

The use of donkeys for transport in South Africa

by

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Abstract

Due to the droughts of the past 10–15 years in South Africa, the number of donkeys used for traction purposes has increased dramatically compared to 10 or 20 years ago. They are mainly used to provide transport in the rural areas. The use of donkeys as pack animals is very limited, perhaps due to a lack of extension and suitable equipment. In some areas, notably the more hilly regions of the country, teams of two or four donkeys pull simple sledges made from tree branches. Lightweight single donkey carts are almost non-existent in South Africa. In some rural areas single horses pull lightweight carts, but no donkeys are employed in this way.

The use of donkey carts pulled by between two and six animals is common all over the country, except for the very hilly areas. The carts are usually built from second-hand car and lorry parts and tend to be heavy and unbalanced. New lightweight carts are not readily available and tend to be expensive compared to the second-hand ones.

Four-wheeled wagons are used in some areas but due to the high price of even the ones built from second-hand spares, they are not often used. The wagons are pulled by between four and eight donkeys and are used to transport soil, maize and water and deliver groceries. These wagons are mainly used in the flat areas of the country. Work is being done by a number of Institutions to improve the availability and use of carts and wagons suitable for use by donkeys.

Introduction

During the droughts of the past decade or so, the number of donkeys used for cultivation and transport has increased dramatically. Though the ox remains the preferred work animal in most of the country, donkeys are playing a major role as a means of providing transport. Even in areas where oxen are common, donkeys are used to pull carts and wagons for delivering groceries, transporting water, maize, manure, soil and many other things. The aim of this paper is to review the future potential of donkeys for transport in South Africa.

The use of donkeys as pack animals

Throughout the world donkeys are used as pack animals carrying of loads on their backs with a saddle, panniers, or bags. This is a cheap and easy way of transporting goods, especially over rough and hilly terrain. As long as the load is correctly placed on the back of the animal and a proper loading system is used, a donkey can easily carry between 27% and 40% of its own weight (Goe, 1983). This means that a typical South African donkey of around 190 kg can normally carry between 51 and 76 kg. However, during the national animal traction survey in 1994 only a few pack donkeys were observed, mainly transporting water in two 20-litre plastic containers (Starkey, Jaiyesimi-Njobe and Hanekom, 1995).

Donkeys could be more widely used as pack animals in South Africa if the correct use of saddles and panniers was promoted. Pack animals should be particularly valuable in the hilly areas where carts are difficult to pull.

The use of donkeys to pull sledges

The second simplest method of transporting goods is by using a sledge. Sledges used in South Africa are usually made from thick Y-shaped branches or trunks of trees. Sledges are mainly used where carts are not available or where there is a long tradition of using them. Upright poles are often inserted into the sledge to allow the stacking of firewood or maize stalks. Sometimes a 200 litre drum is added to transport soil, water or manure.

The use of sledges is restricted to three areas, namely, Mpumalanga Province, KwaZulu-Natal Province and the Eastern Cape Province. Though the sledges are most often pulled by oxen, donkeys are also used, particularly in the Eastern Cape Province where in certain areas the veldt does not support the keeping of cattle. Usually two to four donkeys are spanned to pull the sledges. Sledges may also be used to train animals before they are hitched to carts. Due to the fact that sledges are often believed to cause erosion they have been officially discouraged and even

This paper is published in: Starkey P and Fielding D (eds), *Donkeys, people and development*. A resource book of the Animal Traction Network for Eastern and Southern Africa (ATNESA). ACP-EU Technical Centre for Agricultural and Rural Cooperation (CTA), Wageningen, The Netherlands. 244p. ISBN 92-9081-219-2. This publication was supported by CTA and Neda, The Netherlands. For details of ATNESA and its resource publications see <http://www.atnesa.org>



Photo: Paul Starkey

Photo 1: Two donkeys pulling a cart made from an old pickup in North-West Province, South Africa

banned in almost all the former homeland areas where animal traction is still used. Because of this and the slight increase in cart availability the use of sledges has decreased sharply in the last few years.

Single donkey carts

The first carts and wagons were built and brought into the country by the early settlers. These carts and wagons were pulled by oxen, horses, mules, donkeys and even zebras. The single donkey cart discussed here is a two wheeled cart with two shafts. A single donkey is spanned in-between the shafts and depending on the skill of the handler may or may not bear a major proportion of the load on its back.

Though single horse carts are commonly used for shows and exhibitions, the use of this type of cart in rural areas is rare. The exception seems to be the Western Cape where single horse carts and wagons are seen transporting people, wood, paint cans and other commodities, even in busy suburbs. In North-West Province only a handful of these single horse carts are used and mostly in isolated cases. People in the other parts of the country seem to be totally unaware of this technology. The use of single donkey carts is almost non-existent.

Lightweight, affordable single donkey carts are not commercially manufactured in South Africa. They are not even manufactured by rural artisans. One of the reasons might be that people are unaware of the carrying capabilities of donkeys and the type of harness and equipment needed. If single donkey carts and the accompanying technology were available and promoted some people would certainly adopt them. Many parts of South Africa, for instance North-West Province, Northern KwaZulu-Natal and the Northern Cape Province are relatively flat. In these areas single donkey carts could be of great use.

Due to the drought of the past decade the number of donkeys has increased dramatically. This has put more pressure on the veldt. A single donkey can pull a load (weight of cart included) of 400 to 450 kg on a flat road, but only 150 to 200 kg on a 5% slope (Wanders, 1997). This means that the number of animals usually spanned when pulling a double donkey cart could be reduced, which would in turn reduce the pressure on the grazing. The Institute for Agricultural Engineering is currently working on the building and promotion of single donkey carts, based on designs mainly from West Africa.

Double donkey carts

By far the most common donkey cart in South Africa is the double donkey cart. This is a two-wheeled cart with one shaft (disselboom) and two donkeys, spanned one on each side of the shaft. All the carts have the same basic configuration, with one shaft, two wheels and some form of a body on a main frame. Wheels always have pneumatic tyres (neither wooden wheels nor all-steel wheels are used). The cart may consist of a wooden box on a wooden frame, a wooden box on a metal frame or a metal box on a metal frame. Almost all of the carts seem to have some form of a box and carts with only platforms are rarely seen. In many cases the back of a light delivery vehicle (pickup truck) is used (Photo 1). This makes a very heavy cart.

The majority of carts are built from heavy scrap motor vehicle axles. The reason for this being that low cost simple axles are difficult to obtain and are more expensive than an old axle bought at the local scrap-yard. A second-hand axle might cost US\$ 10–40, whereas a proper beam axle might cost between US\$ 80–110 (US\$1 = R 4.30). Most people prefer to use leaf springs even if they do not make a lot of difference on a slow moving donkey cart. These springs are also salvaged from scrap-yards. Two, four or occasionally six donkeys are used to pull this kind of cart. Except for the northern parts of the country, bordering with Botswana and Zimbabwe, the donkeys are mostly spanned two abreast. For heavier loads more animals are added, also two abreast. In the northern parts three animals may be spanned abreast, but no more. The third animal usually pulls from the side of the cart.

Two donkeys can pull a load (weight of cart included) of up to 700 kg on flat roads and 400 kg on a 5% to 6% slope (Wanders, 1997). If the donkeys are properly harnessed and the load is well distributed on the cart, two donkeys would be able to pull a lightweight, properly designed cart with a lightweight axle and a load of 550 kg. If on the other hand the cart weighs 350 kg, a payload of only 350 kg could be transported.

Unlike in many other African countries, rural blacksmiths are non-existent. In larger villages where electricity is available, small welding shops usually build and sell commodities like burglar bars and gates. If simple plans were available, these people would be able to manufacture and

sell donkey carts. But, for a lightweight, efficient cart, buyers would have to pay more than they pay now for a cart made from the back part of a pickup truck or a cart built on a scrap axle.

The price of a cart made from scrap parts currently varies between US\$ 140–255. A new cart with a lightweight axle costs in the region of US\$ 550. This price might vary slightly, depending on the overheads of the manufacturer. The most expensive part of a new cart is the axle. Research is now bringing forward alternatives to sealed roller bearings and this should help to lower the price of locally made but efficient carts.

The use of donkeys to pull wagons

Four-wheeled wagons are used all over the country except in the more hilly areas of the Eastern Cape and KwaZulu-Natal. Teams of four, six or eight donkeys pull these wagons, transporting wood, building materials, water, maize and numerous other products. The construction of wagons is similar to that of carts, with heavy axles, wooden or metal frames and wooden or metal platforms (Photo 2). It is also common practice to add leaf springs onto the axles. The size of the wagons depends on the requirements of the users and the materials available.

Because of the weight of a wagon and its load, a braking system becomes more important. It is very difficult to stop a load of 1200 kg with four donkeys weighing a total of around 500 kg. Usually there is no braking system other than a piece of old tyre or a stone to throw in front of a wheel. Because carts are mostly used on flat areas brakes are often seen as unnecessary and the two back donkeys are expected to stop the cart, or the entire team must run faster than the cart! It has to be said though, that braking is not that much of a problem in flat, sandy areas.

Wagons are much more expensive than carts. A wagon built on scrap vehicle axles, with a steel frame and platform and with leaf springs, will cost roughly US\$ 470. The price for a new wagon, built on lightweight axles, with leaf springs, a metal frame and body will cost approximately US\$1900, when commercially manufactured.

A well designed new cart with sealed roller bearings will cost approximately US\$ 550. A wagon built from heavy second hand parts will cost more or less US\$ 470. If the wagon weighs 500 kg, four donkeys will be able to pull it with a



Photo: Paul Starkey

Photo 2: Four donkeys pulling a wagon in Mpumalanga, South Africa

load of 400 kg. A cart can transport 360 kg. This means that the wagon owner pays US\$ 1.18 per kg of transport capability. Purchasing a new cart costs US\$ 1.52 per kg of transport capability. There are both advantages and disadvantages in going for the simpler cart. It is easier to injure donkeys in carts if incorrect harnessing techniques are used.

Conclusions

Donkeys are little used as pack animals due to a lack of extension and equipment. The use of sledges is limited because of their environmental impact and policies prohibiting their use. Though the use of donkey carts and wagons is common in most areas of the country, there are areas where they are not used. This is often due to a lack of awareness or the hilliness of the area. There is a lack of lightweight, well-manufactured single donkey carts. The promotion of this technology should receive more attention. Users of donkeys for transport should be made aware of the different options of transporting goods, as well as

the most appropriate harnessing. Due to increases in fuel prices and the poor state of many tractors the use of donkeys and other animals for transport will increase, or at least stay the same, over the next decade and even longer.

References

- Goe M.R., 1983. Current status of research on animal traction. *World Animal Review* 45:2-17
- Starkey P, Jaiyesimi-Njobe F and Hanekom D, 1995. Animal traction in South Africa: the present situation. pp. 67-114 in: Starkey P (ed), *Animal traction in South Africa: empowering rural communities*. Development Bank of Southern Africa, Halfway House, Gauteng, South Africa. 160p. ISBN 1-874878-67-6
- Wanders A A, 1997. The use of donkeys for transport in: *Donkey traction: an overview with region specific developments*. Institute for Agricultural Engineering, Pretoria, South Africa. (This was an input into the paper: O'Neill D H, Wanders AA and Mbanje E, 1997. Technology for donkey utilisation: harnesses, implements and transport systems. Paper prepared for a workshop held 5-9 May 1997 at Debre Zeit, Ethiopia. To be published in: *Donkeys and donkey technology*. A resource book of the Animal Traction Network for Eastern and Southern Africa).