

Experiences with improving animal traction technology in Kaoma District, Western Province of Zambia

by

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Abstract

Kaoma District in Zambia's Western Province has better soils for crop production, but a smaller cattle (and oxen) population, than other districts. Farmers in this district are more commercially oriented than those in other districts, but they have less experience and knowledge of animal draft power. The Animal Draft Power Project is currently concentrating its activities in Kaoma District.

Training activities are closely linked to the availability of oxen, implements and spares, and have concentrated on ox-training courses and the use of primary and secondary tillage implements. Farmers in the district are encouraged to form groups, to improve the availability of animals and implements. The use of ridgers for weeding has gained popularity among the farmers.

Agricultural extension officers in the district lack clearly defined extension messages. There is a need to improve farm management advice to farmers. Rural transport in the district also needs to be improved.

Introduction

Cattle keeping is fairly traditional in Zambia's Western Province; the first cattle were introduced some 300 years ago. Within the agricultural system, people in the province rely heavily on cattle for manure, draft power for plowing and, to a lesser extent, transport. Oxen have been used for plowing in the province since the 1930s.

Although cattle keeping is traditional in most parts of Western Province, regional differences occur (Table 1). Most cattle are found in the Zambesi plains area (to the west of the province) where grazing areas are better and larger than elsewhere in the province. In Kaoma District, to the east (see Map 1), which is a relatively new settlement area for farming, cattle keeping and the use of oxen for farm work are a relatively recent phenomenon. There are several reasons for this: the indigenous inhabitants, as well as most of the settlers, have little or no experience in cattle keeping; grazing is

scarce (the district has fewer dambos/river valleys than the rest of the province); and the eastern part of the district is infested with tsetse flies. Thus, while about 30–40% of farming households in Western Province as a whole own cattle, only 10–15% of households in Kaoma District do so (Beerling, 1991).

On the other hand, Kaoma District has better soils for agricultural production, and higher, and better distributed, annual rainfall, than other districts. And it is in this district that the more commercially oriented farmers of the province are found (some 90% of the marketed maize production is grown in Kaoma District).

About 16–18% of the province's cattle population are oxen, but about one-third of the oxen are not trained for farm work (Corton, 1988). Trained oxen are generally only used for plowing and for transport (mainly using sledges).

The provincial Animal Draft Power Project is currently concentrating its activities in Kaoma District. Various aspects of these activities are presented in this paper.

Present situation in Kaoma District

Although Kaoma District has favourable conditions for crop production, several bottlenecks inhibit expansion of agricultural activities. A major part of the district's population consists of settlers from other parts of the province, or from other provinces, who have limited experience and knowledge of the use of animal draft power. The number of work oxen in the district is quite low, and not sufficient to meet demand. And the supply and distribution of ox-drawn implements and spares is inadequate. Because of these bottlenecks, coupled with low producer prices, high prices of input (such as fertiliser) and the shortage of seasonal and medium-term loans, farming in the district remains a marginal enterprise.

Despite the present economic difficulties, however, farmers want to improve and expand their agricultural production for the market rather than

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remain in, or return to, subsistence levels of farming, and to this end they are keen to invest in knowledge and equipment (van Rootselaar, Kamphuis and Muma, 1991).

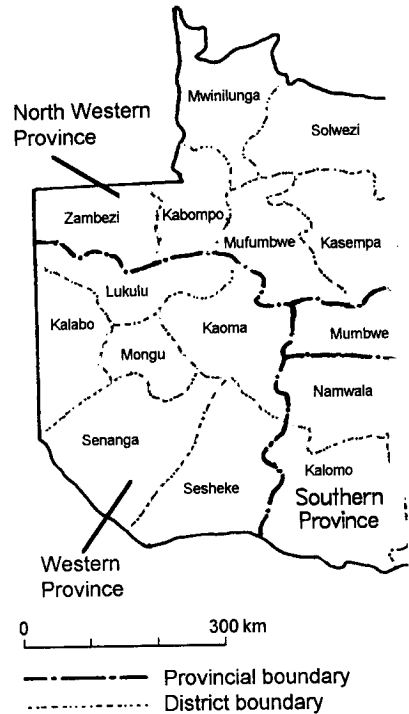
The approach of the Animal Draft Power Project

The Animal Draft Power Project actively promotes and supports sales of oxen and animal draft power implements and spares to farmers through various channels. By increasing the availability of oxen and implements in the district, the project aims to promote more efficient use of animal draft power, involving also other techniques like weeding. The activities the project is undertaking or planning in the district include:

- short mobile courses, focusing on the methodology of ox training and the proper use of plows and weeding implements
- demonstrations of the use of ox-drawn cultivators and ridgers (Photo 1), and issuing farmers' groups with these implements on a trial basis for one season
- support for input supply activities (in December 1990 an oxenisation revolving fund for oxen, implements and spares was established under the auspices of the Kaoma District Cooperative Union)
- short mobile blacksmithing courses (follow-up support will be given in form of the loan of materials and basic tools to trained blacksmiths).

Results

During the past few seasons many farmers and extension staff have received training in animal draft power technology. Nearly all agricultural extension staff in the district have attended a residential course



Map 1: Western Zambia showing district and provincial boundaries

on animal draft power. Since they received little such training during their formal education, this has certainly increased their knowledge and confidence; many of them only started to implement animal draft power extension activities after attending the course. These extension officers are further supported by the Animal Draft Power Project with transport (bicycles), and are being involved as much as possible in various project activities in their areas.

Table 1: Cattle, crop areas and populations by district, Western Province, Zambia

	Kaoma	Kalabo	Lukulu	Mongu	Senanga	Sesheke	Total
Total cattle	23 678	106 154	77 307	99 904	168 189	71 575	546 807
Total oxen	5 072	18 134	8 564	16 324	26 639	12 318	87 051
Trained oxen	(3 380)	(12 100)	(5 700)	(10 900)	(17 800)	(8 200)	(58 000)
Human population	112 747	101 410	51 016	142 213	135 210	64 901	607 497
Households	(22 500)	(20 200)	(10 200)	(28 400)	(27 000)	(13 000)	(121 300)
Trained oxen per household	(0.15)	(0.60)	(0.56)	(0.38)	(0.66)	(0.63)	
Area under crops (ha)	22 726	12 151	10 558	19 935	13 703	17 785	96 858
Trained oxen/ha	(0.15)	(0.99)	(0.54)	(0.55)	(1.30)	(0.46)	

Figures in brackets are project estimates

Due to low cattle population, number of trained oxen in Kaoma District might be higher

Some 12% of the population in the Western Province live in the six district capitals.

Numbers of households are estimated from district populations divided by 5 (average household size)

Sources: Department of Agriculture (1989); Central Statistical Office (1990); Schoonman (1991)

Farmers are eager to attend animal draft power extension activities. As well as ox training, farmers are particularly keen to learn the proper use of ox-drawn implements, especially weeding implements; as a result, the use of ridgers for weeding purposes is becoming quite popular in the district. Since 1987, several mobile ox-plowing courses have been conducted for women. A recent study on the impact such courses (Hocking, 1991; 1994) concluded that women who apply plowing skills themselves benefit both in sociological terms and, indirectly, through enhanced economic benefits to the household. Those who attend a course but have no access to oxen still benefit in sociological terms. Female farmers want more courses organised specifically for them. These courses should include such topics as ox handling and management, yoking and unyoking of oxen, plowing and weeding with oxen.

In December 1990 the Animal Draft Power Project established an oxenisation revolving fund under the auspices of the Kaoma District Cooperative Union (KADICU). It was expected that this would improve the supply, and especially the distribution, of oxen, implements and spares through the cooperative system. But the operation of this fund is constrained by several factors:

- relations between KADICU and the affiliated societies appear to have deteriorated. KADICU is buying oxen, implements and spares (mainly implements and spares), but so far is only selling them in Kaoma township; it has not yet entered into an agreement with any local society for distribution
- KADICU did not give enough publicity in the rural areas of the district to the availability of ox-drawn implements and spares in Kaoma Boma
- KADICU has, at present, no transport of its own.

Therefore, once farmers have attended a mobile animal draft power course, the project is currently trying to implement follow-up activities through the ex-trainees, who are encouraged to organise themselves as farmer groups. The main aim of these groups would be initially to improve the availability and supply of implements and spares in their areas. Once organised, they are expected to express their requirements as a group to KADICU and other input supply institutions. Alternatively, farmers could decide to channel the supply of implements and spares through a local entrepreneur or blacksmith (who would then receive full back-up support from the farmers in his area). If KADICU is unable to secure appropriate transport to supply the implement

and spares, the Project itself will offer transport (and charge KADICU a hiring fee). However, the project will encourage farmer groups to develop their own transport capacity, possibly by offering ox cart loans to farmer groups or to individual members within a group.

The stimulation of farmer groups has started recently. Some groups appear promising, but no clear results can yet be reported.

Constraints on implementation of Animal Draft Power Project activities

Despite the efforts by the Animal Draft Power Project to increase participation of farmers in developing a more sustainable system of input supply by organising them into groups, most farmers still believe that the government should provide them with all essential services (inputs, marketing systems for crops, credit, etc). For some time, the government has provided most of these services through the cooperative system; each ward was expected to organise its own cooperative society. Because the cooperatives are mainly top-down organised (rules and regulations are dictated by the government), farmer participation has been low.

Even in the present situation, where the government is no longer able to provide all the essential services, farmers still tend to wait for government help. For too long, farmers had (and often still have) the opinion that "the government should provide" and that "whatever comes from the government is free of charge".

Photo 1: Demonstration of a weeder in Kaoma District



Photo: H G Kamphuis

Agricultural extension officers are supposed to play an important role in agricultural development, as they are the only nearby source from which farmers can obtain advice on agricultural practices. Their present effectiveness is, however, questionable. One reason is that they do not have clearly defined extension messages. The main message to farmers at the moment is simply to increase production of cash crops, which many farmers in Kaoma District are trying to do by plowing more land; but this only creates a labour problem, especially at weeding time. In addition, fertiliser application is often reduced. As a result, yields are often only one-third or less of what could be expected under proper management (current average maize yield is 1800–2250 kg/ha). In addition, farmers are not advised on farm management practices—planning in relation to available inputs and human resources, cost benefit calculations, etc.

In the present situation of relatively low producer prices, high costs of farm inputs and the effects of the high inflation, many farmers depend each year on a seasonal credit to carry out their cropping plan. Currently, the LIMA Bank and the CUSA (Credit Union and Savings Association) are the main providers of credit (some 125 million Kwacha for 1991/92 season, equivalent to about US\$ 3 million). Both the LIMA Bank and the CUSA depend on the government for funding.

The Animal Draft Power Project has conducted a substantial number of residential and mobile training courses and field demonstrations. Although farmers have gained knowledge through these, they can only put this knowledge into practice if they can obtain the required inputs (oxen, implements, spare parts). Therefore, training activities are closely linked to the existing input supply infrastructure (which should be improved at the same time).

Rural transport is underdeveloped in Kaoma District. One reason for this is the lack of incentives to farmers to invest in rural transport. In the past, the cooperative system provided most of the inputs (fertiliser, implements, etc) near to the farmers and maize was bought for a gazetted price at rural depots. An improved supply and distribution system for ox-drawn implements, spares and other inputs, as well as a better marketing system for farm produce, can only be attained if rural transport is improved. The number of ox carts (and oxen) should be increased, but currently, the price of an ox cart is beyond the reach of most farmers.

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