

The use of animal power for weed control in Malawi

by

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Abstract

In Malawi the adoption of animal power for weed control is still low compared with the use of other animal-drawn implements such as the plow, ridger and cart. Lack of adequate training in the use of the available animal-drawn cultivator for weed control is one reason for the low adoption. Another is that smallholder farmers have difficulty affording a set of animal-drawn implements (plow, ridger, cultivator and cart).

It is recommended to intensify the training of farmers and extension staff to achieve high quality weed control using animal-drawn cultivators. Practices that promote high gross margins for farmers should be encouraged.

Background

Malawi has an area of 119 140 km², of which 20% is inland water. It is landlocked by Mozambique, Zambia and Tanzania. Malawi's economy is dominated by agriculture which employs about 85% of the population and contributes about 37% of Gross Domestic Product and 91% of exports.

In an effort to develop agriculture, under the National Rural Development Programme (NRDP), launched in 1978, the country is divided into eight Agricultural Development Divisions (ADD). There between two and five Rural Development Projects (RDPs) in each division. Each RDP comprises 3–5 Extension Planning Areas (EPA) each serving about 20 000 farm families. One farm family has, on average, five members. At each level in this structure are specialists with respect to different agricultural disciplines. Farm Mechanisation Officers are the specialists who handle farm mechanisation activities.

The major estate crops grown in Malawi are sugar cane, tea and tobacco, all highly labour intensive. The degree of labour intensity observed for these crops is in part attributable to the limited range and high cost of machinery

available for pre-harvest operations. The scale of production and the type of equipment used are, however, closely related factors, because conventional farm mechanisation is likely to be economic only where holdings are sufficiently large to permit the costs of equipment to be spread (Ahmed and Kinsey, 1984).

In the smallholder sub-sector of agriculture, the average holding is estimated at 1.8 ha. Most farm operations are carried out using hand tools.

Power requirements on the farm

Although animal power is used for land preparation, ridging, weeding, carting and other operations such as groundnut lifting, manual labour is the major source of power on smallholder farms in Malawi. Ahmed and Kinsey (1984) observed that almost all land is prepared for planting before the rains (which normally start in October). Demand for labour is high for planting, weeding and ridging from November through January. This is consistently the busiest time of the year, and when most labour is hired.

Animal power for weeding

On most farms in Malawi weed control is mainly manual. Smallholder farmers own very few animal-drawn cultivators compared with plows, ridgers and carts.

Use of ridgers

Some farmers use the animal-drawn ridger for weed control because they cannot afford to own a set of animal-drawn implements (plow, ridger, cultivator and farm cart). However, the quality of weed control achieved with a ridger is not very high.

Type of cultivator

The type of the cultivator used in Malawi is the S51 (Figure 1). Correct setting of the cultivator is very important to avoid damage to the roots of the growing crop. The cultivator is most

effective for weeding when the operation is carried out when the weeds are small, 2–9 cm tall (Ministry of Agriculture, 1984).

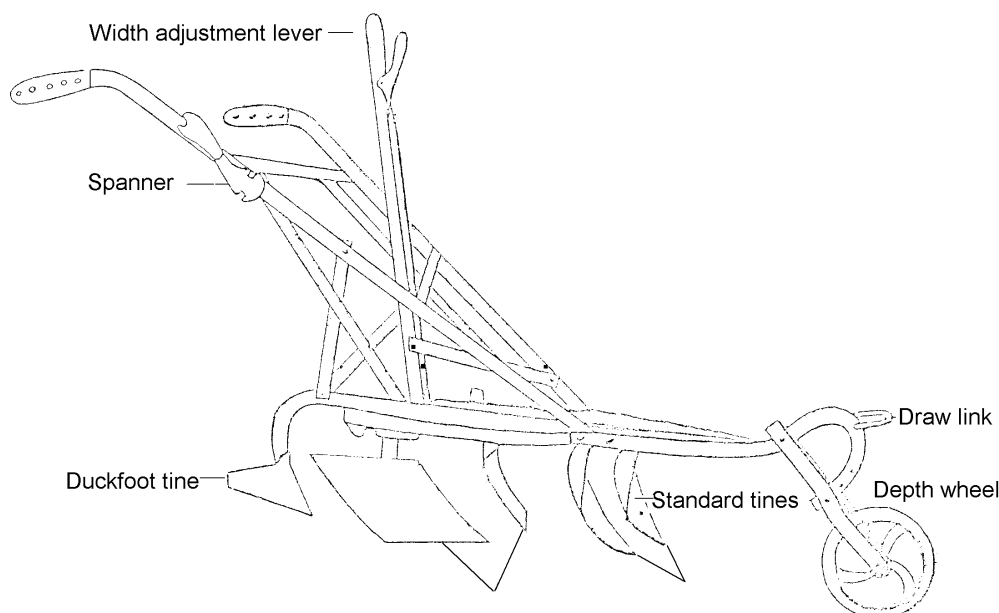
Depending on the row spacing, the adjustment lever is used so that inter-row weeds are disturbed. If the lever on the frame is pushed away from the operator the setting is wide, and if towards the operator the setting is narrow. Standard tines are used for all weeding purposes. Standard tines together with hilling blades are used only when light banking is required, say in groundnuts. Depth control is obtained both by a depth wheel on the tool and clamps on individual tines (Starkey, 1989). In the horizontal plane, it is usual for adjacent weeding tines to be spatially offset and for their paths to overlap by about 25–50 mm.

Knowledge and skill in setting the cultivator is a prerequisite to proper weeding using this implement. Some farmers have acquired this implement but have not used it because they have not been trained to do so.

Timeliness

Timeliness in the use of animal-drawn cultivators for weeding is very important. Once weeds are taller than 9 cm it becomes very difficult to use the implement. It is not uncommon in Malawi to find farmers behind time for such critical operations as planting, weeding and banking. As a result, even if the farmer has the implement it may not be used for weed control because the weeds are already too tall.

Figure 1: The S51 cultivator



Conclusion and recommendations

The adoption of animal power for weed control is low in Malawi compared to the use of other animal-drawn implements. As weed control is critical for sustaining and improving agricultural production there is need to increase the adoption of animal power technology for weed control.

Two recommendations are therefore made:

- training of farmers and field staff in the use of animal-drawn cultivators for weed control should be intensified so that cultivators are used properly to attain high quality weed control which will result in high yields
- practices that promote high gross margins for farmers should be encouraged so that farmers realise returns from the use of animal-drawn implements.

Acknowledgements

I would like to thank Farm Mechanisation Officer J L Chidothi for some of the material presented in this paper and the Deputy Chief Agricultural Extension and Training Officer, Mr H S Chanza, for his constructive criticisms of the draft text.

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