

Improving the management of feed resources for draft animals in Mangwende, Zimbabwe

by

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Abstract

Poor body condition of draft animals at the onset of the rainy season prevents farmers from undertaking operations at optimal times. This leads to poor yields. This paper presents the results of on-farm trials in which draft cattle were supplemented during the plowing period. There were no significant differences between the weight gains of supplemented and non-supplemented animals, nor in the rate of use of the animals by farmers. This suggests that farmers are more concerned with timely land preparation than with the condition of their oxen. The farmers claimed it was important to cultivate rapidly with whatever animals were available, knowing that the animals would gain condition later in the season.

Introduction

The Farming Systems Research Unit (FSRU) of the Department of Research and Specialist Services, Zimbabwe, was established in 1984 to study communal area farming systems. One of the areas chosen for detailed study was Mangwende: with 800–1000 mm annual rainfall, this area is representative of the high potential communal areas of Zimbabwe.

Lack of adequate draft power during the time of land preparation is one of the main constraints to the farming systems in this area (FSRU, 1985; Shumba, 1985). At the onset of the rains, when draft cattle are needed for land preparation, the animals tend to be in very poor condition because during the dry season feed resources are limited and the feeds that are available—dry forage and crop residues—are of poor quality. The animals are therefore only capable of working small areas each day, so land preparation may be delayed, and resulting crop yields may be low (Scoones, 1990). Farmers may use spans of four animals, instead of just two, to reduce stress on their animals, but this effectively reduces the number of draft animals available for work.

One way of increasing draft power availability would be to improve the condition of draft cattle during land preparation. Animals in better condition should be able to work faster and for more hours each day, and could also be used in spans of two,

rather than four, thus making more teams available from the existing cattle population.

As maize stover is one of the main feeds available during the dry season, one way of improving animal condition at the end of the dry season would be to improve the management of this feed resource. Traditionally some farmers in the communal areas just leave stover in the field to be grazed *in situ* by the animals soon after harvesting (Mombeshora, Agyemang and Wilson, 1985). Other farmers collect their stover after harvesting and store it at the homesteads. However, during the late dry season, the stored stover is simply piled into the night pen (kraal) and so is available to all animals, working ones and others (GFA, 1987). Under an improved management system, the stored stover could be used to supplement working animals. A trial was therefore undertaken to investigate the possible benefits of such a system.

Materials and methods

Farmers selected for the trial owned at least two draft oxen, and were willing to harvest and store maize stover and feed it separately to their work oxen. Those farmers who were willing to harvest and store stover, but who could not do so because of labour constraints, were assisted by the researchers. Farmers were visited individually to ascertain whether their maize stover was adequate and whether they had separate feeding facilities.

Scales provided by the researchers were used to estimate the bulk of stover that was approximately equivalent to 6 kg, which was the calculated quantity for daily maintenance of each animal. The animals were fed after their release from work before they joined the rest of their herd. A block lick containing 24% crude protein and 5% urea (Rumivite Economy) was placed in the feeding stall of each ox and the animals were allowed about one hour per day to lick and feed on the crop residues. The intake of the block lick was estimated weekly by weighing. The oxen were weighed once a month for three months. The control group of animals

Table 1: Average daily liveweight changes of draft oxen and plowing performance

	Group A (no supplement)	Group B (supplemented)
Number of animals	26	26
Average daily liveweight change (kg)	+0.17	+0.20
Average plowing time per day (hours)	3.9	4.2
Duration of plowing (days)	15–21	10–22

grazed normally but had neither maize stover nor block lick. The feeding trial lasted for 90 days starting in mid-November 1984.

Results and discussion

Table 1 shows the average weight changes of the draft animals, and the average time spent plowing, during the study period of November, December and January.

Contrary to expectations, animals in both groups gained weight and there was no significant difference in the rate of gain between the supplemented and unsupplemented animals. One pair of oxen in the control group lost weight during the period, but none of the supplemented animals did so.

The figures in Table 1 for average plowing time per day do not give a clear impression; early in the plowing season animals worked up to seven hours a day, but plowing hours were much reduced as the season progressed. However, on average, neither the time spent plowing each day, nor the number of days spent plowing, differed between the groups.

There may have been differences in the area plowed per unit time, and in the total area plowed. However, it is not possible to give figures for these, because the total area plowed per household, as measured by the research staff, did not agree with the totals calculated from daily estimates recorded by the farmers. The problem may have been due to inaccurate farmer estimates of area of land worked in a given time. In any case, these differences

illustrate one of the problems of managing and recording this type of farmer-managed, on-farm trial.

The results appear to suggest that the amount of work farmers obtain from their draft oxen is not greatly influenced by the presence or absence of supplementary feeding. Informal discussions with some farmers revealed that they were mainly interested in plowing their fields as

early as possible, and would do so whatever the condition of the oxen and whatever their apparent stress. Farmers knew the animals would recover later in the season, and they did not seem very concerned about the condition of their animals in the short term. It is not clear whether such attitudes would prevail in areas of lower potential or in more severe years. It is also possible that farmer attitudes would be different if animals were supplemented throughout the dry season and were in good condition at the start of the plowing season.

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References

- FSRU, 1985. *Annual report 1983–1984*. Farming Systems Research Unit (FSRU), Department of Research and Specialist Services, Ministry of Agriculture, Harare, Zimbabwe. pp. 33–56.
- GFA, 1987. *Study on the economic and social determinants of livestock production in the communal areas of Zimbabwe*. Gesellschaft für Agrarprojekte mbH (GFA), Hamburg, Germany. pp. 79–80.
- Mombeshora B, Agyemang K and Wilson R T, 1985. *Livestock ownership and management in Chivi and Mangwende communal areas of Zimbabwe*. Farming Systems Research Unit (FSRU), Department of Research and Specialist Services, Ministry of Agriculture, Harare, Zimbabwe.
- Scoones I, 1990. *Livestock and the household economy: a case study from Southern Zimbabwe*. PhD Thesis. University of London, London, UK.
- Shumba E M, 1985. On-farm research priorities resulting from a diagnosis of the farming systems of Mangwende, a high potential area in Zimbabwe. *Zimbabwe Agriculture Journal Special Report* 5:38–44.