

# Animal traction use in Tabora Region, Tanzania

by

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## Abstract

*This study was conducted to examine problems affecting the use of draft power in the semi-arid areas of Tabora Region, Tanzania. Inadequate nutrition during the dry season was found to be among the major reasons why draft animals are physically weak, and hence cannot perform well, at the onset of the rainy season.*

## Introduction

Little research on the use of draft animal power has been done in Tanzania, and it is only recently that serious attempts have been made to test the suitability of various animal-drawn implements and to conduct cultivation trials at the Centre for Agricultural Mechanisation and Rural Technology (Camartec), the Uyole Agricultural Centre and the Mbeya Oxenisation Project (Camartec, 1988; Lutende, Shetto and Kwiligwa, 1989; Mkomwa and Loewen-Rudgers, 1992).

In the semi-arid areas especially, working animals lose body weight towards the end of the dry season because the supply of pasture is inadequate. Body weight loss may restrict the period of work (Preston, 1986)

Tabora is one of the semi-arid regions in the west central part of Tanzania (Figure 1). The region covers about 76 120 km<sup>2</sup> and is divided into four administrative districts: Igunga, Nzega, Tabora and Urambo. The region has about 2.4 million ha of arable land, but only 500 000 ha are used for agriculture and only about 30 000 ha are cultivated using animal power (Kivuruga, 1989).

Tabora Region is divided into two main agroclimatic zones. The north-east zone, which covers Igunga and Nzega Districts, receives an annual rainfall of 600–850 mm. This zone is susceptible to frequent drought, leading to crop and pasture failure in some years (Kivuruga, 1989). About 84% of the total cattle population of the region is found in this zone (MALD, 1984). The southern zone, which covers Tabora and Urambo Districts, receives more rain (850–1000 mm per year), but expansion of the use of animal power in this zone is limited by the presence of tsetse flies.

Due to high labour costs for tractors, draft animal power will remain the only alternative for expansion of agriculture in Tabora Region. The purpose of this paper, therefore, is to discuss the nutritional problems affecting draft animals in the region, and to suggest measures to solve them in order to maintain a constant draft power output throughout the year.

## Materials and methods

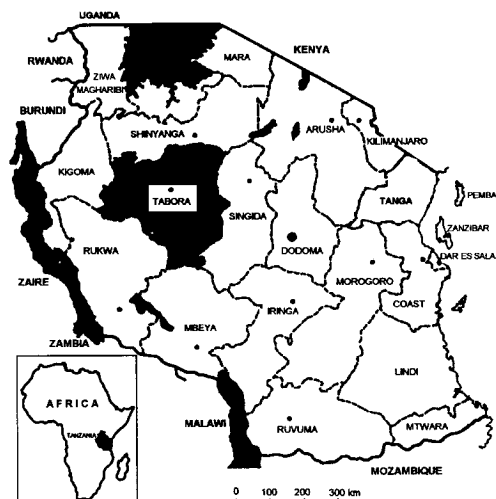
Data were collected from the Tabora Regional Mechanisation Office, using their Annual Reports on power utilisation in cultivation (tractor and draft animal) from 1983/84 to 1990/91.

## Results and discussion

The population of draft animals in Tabora Region has decreased from about 111 000 in 1986 to about 60 000 in 1991, mainly due to lack of adequate nutrition, particularly during the dry spell in 1987 and 1988. About 16% of the working animals are donkeys (see Table 1).

Most farmers use the Tanzanian short-horned zebu (average body weight 200–250 kg) for draft power.

Figure 1: Administrative boundaries of Tanzania showing Tabora Region



**Table 1: Approximate numbers of draft animals in Tabora Region**

	1986/87	1987/88	1988/89	1989/90	1990/91
Oxen	80 900	80 100	66 600	62 700	50 200
Donkeys	30 400	30 200	9 700	9 700	9 700
<b>Total</b>	<b>111 300</b>	<b>110 300</b>	<b>76 300</b>	<b>72 400</b>	<b>59 900</b>

Crosses of these with large zebu such as Boran and Brahman are found only on the National Tobacco seed multiplication farm in Urambo District. The use of these large oxen has been very successful as land preparation is done during the dry season.

The distribution of implements in Tabora Region by type and district is shown in Table 2. Draft animals are used mainly for dry-land cultivation, and most farmers only own plows. Animals are also used for transport and, to a lesser extent, for harrowing and ridging. Main crops grown include cash crops such as cotton, tobacco and sunflowers, and staple crops such as maize, sorghum, groundnuts and cowpeas. Draft animal cultivation also dominates in the wet lowlands (known as "Mbugas") where rice is grown.

Ox carts are used to carry harvested cash crops from the field to the house and to market and, during the dry season, to ferry firewood, charcoal and water (especially in the drier parts of Igunga District). In Igunga and Nzega Districts oxen pulling carts can walk an average of 40 km per day. During the dry season most semi-nomadic pastoralists in Igunga District use ox carts to transport essential items such as grain when moving their animals across to the south Usangu plains of Mbeya in search of pasture.

### Problems hindering use of draft animals

The work performed by a pair of draft oxen depends on animal type, design of implements, soil type, and level of training of the animals (Mrema and Hatibu, 1989). Nutrition and disease are the major obstacles hindering the efficient use of draft animals.

In the north-east part of Tabora Region the major problem leading to inefficient utilisation of animal power is scarcity of animal feeds. Draft animals are weak and emaciated at the start of the rainy season,

and so cultivation of the land is difficult. Peasants use up to three pairs of oxen in black cotton soils to alleviate this problem.

Inadequate pasture during the dry season leads to severe loss of weight, which reduces the draft force and draft power output of draft animals, and may restrict the period of work (Preston, 1986). There is a great need, therefore, to prevent this weight loss during the dry season through improved nutrition.

### Options for improving animal traction

Crop residues which can form an important feed component in the dry season are not fully exploited in Tabora Region at present (Kabatange and Kitanyi, 1989). Their use as feed for oxen does not constitute competition for food with humans or monogastric animals (Preston and Leng, 1987). Crop residues can easily be collected from the field using ox carts, and stored for use as required.

Whenever possible crop residues could be supplemented with protein-rich oil cakes or surplus cotton seeds. Manonga cotton ginnery, on the border between Igunga and Nzega Districts, could supply oil cake byproducts to farmers in the villages of the north-east zone.

Farmers in the north-east part of Tabora Region could be educated, and encouraged, to establish fodder banks which can be used to feed draft animals towards the start of the rainy season when natural pasture is inadequate. In the south, where rainfall is good, shrub legumes such as *Leucaena leucocephala* and drought-resistant legumes such as *Macroptilium* (Siratro), *Trifolium* and *Stylosanthes* spp could be grown (Kabatange and Kitanyi, 1989). *Leucaena* could supply oxen with green foliage throughout the year: it is very palatable, one hectare

**Table 2: Distribution of animals and implements in Tabora Region in 1990/91**

	Igunga	Nzega	Tabora	Urambo	Total
Ox plows	12 299	7 440	5 160	2 000	<b>26 899</b>
Ox harrows	53	30	50	30	<b>163</b>
Ox ridgers	9	30	48	20	<b>107</b>
Ox carts	1 627	807	650	78	<b>3 162</b>
Oxen	28 975	14 858	5 436	889	<b>50 158</b>
Donkeys	2 887	6 400	348	98	<b>9 733</b>

can supply enough dry matter (5500 kg) to feed two oxen per season, and it gives long-lasting stands when first established compared to other dry season supplementary feeds such as hay and silage.

However, in the districts which receive adequate rainfall (Tabora and Urambo) and in some parts of Nzega Districts, farmers could be advised to select areas where they can keep standing hay (commonly known as "Ngitile") that can be grazed when natural pasture is scarce.

With the help of government leaders and livestock experts a specific ranch area could be set aside for grazing draft animals from the north-east parts of the region. These could be grazed throughout the dry season when pasture is scarce and returned to their home areas after the start of the rainy season.

## Recommendation

A nationally coordinated research programme involving agricultural engineers and animal nutritionists is required to study the relationship between draft power output, level of feeding and management of draft animals.

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