oxen, this led to incurable wounds.
>
> Donkey operators who made some KSh 1200 per day from transport work claimed that collar harnesses were expensive at KSh 1100 (US$ 20) per animal. The collar harnesses, made of canvas and leather, last at least one year without damage to the harness or animal.

Traders and transporters in South Nyanza

South Nyanza has a hidden but elaborate means of transport associated with a semi-barter trade between the inhabitants of Lake Victoria locations and those farther inland in Awendo and Kisii areas. Donkey transport is highly dependable in the prevailing rough terrain. Mine salt for oxen, dried fish and other lake region products are transported and exchanged for maize and other grains. All donkeys are used as pack animals. A study of this highly traditional and robust business would be most interesting.

Nyahururu District

Some of the donkey power users visited believed that donkeys are resistant to all diseases and never need treatment. Several however received the free services of KSPCA (Kenya Society for the Protection and Care of Animals) and had their animals dewormed and their hooves trimmed. Some youths were using knapsack sprayers and doing business spraying animals and also administering antibiotics, an area for qualified veterinarians. Many donkey users were surprised to hear that donkeys do suffer from trypanosomiasis and other diseases.

Trypanosomiasis

This disease is mainly associated with oxen but can also affect donkeys. It is an important disease because of its debilitating nature and long period of convalescence.

Helminthiasis (worms)

Many farmers appear to be ignorant of the importance of worms in donkeys. Although worm treatment is widespread in cattle it is rarely practised in donkeys except in research projects and by the KSPCA.

Malnutrition

Malnutrition is partly due to adverse climatic conditions. A good example is the case of the Mwea Irrigation Scheme where rice is harvested in the months of November and December when there is plenty of grass for the animals. Farmers burn the rice straw which in the dry season of January and February could be a valuable source of food. An efficient technology for compacting the straw and transporting it to the homesteads would represent a good supply of dry season nutrients.

The user's input

KENDAT comes across a wide range of comments by animal power users and developers which provide food for thought. Some examples are reproduced below.

> *"I have never seen a double donkey cart. I would not recommend such a cart because if one of my donkeys died or was incapacitated I could not use the cart with one donkey."*
>
> Wainaina Wagura of Kamirithu, Limuru.

> *"We are now looking for donkeys for our farmers because they have lost all their oxen to drought and 'land clashes'. Farmers are now living in towns and not on the farms. To the Maasais, donkeys are useful but not as valuable as oxen. If you can show the farmers how to plow with donkeys, it would be most useful. Donkeys here tend to suffer wounds which last for a long time due to lack of treatment."*
>
> Fr. Mwaura, Longonot Catholic Parish speaking after the 'land clashes' of 1994/95.

"A donkey cannot be eaten as meat. If you use it as a beast of burden it becomes part of your household and if it dies you must bury it in a ceremony like a human being or the evil spirits will haunt you."

A farmer in Busia Nambale.

"In Siaya District we have about 60 donkeys in land preparation and transport but only one farmer has a harness. All the other donkeys are using yokes."

District Agricultural Office, Siaya.

"A donkey has a 25 year working life while oxen have only 10 years. I like working with donkeys. They are very intelligent and not stubborn. Donkeys are stubborn when users want to mistreat them!"

Artisan, Mabusi Town, Matunda, Mois Bridge.

The way ahead

For donkey power in Kenya to contribute further to development there is need to:

Promote strongly draft animal traction technology and the donkey.

Provide a choice of cost-effective means for harnessing and implements backed by site-specific animal power management strategies to ensure optimum utilisation of donkey power and human resources. New methodologies and activities must have a strong farm base and should be of immediate benefit to the farming communities. Experts across disciplines, planners as well as industrialists, must be actively involved.

Provide resources for donkey power support services, networking and promotional activities. Viable collaborative linkages must be established between the various parties involved. The allocation of resources will need to be flexible and decentralised to the level where they are needed. This calls for organisational, managerial as well as material accountability levels which more and more, are lacking in centrally run, large government projects. Incentives must be provided to workers at all levels.

Animal power programmes must provide for:

Information regarding the socio-economic place for animal power within the crop/livestock system and nationally. At a deeper level farmers should be assisted as well as trained to evaluate their animal power utilisation in socio-economic terms. It is paramount to be able to financially manage, eg, to save for veterinary services and the replacement of dead or aged animals.

Activities geared towards understanding as well as providing for donkey power needs like animal health, equipment, tools, accessories and capacity to service the same.

Recommendations and projections for active guidelines for donkey power as a business enterprise for on-farm and off-farm activities.

Other countries and localities will have different or similar shortcomings to the ones highlighted here. For Kenya it is clear that the mechanisation strategy needs redirecting. Promotional activity is needed to encourage more animal power exploitation, including the under-utilised donkey.

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