

The introduction of animal traction and animal-powered weeding technology in Morogoro Region, Tanzania

by

John A C Steel

Research Fellow, Sokoine University of Agriculture, PO Box 3003, Morogoro, Tanzania

Abstract

The introduction of draft animal power in the Morogoro Region of Tanzania is reviewed and evaluated to help identify where future animal traction work should be concentrated, and of what kind. During the colonial period, few draft animals were used in the region. In the 1970s and early 1980s, the government began to stimulate the use of animal power technology as a means of making agricultural mechanisation more accessible to farmers, but met with little success. A more recent holistic approach has been taken by two donor organisations, but again was only partially successful in part of the region. Building on these experiences, a team from Sokoine University of Agriculture, working in conjunction with the Ministry of Agriculture and the Gairo Agro-forestry and Land Use Project, introduced animal traction weeding and other equipment to farmers already using draft animals for plowing and transport. Combined with farmer-to-farmer visits and training sessions, uptake of the new technology has been rapid.

Introduction

As in many other less developed countries, Tanzania has given high priority in recent years to the development and application of improved farm technologies to reduce labour bottlenecks, improve the timeliness of field operations and increase farm output (Hyden, 1980). This has included the introduction of animal traction equipment and training in the Morogoro Region. However, this has met with little success. Before embarking on an animal power research and extension programme, it was thought prudent to study past experiences of draft animals working in the region. This was

to help assess whether new animal traction technology such as weeding could be introduced and successfully adopted.

Efforts to promote animal traction in Morogoro Region

The people of Morogoro Region are traditionally neither pastoralists nor livestock keepers, so there was no natural tendency for them to want to keep animals for tillage or transport. With the influx of foreigners during the 1930s and 1950s, some miners used pack animals to transport mica and other commodities down the Uluguru Mountains to major roads and the railways, and occasional settlers used animals to move their produce to markets. In most cases, as soon as road communications were improved, motorised transport replaced those few animals that were employed for transport work.

First efforts to promote animal traction by the government were as part of a national campaign to increase production of food and cash crops in the early 1970s. The aim was to employ draft animals for cultivation and so overcome the limiting effect of farmers using only hand hoes for field operations. Sixteen villages in the region were selected for the introduction of oxenisation. The government's objectives were to introduce the practice to people who were unaware of it as they were not livestock keepers, to help rural people expand the cultivated area by using oxen instead of the hand hoe, and to reduce dependency upon the hand hoe; the other aim was to avoid the need to buy and hire tractors, as they were considered too expensive.

The first phase of the project ran for five years from 1976, but was considered a failure for a number of reasons. As Morogoro farmers are traditionally not livestock keepers, only a few of them wanted to use the animals: many felt them to be an additional burden. The oxen were collectively owned by the villagers, hence there

*Subsequent address: Dr John Steel
Flackley Ash Hill Cottage, Peasmarsh, Rye
East Sussex, TN31 6YH, United Kingdom

were no clear lines of responsibility for feeding, health matters and other needs. Some farmers thought that the soils were too heavy and not suitable for ox cultivation. Overall, it was judged that not enough time had been spent educating farmers on animal keeping and use before the oxen were introduced to the villages.

In 1981, efforts were made to correct these matters in a second phase by building and using ox-training centres. The centres were to have trainers who could help select suitable oxen, provide demonstrations and training to farmers and their draft animals and dispense other advice needed for the successful introduction of draft animal power into the local farming systems. Of the five centres, most ran for about five to eight years before being closed. This approach was no more successful than the first phase because of management problems, lack of funding and access difficulties. Most district councils reportedly never received enough funds to run the centre, only enough to feed the oxen and pay the salaries of the workers.

An integrated approach to the introduction of draft power

In the late 1980s, a different approach was tried by two different projects that offered animal traction as a component of their broader extension programmes in Morogoro Region. Oxenisation was being promoted as a means of alleviating labour and other constraints in the farming cycle.

In 1988, the regional extension project of the Food and Agriculture Organization of the United Nations (FAO) introduced five pairs of oxen to two villages for plowing and transport work. Six oxen died within two years because of disease and/or lack of veterinary care; the others were used for some plowing and transport duties. It is believed that not enough provision was made for technical assistance during the start-up phase, so farmers had little support in the crucial early stages.

The other work oxen project was part of the Sokoine Extension Project (SEP), a pilot extension programme supported by the Irish Government. A survey of villages by SEP to identify problems showed that farmers deemed the lack of farm power and lack of labour as two of the most important constraints. In 1989, oxen were introduced into five villages, but due to lack of preparation of both extension

personnel and villagers, all animals had either died or been stolen within the first year.

A new extension approach was tried in 1990 using a more business-orientated approach whereby new ideas or techniques were *sold* to the villages and farmers (consumers) as a product suited to their particular needs. A 'needs assessment survey' was carried out in which a number of villages reported that there was a labour shortage. SEP considered that draft animals could be provided under a loan scheme to those villages reporting a labour shortage. Villages wanting draft oxen entered into a contract with SEP to obtain a loan to purchase the livestock. In addition to financial details, it included the needs of the villagers for training and other assistance in order to manage, house, feed, train and work the oxen, much of the latter being supplied by SEP and Ministry of Agriculture staff. Eventually, a total of seven villages entered into contracts with SEP for loans to purchase oxen.

Evaluation of past oxenisation initiatives

In 1992, funding for SEP came to an end. Before the project finished, the Irish management group invited a team of people from Sokoine University of Agriculture, the Ministry of Agriculture and SEP to review the SEP oxenisation programme's successes and failures in introducing draft animal power and other extension services to selected villages in the Morogoro Region.

The team took the opportunity to not only review the impact of the SEP oxenisation programme, but also to assess the management practices of the small village farmers and how they pertained to draft animals and implements. Further, it took the chance to identify any other suitable technological packages. The Department of Agricultural Engineering considered the experiences would be useful in helping to form its research and training programme.

In a two-month period, 132 people were surveyed formally in eight villages. Those questioned included village leaders, village extension workers and farmers who had or had not used oxen, either in the SEP oxenisation programme or previously. In addition to formal surveys, information was gathered about the farming systems around each village, communication links and other provided

services. Details of other past draft animal work were also collected.

One important issue raised by the survey was that all the villages visited except one (Kwipipa) lacked skilled people who could manage, care for and handle livestock for animal traction. This was as expected, as very few people keep livestock in the region. Although the survey team was actively looking for animals, particularly for draft work, chickens were the most popular livestock, but were kept by only 31% of the respondents. Fewer than 4% of the respondents kept oxen, and they were all (bar one person) in Kwipipa village.

Another issue studied was how past projects had been organised. SEP and most other animal traction projects in the region used the approach of working in a number of villages that were widely scattered. This had made it very difficult to provide the necessary concentrated backup and training for draft animal technology to work successfully. Further, the life spans of the projects were considered too short, with no extended backing for successful long-term adoption. In almost all the animal traction programmes reviewed, draft animal usage ceased as soon as the projects stopped. Even at Kwipipa, where the most successful adoption took place in the SEP programme, the oxen were sold within eight months of the project closing because of various problems. The group's leader subsequently turned to using donkeys for pack work.

Approach to introducing animal power for weeding

From the past experiences, the approach suggested for draft animal power work was to have a multi-disciplinary team working in a small area where effective support could be given to the target group of farmers. This approach would help not only the target group, but also the support team until training methods and other support skills had been well learnt and refined. Further, it was considered easier to develop these skills in an area where people were familiar with livestock and used to some animal draft technology.

From previous visits, people in the north-west of the region had expressed a strong interest in further developing their animal traction technology. Work started in four closely

situated villages with the assistance of British and Irish funding.

To first test and find out what was actually required, demonstrations/hands-on days were held so that farmers could use a range of different types of animal traction equipment with their oxen, including ridgers and cultivators suitable for weeding. After every hands-on test, extensive discussions were held with the farmers to evaluate each piece of equipment and see how it would fit into their farming system. Besides weeding equipment, there was a strong interest in alternative plows because of the difficulties in obtaining spare parts for the Ubungo Farm Implements plow.

The preferred equipment was all made by SEAZ Ltd of Mbeya, based on designs by Project Equipment Ltd and sold under the name of *Mkombozi*. As there was no local agent for this equipment, Sokoine University of Agriculture acted as the trader in purchasing the cultivation equipment from SEAZ and selling it on to the farmers. Initially 10 *Mkombozi* plow/cultivator sets were purchased from Mbeya and promptly sold to farmers using a revolving fund scheme set up by SEP. A further batch of cultivation equipment was purchased and sold, with many farmers paying the full price.

Besides the sale of equipment, a farmer-to-farmer visit was organised for those people who had purchased weeding equipment. They and some extension agents were taken to visit the Mbeya Oxenization Project area. They met men and women who were weeding with animal power technology. The visitors also learnt about the need for and method of making nose muzzles and weeding yokes of the correct width. Two of the Morogoro village extension workers stayed on for additional training in using and managing draft animals for weeding and other purposes.

On their return to Morogoro, this pilot group of farmers was given support in training their oxen and laying out fields suitable for mechanical weeding. The start of the exercise in using weeding technology had been planned to coincide with planting time of maize in the Gairo area. In addition, when the crops were tall enough to be mechanically weeded, the Mbeya Oxen Project trainer, Mr M Massunga, came to the Gairo area to run practical training sessions with the farmers using their own oxen.

Discussion and future activities

The initial introduction of weeding technology involving the uptake of equipment, learning of operator skills and training of the oxen proved reasonably successful. The draft-animal farmers have been made aware of weeding technology and its benefits. This came over strongly during discussions with farmers about weeding, both after the training sessions and after they had used the weeders on their own fields.

For the continued adoption of weeding technology to be successful, two points need to be addressed. Weeding technology is quite new in this part of Tanzania and so requires support to be assured of long-term success. Fortunately, this work has been assured support under the

Gairo Agro-forestry and Land Use Project in collaboration with staff of the Mbeya Oxenisation Project. Secondly, there is a need for a local supply of spares and new equipment. At the demonstrations and training sessions, local traders and farmers expressed strong interest in providing this service. In the long term, these people must reach agreements with suppliers and manufacturers of animal traction equipment. In the short term, Sokoine University of Agriculture and the Gairo Agro-forestry and Land Use Project can act as a 'stop-gap' suppliers.

Reference

Hyden G, 1980. *Beyond Ujamaa in Tanzania*. Heinemann Educational Books, London, UK.