

A note on the use of donkeys for rural road maintenance in Tanga Region, Tanzania

by

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Abstract

Donkeys are being used to haul gravel for road maintenance work in Tanga Region, Tanzania. The scheme has helped to accelerate the adoption of animal traction technology in the region. For farmers living close to the roads, this work provides sufficient income to finance the purchase of carts which can be used later for other agricultural and transport work.

Introduction

The Tanga Draft Animal Project is introducing the use of draft animals in the north-east of Tanzania where there is little tradition of using animal power. When the project started in 1981, it only promoted the use of oxen in farming systems, and adoption was slow. Diseases and animal losses were the major problems at that stage. More recently, the project has changed its approach and has achieved greater success. One change has been the promotion of donkeys, particularly for transport.

Use of donkeys

Donkeys proved a very interesting alternative to oxen. They are liked by farmers who do not own cattle and have no cattle husbandry experience. They are particularly important where animal draft power is exclusively used for transport. Donkeys seem more hardy than cattle and are able to survive local conditions without intensive care.

Adoption rates for donkeys did not increase substantially until a suitable design of donkey cart was produced locally. Modified ox carts were cumbersome to construct and use. The donkey cart introduced was based on one used at Mbita Mission near Kisumu, Kenya.

Donkey-drawn gravel haulage

The latest and most sophisticated development is the use of animal-drawn carts to haul gravel for road maintenance.

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For the farmers involved, this work gives substantial income in a comparatively short time; lack of credit facilities is not a problem because carts are issued to farmers on loan and can be paid for within a few months. Compared to crop production, transport yields immediate income and, apart from business sense, little technical information is required to perform well.

The Tanga Draft Animal Project established a first trial site in 1989, in cooperation with the local Rural Road Maintenance project and with the assistance of an ILO (International Labour Office) specialist in labour-intensive road maintenance and construction. These trials made use of experience gained from a similar scheme in Kisii, Kenya (Illi, 1987). Farmers enter contracts to carry gravel from the quarry to the road. A road supervisor allocates plots for excavating gravel and makes sure the gravel is spread correctly on the road. The farmer is responsible for the whole operation, including excavation, loading, carrying and spreading the gravel on the road, and is paid at a fixed rate per standard trip (0.4 m³ of gravel). An example of the rates paid is given in Table 1.

Table 1: Payment rates for gravel haulage in 1990 (with approximate US\$ equivalent)

Hauling distance (m)	Maximum trips per day (number)	Payment per 0.4 m ³	
		(TSh)	(US\$)
0-499	24	125	1.40
500-999	14	150	1.70
1000-1499	10	175	2.00
1500-1999	8	200	2.20
2000-2499	7	225	2.50
2500-2999	6	250	2.80
3000-3499	5	275	3.00

Road maintenance

Roads are between 4 and 4.5 m wide. A layer of loose gravel approximately 15 cm thick is spread over the whole width of the road. This requires 675 m³ of gravel per kilometre. No special

Table 2: Summary of roads regravelled using animal-drawn carts and amount paid to cart-contractors

Road section	Road distance maintained (km)	Volume of gravel (m ³)	Amount paid to contractors	
			(TSh)	(US\$ ¹)
Korogwe to Mashewa	2.4	1434	447 305	5 000
Kwameta to Dindira	7.9	3619	1 246 216	14 000
Maguzoni to Mnyuzi	12	6480	6 269 000	31 000

¹ US\$ equivalent is very approximate. The exchange rate during the time has moved from 90 TSh to 330 TSh = US\$ 1.00

equipment is used to compact the gravel: normal traffic is sufficient to achieve compaction, except during a long dry period when the gravel is completely dry. Examples of some of the roads maintained in Tanga Region using donkey carts are given in Table 2.

Advantages and constraints of animal-drawn gravel haulage

Provided there are suitable quarries within a short distance of the road, using animal power to haul gravel for road maintenance has several advantages over mechanised haulage. For example:

- the cost of animal-drawn haulage is considerably lower than that of tractors and trailers or tippers and wheel loaders
- the foreign exchange component of total costs is very low (13%), comprising only the cost of an inspection vehicle
- people living along the road earn substantial amounts of money from maintenance work
- the money spent on road maintenance finances the purchase of carts which are then available as vehicles for transport or future maintenance work.

Piles of gravel transported by animal-drawn carts in Tanga Region, Tanzania



Photo: René Fischer



Photo: René Fischer

Unloading gravel from a donkey cart

There are, however, a few possible minor constraints. Gravel must be available a short distance from the road; the maximum hauling distance is about 2 km. Due to the payment structure shown in Table 1, farmers preferred many shorter runs to fewer longer hauls. The people living along the road have no control over the work; although they compete with the road administration for earnings from road work, it is the road administration that makes the decisions.

Conclusion

The use of animal-drawn carts has helped to accelerate the adoption of draft animal technology in Tanga Region. The regular and intense use of animals on road maintenance work has a considerable publicity effect and carts issued to contractors on loan are paid for within a few months through a scheme of deductions from the contract payments. Experience has shown that it is possible to finance one cart for every kilometre or so of road gravelled.

Reference

- Illi W, 1987. *Study on hauling of gravel for routine maintenance by animal-drawn carts*. Intermediate Report 2 (Technical Report). Minor Roads Programme, Ministry of Transport and Communications, Kisii, Kenya. 54p.