

# Improving animal traction technology in Uganda

by

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## Abstract

*Ox cultivation has a great potential in Uganda where about 70% of the population are involved in agriculture. Until recently most farm operations in Uganda, apart from first plowing, were done by women because of a lack of appropriate animal-drawn implements. Imported implements were very expensive and supplies were irregular and subject to delays. Farmers lacked knowledge of ox training and of proper animal management. Now, however, efforts are being made to encourage local manufacture of animal-drawn implements (and spare parts) that are suitable for local soil conditions and available animals. Several Ugandan firms are producing ox plows, ox carts and spare parts, are planning to produce planters, weeders and a multipurpose toolbar, and are able to demonstrate these implements to farmers. Village blacksmiths can also play an important role in producing implements locally. Non-governmental organisations are promoting the use of oxen in rural areas; they aim to ensure a sufficient supply of implements and spares, and to providing training. The Ugandan Government, too, is encouraging the use of ox draft power in an effort to increase agricultural production and reduce drudgery for women.*

## Introduction

The economy of Uganda is greatly dependent on agricultural production, which accounts for 80% of foreign exchange earnings. About 70% of Ugandans are directly or indirectly involved in agriculture. Over the past few decades, efforts have been made to increase the agricultural production of the smallholder farmers in the north and east of Uganda through encouraging the use of oxen for cultivation. Farmers have increased their interest in the technology and, today, ox cultivation has a great potential in most areas of the country.

For a long time the use of oxen was confined to primary cultivation with a mouldboard plow. Sometimes oxen were used for a second plowing. All other farm operations, such as planting, weeding, harvesting and transport of crops, have been done by women, due to the lack of appropriate animal-drawn implements.

In 1986 about 30–35% of households in Uganda were using oxen. Estimates of cattle populations and proportions of households using oxen are given in Table 1.

## Ox-drawn equipment

The mouldboard plow continues to be the basic tillage implement. Most plows are imported from India by private firms and by the Agricultural Development Programme supported by the World Bank. The firms distribute the plows through farmer schemes and local banks. This recent arrangement is of great help to farmers who cannot afford to buy ox plows without credit.

**Table 1: Estimates of the cattle population and percentage of households using oxen in the districts of Uganda**

District	Cattle population (000s)	Households using oxen (%)
Soroti	1918.0	95
Kumi	317.6	90
Torore	334.9	90
Kitgum	248.7	85
Lira	155.1	80
Morote	244.4	75
Iganga	282.0	55
Gulu	128.8	50
Kotido	26.0	50
Mbale	89.0	45
Apac	183.7	40
Masindi	39.9	30
Kapchorwa	30.2	25
Jinja	14.6	20
Kamili	122.9	20
Hoima	32.0	15
Lwero	88.8	10
Nebbi	57.2	5
Arua	95.0	5
Kabarole	143.9	3
Moyo	16.0	3
<b>Total</b>	<b>4568.7</b>	

Source: MAAIF, 1987

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The Indian plow weighs about 30 kg. This is relatively light for four small East African Zebu oxen to pull. Where soil is light, two oxen of reasonable size can pull the plow without much strain.

A major problem is that farmers often do not consider that proper animal management is important. As a result the animals are often underweight after drought periods and they are made to undertake work they cannot readily manage. Most farmers still lack knowledge of ox training and the proper maintenance of the implements.

Importation of ox plows and their spare parts is quite often irregular, and delays in the supply of spare parts means that agricultural production is retarded. Because of these outstanding problems, local parastatal and semi-parastatal bodies within the country are encouraged to make plow spare parts locally.

### **National effort to develop ox cultivation technology**

The present efforts to encourage local firms to manufacture animal-drawn implements and spare parts is a result of past research at Serere Research Station. Most implements tested during the 1960s and 1970s were found to be unsuitable for local soil condition or were too heavy for the small local East African Zebu animals to pull. Some were too sophisticated for Ugandan conditions and very expensive in foreign exchange to import. The poor farmers could not afford them despite a heavy subsidy of 50% given by the government.

Soroti Agricultural Implement Machinery Manufacturing Company (Saimmco) is situated in the centre of Uganda. The company manufactures ox plows, spare parts and ox carts. It satisfies requirements for plow spares in eastern Uganda. For a long time 90% of the total land area in the east was cultivated with oxen, but animal draft has been considerably reduced in recent years by the political situation.

Saimmco plans to continue to make ox plows, shares and carts, in quantities that will be determined largely by the availability of raw materials, which depends on hard currency. The firm may look into the possibility of developing animal-drawn planters and weeders that would reduce human drudgery. One idea is to produce a relatively cheap multipurpose toolbar and ensure the availability of spare parts.

Saimmco has had one pair of oxen trained for use in testing the ox-drawn implements made by the firm, and to demonstrate their use to farmers. Land for this purpose has already been acquired at a nearby prison farm, and work should commence in April 1992.

In the far north of Uganda, West Acholi Cooperative Union Ltd (WACU) produces light ox plows and spare parts for the Indian type plows. They supply spares to the whole of northern Uganda, north-eastern Uganda (Karamoja) and parts of eastern Uganda. Their production capacity is high because they are able to import raw materials from abroad with the assistance of the non-governmental organisation, Acord.

WACU also manufactures ox plows with a rectangular hollow section beam, designed for lightness and strength. By July 1991, 100 ox plows were in stock together with several spares. This tool frame was tested at Serere during the early 1980s and was recommended for use by farmers. It is designed to be a simple but versatile toolbar that can be used for plowing, planting and weeding with cultivating tines. Although the toolbar is quite promising, it did not, unfortunately, achieve all these operations because tests and modifications were interrupted by the national political situation.

The informal sector of village blacksmiths is another source of implements and spares. However, currently this role is insignificant. Where individual attempts have been made, production has been of poor quality and the tools produced inefficient. For ox draft power to play a greater role in Uganda's economy, greater recognition and support must be accorded to traditional blacksmiths. This could, in the long run, improve the quality of their products and lead to a reliable supply of ox-drawn implements and spare parts.

While farmers in Uganda are to some extent satisfied with the ox plows, they still lack knowledge of ox training. This is the area of present concentration, especially as the technology is being re-introduced to the districts of north and east Uganda where the cattle population was considerably reduced by rustlers in the mid-1980s.

### **NGO efforts to improve ox technology**

NGOs (non-governmental organisations—mainly church missionary societies from overseas and local church organisations) are playing an important role in promoting the use of oxen in rural areas of Uganda. Their efforts are concentrated in north-eastern Uganda (Karamoja), Soroti in eastern Uganda, and Mityana Diocese in southern Uganda.

They aim at ensuring a sufficient supply of ox implements and spare parts for the repair and reconditioning of implements currently in use. The NGOs have workshops for the repair of implements and also have ox units for demonstrating ox training and for running short courses for extension staff and farmers. The NGOs work closely with the ox cultivation experts of the Ministry of Agriculture, Animal Industry and Fisheries to keep them abreast of government policy regarding animal traction.

In Soroti, a church organisation has set up a cattle restocking programme to re-introduce ox cultivation into the area. The programme includes training of donkeys to supplement oxen wherever possible, especially for use as pack animals and for pulling carts. Three agricultural staff were sent from Uganda to Harare for a three-week training course. On their return they advocated the systematic method of ox training they had learnt about.

### Problems remaining

There are several specific problems affecting efficient ox power that need to be tackled to reduce human drudgery and improve animal traction technology. These include:

- poor management and feeding of working animals including, at times, inhumane use of animals at work
- poor harnessing as a result of inadequate knowledge and training
- lack of training
- poor ox-drawn equipment and machinery
- inadequate availability of equipment and spares when and where required
- high prices of ox-drawn equipment and spares
- lack of repair facilities including equipment for fabrication of spares by local blacksmiths
- lack of equipment for fine seedbed preparation, row seeding, crop protection (spraying, etc) and harvesting groundnuts and tuber crops
- farmer training and ox cultivation extension
- quality of draft animals. The East African Zebu at 250–300 kg provides inadequate traction power, while the long-horned Ankole is considered unsuitable for work due to poor body conformation (long legs, weak shoulders, poor hind muscles, narrow chest and long neck).

### Government policies

The present Uganda Government policy relating to ox draft power is to:

- encourage first and second plowing with oxen
- encourage row cropping using seeders so that inter-row cultivation with weeders is possible
- integrate the use of oxen with tractors, by using animal-drawn transport for farm and household materials such as manure, farm produce, water, firewood and charcoal. This will be of particular benefit to housewives, relieving them of drudgery and giving them time for other useful work.

To work efficiently, oxen and the farmers must be well trained. The farmers must know about the parts, functions, basic adjustments and repair of plows and other available equipment. Positive efforts have in the past been made by the government, but in recent years many constraints have overwhelmed the technology. These have included budgetary constraints and inadequate funding of ox cultivation technology and inadequate training for ox cultivation extension staff and farmers.

### Future developments

Training at a national level (when peace returns) will be conducted at the National Ox Cultivation Centre at Serere Research Station. At this level district extension agents and subject matter specialists will be trained in:

- harnessing systems
- care and maintenance of ox-drawn implements
- training oxen
- care and management of oxen
- soil conservation using ox power
- the philosophy of ox draft power.

The district subject matter specialists will then conduct similar training for extension agents in their respective District Farm Institutes. The trained agricultural agents in the districts will, in turn, conduct on-farm training of farmers and oxen. The success of the training programme will depend, in part, on the availability of oxen, of local breeds, in the districts.

### Reference

- MAAIF, 1987. *Agricultural survey for Dairy Development Committee*. Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Kampala, Uganda.