

Care and management of work oxen in Tanzania: initial survey results

by

G J M Mgaya, T E Simalenga and N Hatibu

Department of Agricultural Engineering, Sokoine University of Agriculture, PO Box 3003, Morogoro, Tanzania

Abstract

Results of a preliminary survey on use and management of work oxen in Tanzania are presented. A total of 100 oxen-using farmers in seven regions of the country were interviewed.

All respondents used indigenous male animals for work. Average number of work animals per household was seven (range 2–18). All respondents used animals for cultivation/plowing: 85% of respondents also used animals for transportation, 16% used them for planting and 5% used them for weeding. Animals were worked for an average of five hours/day (range 3–7 hours/day). Average productive life span was 8.5 years (range 5–12 years).

Most respondents (85%) reported that animals lost condition during the working period, while 9% claimed that their animals gained weight (although even they admitted that their animals lost condition at the beginning of the work period). Only 34% of respondents supplemented their working animals with crop residues and byproducts during the working period.

The majority of respondents (62%) said they would continue using draft animals even if a tractor were available; the rest said they were prefer to use a tractor if the opportunity arose.

Introduction

Mainland Tanzania has about 12 million cattle, concentrated in the north and north-east (Figure 1). In 1984 there were estimated to be just over one million working animals of which about 840 000 were cattle, 220 000 were donkeys and 2000 were horses (Table 1). The working animals are mainly concentrated in those areas with higher cattle populations.

The development and expansion of ox plowing has been associated with a particular type of land use—the fairly extensive grass-fallow cultivation system found in the cool southern and northern highlands, in the warmer, semi-arid north-western area of the central plateau and in the more humid south-eastern part of the Lake Victoria plateau (Kjærby, 1983).

The main limitations to the wider adoption of ox plowing are tsetse infestation and the lack of a

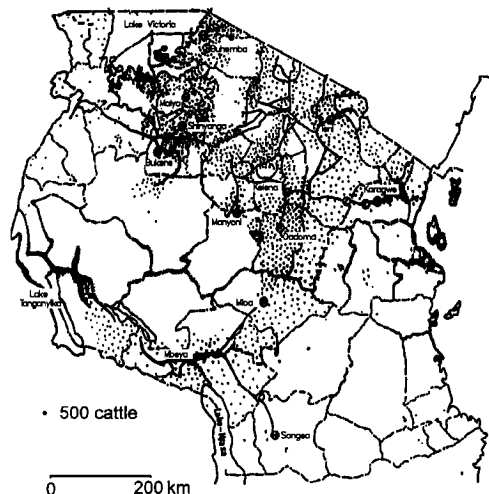


Figure 1: Distribution of cattle in Tanzania

tradition of animal ownership. But efforts are being made to introduce draft animals into new areas, together with appropriate technical packages to help villages look after them and get the maximum output from them (MALD, 1983).

Experience from other countries has shown that a pair of draft oxen is capable of working 4 ha per season (Giles, 1975; Starkey, 1981). On this basis, the 0.8 million draft oxen in Tanzania should be able to work about 1.6 million ha. However, only minimal use is currently being made of this resource (Hatibu and Simalenga, 1992). The main reasons for this, as reported by MALD (1983), are:

- low efficiency of power utilisation
- the small size of the Tanzanian zebu cattle
- lack of appropriate equipment and harnesses
- management and feeding problems which leave oxen in poor condition at start of the working period.

To promote the use of draft animals in Tanzania, the Ministry of Agriculture and Livestock Development

(MALD, 1983) proposed the following goals for Tanzania's livestock policy:

- improvement of extension and veterinary services
- adequate seasonal feeding of draft animals
- efficient draft animal husbandry during periods of high work demand
- production of appropriate implements for use with draft animals.

In 1991 Sokoine University of Agriculture carried out a survey of animal traction use in Tanzania. Initial results of this survey are presented here.

Methodology

The survey was carried out during the cropping season in the seven regions of the country with the highest number of working animals, namely Shinyanga, Singida, Mara, Mwanza, Tabora, Mbeya and Iringa.

Data were obtained through a guided questionnaire administered to 100 farmers who owned work oxen. The following parameters were studied:

- types of animals used
- operations for which animals were used
- area plowed per day
- working period per year and per day
- care and management practices
- feed supplementation of the work animals.

Results and discussion

All farmers interviewed use indigenous male animals for work because they have a good temperament, are strong and can be used throughout the year. As animals are in a poor state at the start of the work period, many farmers work their animals in pairs, or even larger teams, to increase work efficiency.

The majority of farmers (64%) bought all of their work animals; 26% inherited them or obtained them through dowries; and 10% acquired them by a combination of purchasing and inheritance/dowries. Average number of animals per household was seven (range 2–18).

Use of animals

The use of animals for different agricultural and household operations is shown in Figure 2. Animals are usually fit to start work when they are between two and five years of age (Figure 3), depending mainly on the adequacy (quality and quantity) of their feeding. Animals reared under harsh conditions start working later. Most animals continue to work for up to 10 years (Figure 4), after which they are

Table 1: Working animals in Tanzania in 1984

<i>Region</i>	<i>Working cattle</i>	<i>Horses</i>	<i>Donkeys</i>
Arusha	67 556	309	107 768
Coast	15	20	383
Dar es Salaam	0	67	23
Dodoma	18 182	74	30 268
Iringa	53 322	322	3 847
Kagera	863	47	96
Kigoma	201	31	2
Kilimanjaro	3 491	162	6 477
Lindi	22	7	2
Mara	107 949	71	5 519
Mbeya	44 045	238	4 695
Morogoro	651	72	1 827
Mtwara	10	10	3
Mwanza	103 729	77	6 051
Rukwa	45 481	6	3 825
Ruvuma	93	74	40
Shinyanga	247 078	181	11 281
Singida	72 480	40	22 759
Tabora	71 032	107	8 166
Tanga	172	134	4 244
Total	836 373	2048	217 276

Source: MALD (1984)

usually sold: working animals are not slaughtered and consumed by the household owning them because they are regarded almost as members of the family.

Work rates of work oxen

The area a pair of oxen cultivate a day is very small (Figure 5). Poor nutrition, inadequate training (of both animals and operators) and inefficient utilisation are the main reasons for the low work rate.

Poor nutrition is a particular problem. Draft bulls and oxen need feed supplementation if they are to do the work expected of them (Mohamed-Saleem and Von Kaufmann, 1989), but only 34% of the households surveyed supplement their working animals with crop residues and byproducts (maize and rice straw and, to a lesser extent, sorghum straw, hay and maize bran). Work animals are usually grazed separately after working but because pastures are poor in terms of both quality and quantity animals are undernourished.

Work periods

On average, animals work for about five hours a day (Figure 6), depending on conditions; when there is moonlight work can start as early as 0300 hours and go on until 2200 hours.

The length of the annual working period can vary widely (Figure 7) because in some areas animals are

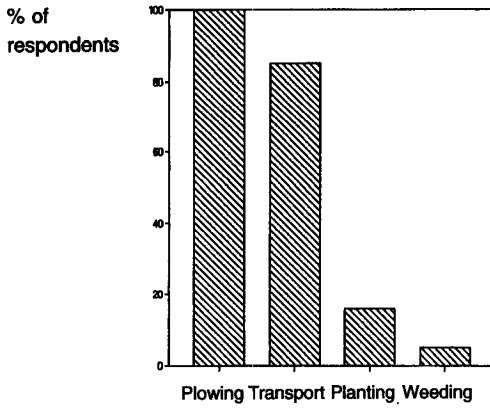


Figure 2: Use of animals for different operations

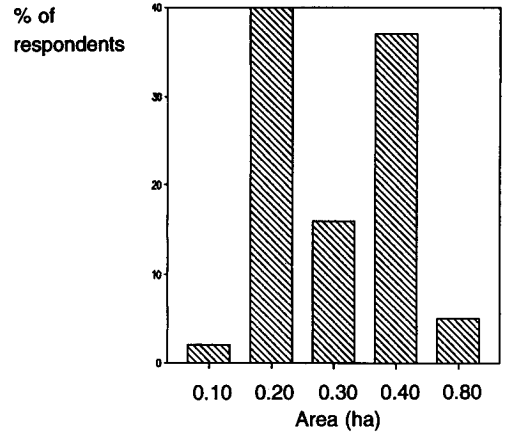


Figure 5: Area plowed/cultivated per day per pair
Range: 0.10-0.80 ha/day. Mean: 0.36 ha/day

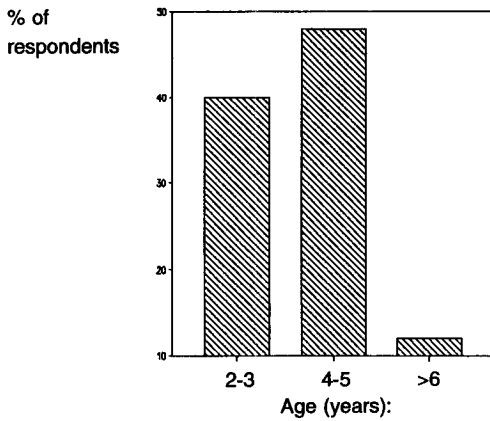


Figure 3: Age at which animals start working

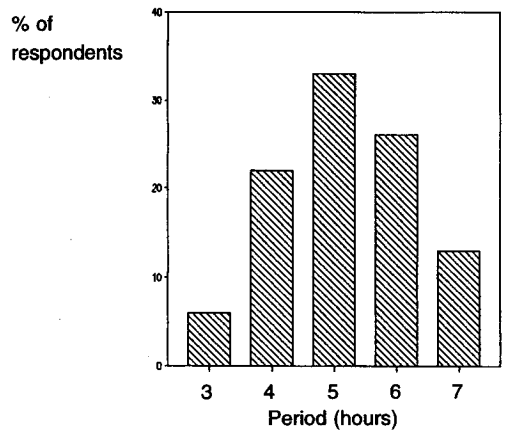


Figure 6: Working period per day
Range: 3-7 hours/day. Mean: 5 hours/day

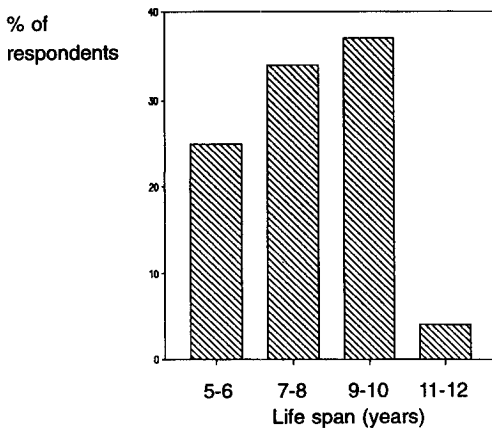


Figure 4: Productive life span of working animals
Range: 5-12 years. Mean 8.5 years

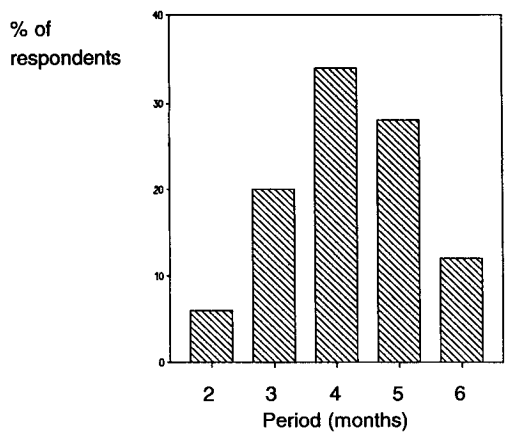


Figure 7: Working period per year
Range: 2-6 months/year. Mean: 4 months/year

used only during one growing season while elsewhere they are worked for two growing seasons.

Care and management of work animals

Most respondents (85%) reported that animals lose condition during the working period due to undernourishment and overwork. Farmers therefore sometimes have to team up three or four pairs of oxen to pull one plow. Some farmers (9%) claimed that their animals gained weight during work, but even they admitted that the animals do lose weight at the beginning of the working period. The remaining 6% of farmers reported no weight change in their animals in response to work.

Most respondents dipped their animals frequently (Figure 8): if a cattle dip was not available they used hand sprays. The few respondents who rarely dipped their animals were those who lived far from the cattle dip and who had no hand spray (or if they did, could not obtain an acaricide). The 24% of respondents who never dipped their animals were those living even farther from a cattle dip, or those whose village cattle dip was out of order.

The advice and services provided to farmers included:

- treatment of diseases
- castration
- dehorning
- vaccination
- advice on training animals
- feeding animals
- dipping and spraying of animals.

Sixty-six per cent of respondents received such services, the same number who dipped their animals at the recommended frequency. The remainder said they did not get any advisory services, because the extension officers lived far away and the services were too expensive.

Animals need protection against harsh weather conditions if they are to perform satisfactorily (Bangura, 1988). But only 14% of respondents provide a shed for their animals at night; most farmers keep their animals in a kraal close to the homestead.

Factors affecting work performance

The majority of respondents (62%) indicated that they would continue using draft animals even if a tractor was available to them. They gave several reasons for this choice: animals are cheaper to

acquire than a tractor; using a tractor requires skilled management; a tractor cannot work in areas with stumps; and the sizes of their farms do not justify the use of a tractor. However, the other 38% of respondents said that they would prefer a tractor because they could then plow a larger area.

Finally, respondents were asked to give their opinion on the importance of several factors to work performance of their animals. It is clear from the responses (Figures 9 to 13) that farmers believe that the work performance of their draft animals can be greatly improved through proper nutrition and other management practices.

Conclusions

This study has shown that care and management of work oxen should be an area of concern for both research and extension programmes. The viability of animal draft technology depends to a great extent on the improvement of animal husbandry, management and efficient utilisation of available power.

References

- Bangura A B, 1988. The utilisation and management of draft animals at farm level. pp. 293–298 in: Starkey P and Ndiame F (eds), *Animal power in farming systems*. Proceedings of Second West African Animal Traction Networkshop, held 17–26 September 1986, in Freetown, Sierra Leone. Vieweg for German Appropriate Technology Exchange, Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), Eschborn, Germany. 363p.
- Giles G W, 1975. The reorientation of agricultural mechanization for developing countries: policies and attitudes for action programmes. pp. 71–90 in: *Proceedings of meeting of FAO/OECD expert panel on effects of mechanization on production and employment*. Food and Agriculture Organization of the United Nations (FAO), Rome, Italy.
- Hatibu N and Simalenga T E, 1992. Research and development strategy for improvement of animal traction in Tanzania. pp. 23–26 in: Simalenga T E and Hatibu N (eds), *Proceedings of animal traction workshop held on 8–10 April 1991, Morogoro, Tanzania*. Mbeya Oxenization Project, Mbeya, Tanzania. 57p.
- Kjærby F, 1983. *Problems and contradictions in the development of ox-cultivation in Tanzania*. Research Report 66. Scandinavian Institute of African Studies, Uppsala, Sweden. 164p.
- MALD, 1983. *The agricultural policy of Tanzania*. Ministry of Agriculture and Livestock Development (MALD), Dar es Salaam, Tanzania. 19p.
- MALD, 1984. *National livestock count: final results*. Preliminary release. Ministry of Agriculture and Livestock Development (MALD), Dar es Salaam, Tanzania. 50p.
- Mohamed-Saleem M A and Von Kaufmann R R, 1989. A rapid survey of feeding regimes for draft cattle in Niger state. *ILCA Bulletin* 33:14–17. International Livestock Centre for Africa (ILCA), Addis Ababa, Ethiopia.
- Starkey P H, 1981. *Farming with work oxen in Sierra Leone*. Ministry of Agriculture, Freetown, Sierra Leone. 88p.

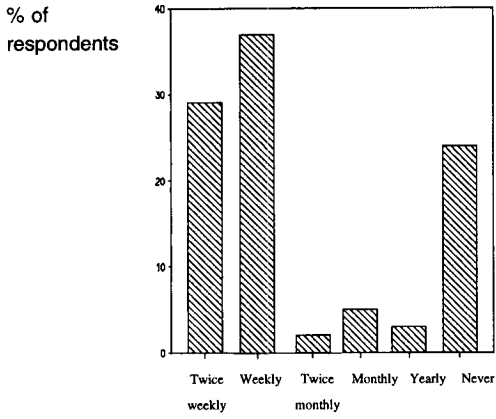


Figure 8: Dipping frequency

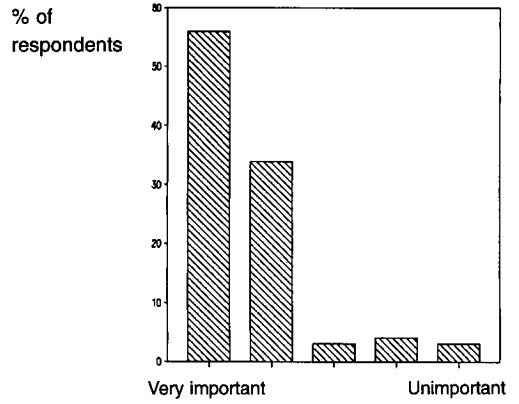


Figure 11: Importance of equipment type on work performance of draft animals

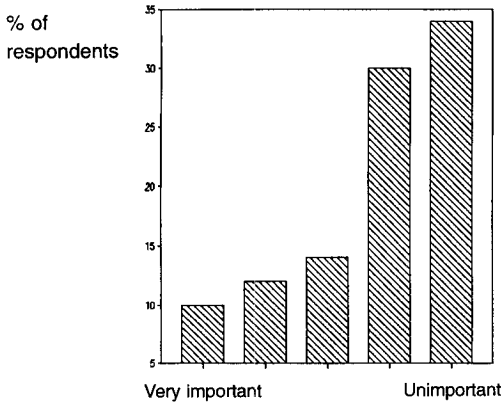


Figure 9: Importance of equipment type on work performance of draft animals

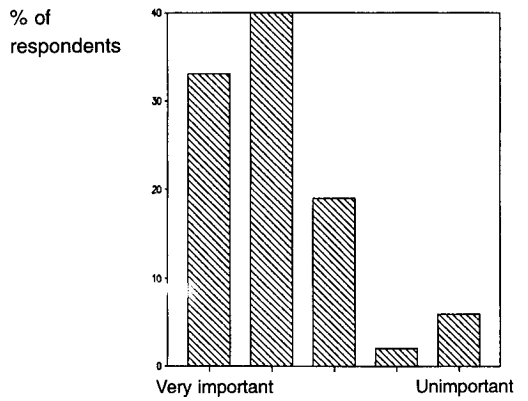


Figure 12: Importance of animal nutrition on work performance of draft animals

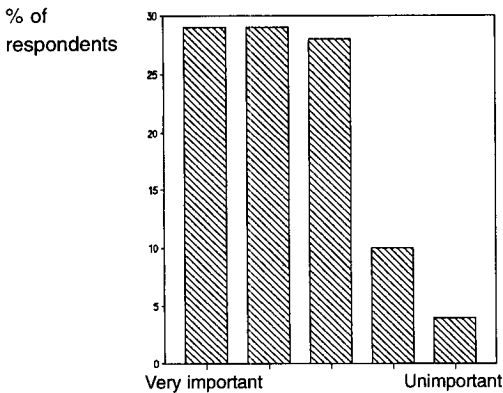


Figure 10: Importance of animal health on work performance of draft animals

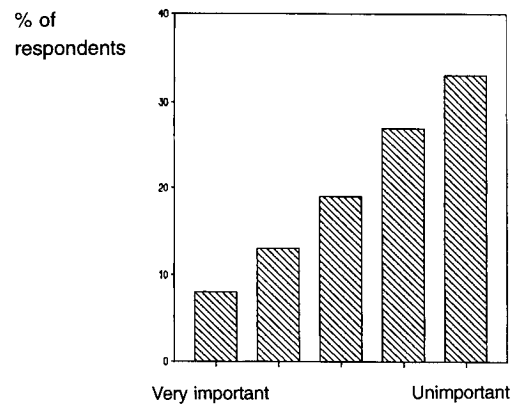


Figure 13: Importance of soil type on work performance of draft animals