

Hiring and lending of oxen for plowing in Kaoma, Zambia

by

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Abstract

This paper discusses lending and hiring arrangements of oxen for primary tillage in Kaoma District, Zambia based on the results of interviews with 152 ox-owning and non-ox-owning households. Only 13% of rural households own oxen but approximately half the cultivated area in Kaoma District is plowed under hiring and borrowing arrangements with ox owners. Most (51%) of oxen exchanges were on a sharing basis, with 26% of transactions conducted for cash and 15% hired in return for fertiliser. A few transactions were conducted for labour, maize or were lent free of charge. More than half of hiring transactions were to relatives, and relatives, especially women, had a high priority in terms of time of plowing. This study found that farmers were optimistic about the continued importance of the hiring market. However, a more recent study indicates that removal of subsidies for fertiliser and hybrid seed may have a negative impact on the hire market.

Introduction: lending and hiring animal draft power

Hiring and borrowing of oxen has been mentioned in animal draft power literature since the 1960s (Nicolas, 1968; Dronne, 1969). In some cases lending has been explained by owners' interest to be assured of labour for weeding and harvesting (McCown, Haagland and de Haan, 1979). In other countries with a long history of using animal power, for example Ethiopia and Bangladesh, farmers appear to have a range of words for different hire arrangements (Helmrich, 1986b; Gryseels, 1988). A few aspects of hiring and borrowing oxen in other districts of the Western Province of Zambia have been described by other authors (Nambayo and Vierstra, 1988; Vijfhuizen, 1987; Beerling, 1988; Beerling and Mwenda, 1988; Beerling, 1985; Sutherland, 1984).

In the Western Province of Zambia, Kaoma District has the highest proportion of oxen (20%) in the total cattle population (Muntali et al, 1995). If one assumes that each pair of oxen plows 8 ha

in a season, all 5,600 oxen could plow over 20,000 ha, which is more than the total area cultivated. Furthermore herd analysis shows that in Kaoma only 12% (250) of the oxen required each year need to be imported. However, a district-wide survey and contacts with farmers showed that only 13% of all rural households actually own oxen (Kakwaba, 1995).

The Western Province Animal Draft Power Programme (WP-ADPP) estimated that 30–40% of the rural households would have access to animal draft power and so in 1994 initiated research into the arrangements of hiring and borrowing draft animals. The aim of the research was to establish whether access to draft power could be increased by project intervention. After some exploratory interviews, 152 households of four types in the maize belt of Kaoma were interviewed:

- farmers owning more than two oxen (n=44)
- farmers owning two oxen only (n=39)
- farmers who hired and borrowed oxen (n=39)
- farmers tilling the land by hand (n=30).

Results

On average, farmers with oxen kept bigger households (mean 7.7 people) than the farmers who used manual labour (mean 5.3 people) or borrow oxen. Of households owning oxen, 4% were female-headed, while 32% of households using manual labour or hiring oxen were female-headed.

Some farmers from all four categories used hired labour, especially farmers with only two oxen, of which 28% employed hired labour more or less continuously. About 70% of all respondents used fertiliser during the period 1992–1994 for maize production, without significant differences between the four categories. External financing of fertiliser by agricultural lending institutions increased during that period for farmers using manual labour and for ox borrowers (while self financing decreased). For ox owners the source of fertiliser

Table 1: Area of maize grown by respondents

	<i>Area of maize planted (ha)</i>		
	<i>1992</i>	<i>1993</i>	<i>1994</i>
Ox owners with >2 oxen (n=44)	6.1	3.7	4.6
Ox owners with 2 oxen (n=39)	2.2	2.4	2.5
Ox hirers (n=39)	1.4	2.0	2.3
Hoe users (n=30)	0.7	0.8	0.8

Notes:

Differences between categories are statistically significant (t-test at $p < 0.05$)

Table 2. Quantities of maize sold by respondents

	<i>Maize sales (tonnes)</i>		
	<i>1992</i>	<i>1993</i>	<i>Mean</i>
Ox owners with >2 oxen (n=44)	4.1	5.7	4.8
Ox owners with 2 oxen (n=39)	1.3	1.9	1.6
Ox hirers (n=39)	0.7	2.0	1.4
Hoe users (n=30)	0.3	0.5	0.4

did not change significantly and 20–35% financed fertiliser from their own resources.

Maize cultivation and sales were considerably different between the categories (Tables 1 and 2). In each category, some farmers do not grow maize every year, but there is a higher percentage of non-maize growing among the borrowers and hirers of oxen. During 1992 and 1993 only about 55% of these households plowed for maize cultivation. Analysis of the 3-year average area plowed, using the t-test, showed statistically significant differences between all categories.

The differences in maize sales between the categories are less marked. The difference between ox owners and ox borrowers is not significant, like the difference between ox hirers and hoe users. The analysis generally confirms the findings of WP-ADPP in 1992 (van Agt, 1992).

Plowing for others

The 82 owners of oxen plowed an average of 4.1 ha on their own fields, and 3.6 ha on other farmer's fields in 1993/94. The total area plowed per span of oxen was lower than estimated previously (Dibbits and Mwenya, 1993) and there was no difference in total plowed area between farmers with one and farmers with more than one span of oxen. Farmers with high maize production (>4.5 t/year) plowed more in total (10 ha), but plowed a relatively smaller area (43%) than farmers that produced less (60%).

Table 3 shows that plowing for others is mostly done on fields of relatives. The score for priority in time shows that, contrary to the general perspective of gender and animal draft power (Sylwander, 1992), the fields of the wives and sisters have a higher priority than fields of male relatives or clients who want to hire.

Table 3: Plowed area and priority in time of plowing for different types of plow clients (n= 82 farmers renting their oxen)

<i>Clients</i>	<i>No people</i>	<i>Area plowed (ha)</i>	<i>% of total area</i>	<i>Area/client (ha)</i>	<i>Time priority</i>
Hirers	105	92	31	0.9	5
Wife	37	68	23	1.9	1
Son	35	40	13	1.1	3
Daughter	29	34	11	1.2	4
Brother	23	25	8	1.1	6
Parents	19	23	8	1.2	7
Sister	17	19	6	1.2	2
Total	265	301	100	1.1	

Only 74 farmers could precisely describe the reward for their plowing services. Table 4 gives an overview of the arrangements. It appears that only 35 of the 74 ox owners hired out their oxen for cash. Plowing through hiring of oxen is provided by relatively more farmers with a high maize production. Less productive farmers tend to use sharing arrangements more often, whereby the plow or the plowing labour is provided by the clients. It is interesting that although farmers applied several barter values for plowing, most of the respondents kept 2 bags of maize or 2 bags of fertiliser as 'a standard price per ha', whereby fertiliser is underrated compared with real market prices.

Sustainability of ox hiring

The hiring and lending arrangements are mostly seasonal. Only 41% of the ox owners plow more than one season for the same clients. When asked why their clients change each year, ox owners responded with various explanations which are shown in Table 5. It suggests that clients can decide which owner they want to plow for them. Ox owners, asked to characterise clients who return yearly for plowing, mentioned farmers *who have something to offer*, like maize, fertiliser and cash. However, when asked which persons did not return, the same characteristics were given: *'those who have means to look for plowing services elsewhere'*.

Table 4: Arrangements for hiring and lending plow capacity (n=74)

<i>Arrangement</i>	<i>Frequency (% of transactions)</i>	<i>Value</i>
Sharing	51	
Hiring for cash	26	K16,000/ha
Hiring for fertiliser	15	2 x 50kg bags /ha
Hiring for labour	3	weeding
Lending	4	

Table 5: The major reasons for changes in clients from year to year

<i>Reason for change</i>	<i>Frequency (%)</i>
Clients do not come back	26
Clients come too late	19
Clients bought oxen	9
Clients book others	2
Not enough (trained) oxen	24
Much work on own fields	12
Avoiding hatred	2

Demand for hiring

Ox owners were optimistic about the plow hiring market; 94% of the owners expected expansion.

The main arguments mentioned were:

- many farmers increase their cultivated area
- the district still receives a lot of immigrants
- there are not enough oxen for the increasing number of farmers.

This opinion was not confirmed in a 1995 survey of 25 farmers who had in the past obtained loans from WP-ADPP. This group was almost unanimously of the opinion that demand for hiring oxen was shrinking. When asked under which conditions they would plow more, most of these farmers replied: *'If I receive more fertiliser and seed'*. Conditions like sufficient rainfall, spares and stronger oxen were not considered important. The change in public opinion of ox owners could be caused by the fact that in 1994/95 farmers experienced the effect of reduced government support to agricultural lending institutions, whereby almost 20% lost access to the use of fertiliser and hybrid seed (Kakwaba, 1995).

Stability of ox ownership

Another influence on the sustainability of ox hiring and borrowing services is the stability of ox ownership itself. When the 40 farmers who hire or borrow oxen were asked about their past ownership of draft animals 43% stated that they owned oxen in the past, while half of these former owners had plowed for less than 3 years with draft animals. Table 6 shows the period of ownership of farmers with a single pair of oxen. More than 55% of the ox owners with 2 oxen acquired their oxen within the last five years. This relative instability of ox ownership was also found in a survey in 1994 (Bwalya and Leeuwen, 1994).

Conclusions

About 49% of the cultivated area in Kaoma District is plowed under hiring and borrowing arrangements with ox owners.

Hiring for cash is more important than hiring for barter (fertiliser, labour or maize), but borrowing through sharing is most common.

Hiring of oxen in Kaoma District is applied by 43% of ox owners. Farmers with higher maize production and/or only one span of oxen hire more frequently.

Table 6: Period of ownership of oxen by farmers with 2 oxen (n=39)

<i>Period of ownership</i>	<i>Frequency (%)</i>
<1 year	10
1–3years	26
3–6 years	23
6–10 years	26
>10 years	15

Among family members, women receive plowing services at a relatively high priority in time.

Ox ownership as well as ox-hiring relations in Kaoma District are rather unstable throughout the years.

Ox owners expect less demand for hiring services when fertiliser and seed are less easily available, for example as a result of the removal of government subsidies.

The research did not show obstacles for WP-ADPP's programme of support to resource-poor female-headed households, whereby the programme creates an environment for training of surplus oxen in herds of cattle owners by resource-poor female-headed households. It is likely that the demand for hiring oxen by this group has reduced recently, due to diminished availability of credit for seasonal inputs.

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