

Possible initiatives for increased utilisation of animal traction in Malawi

by

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Abstract

Malawi is small country with a limited resource base, high birth rate, high infant mortality, low life expectancy, and a high population density in relation to arable land. The economy is predominantly agricultural, accounting for 35% of GDP in 1991 with the smallholder sub-sector contributing 26%. The smallholder sub-sector is important to the country's economy since it supplies about 85% of the country's food requirements and accounts for about 80% of the agricultural output. However, the sub-sector operates almost at subsistence level due to low farm sizes, low levels of technology use and lack of adequate draft power. Provision of draft power would improve yields through improved timeliness, and hence increase farm incomes. Due to the small farm sizes and knowledge and skills of smallholder farmers, the most appropriate power source is animal draft. However, there is low utilisation of animal traction due to limited access to credit, inadequate supply of implements and spare parts, diseases, and land pressure. Increased utilisation of animal traction could result from improved access to credit, identifying appropriate tools and implements, and the use of animals not traditionally used for traction such as cows and donkeys.

Introduction

Malawi covers an area of 11.8 million hectares, 2.4 million of which are water. In mid-1988 the population was estimated at 8 million, with almost 85% rural small-scale farmers. A preliminary analysis of the 1987 census suggests an annual growth rate of 3.7% and a projected population of between 10.2 and 11.9 million people in the year 2000, depending on fertility, mortality rates and the impact of AIDS (UNICEF, 1992). Twenty percent of the population is under 5 years old and 45% is below the age of 15. The population density ranges from 10 to 292 people per square kilometre with a national average of 85 people per square kilometre (Statistics, 1987).

Smallholder production

Agriculture is the backbone of the Malawi economy. In 1991, it accounted for 35% of GDP with the smallholder sub-sector contributing 26% and 87% of export revenue (Planning, 1991). Of the total labour force, 81% were in agriculture. This dominance of agriculture in the economy has not changed much since independence in 1964, when agriculture accounted for 58% of GDP, 90% of domestic exports, and 90% of the resident labour force was engaged in this sector.

Thus, high priority has been given to agriculture in the country's development programme. Agriculture was seen, and is still seen, as offering the greatest potential for increasing income and thus improving the welfare of the population. Achieving self-sufficiency in food production and expanding exports have been at the centre of agricultural development policy.

Table 1 shows the distribution of household farm size. In 1990, 26% of households cultivated less than 0.5 ha. A further 30% cultivated between 0.5 ha and 1.0 ha. Thus, about 56% of rural households cultivated less than one hectare and the overall mean farm size is 1.1 ha. Holding sizes vary by region, depending on a combination of population density, population growth, quality of land and level of marketing activity. The prevalence of smallholdings within the smallholder sub-sector emanates from population growth resulting in high densities and low technological and income levels.

Given a fixed amount of village land, population growth will result in falling average holdings as land is subdivided into smaller family units. At the same time the remaining uncultivated land is brought into production. Land may be limited not only quantitatively but also qualitatively. This problem can be resolved by using

Table 1: Number of households with different farm sizes in Malawi in 1992

<i>Farm size (ha)</i>	<i>Number of households ('000s)</i>
<0.5	338
0.5– <1.0	389
1.0– <1.5	265
1.5– <2.0	143
2.0– <2.5	66
2.5– <3.0	35
>3.0	62
Total	1298

Source: UNICEF, 1992

productivity-increasing inputs such as fertiliser and high-yielding seed. However, not only must the producer know how to apply these, they must be available at the right time, in the right quantities and at an affordable level. Similarly, use of efficient agricultural tools is necessary. Government policy must be such as to confine provision of such technologies to a specific group of producers. Even so, since such technology has to be paid for, the producer must have sufficient income to afford them. If he/she does not have the means, an agricultural credit system could solve the problem. However, credit facilities might not be available to all household producers. More particularly, those households whose holdings are too small to produce more than what is required for food may consider it unwise to receive credit since they would not be able to repay it. Further, there may be certain institutional procedures acting as a constraint. Where credit is provided only to a farmer group or club, those outside may be ineligible for credit. Credit may also be tied to a repayment record.

Smallholder production is derived almost entirely from family labour. Although labour is not considered a constraint for most farmers, labour shortages do occur during land preparation and harvesting periods, especially on larger holdings. Levels of animal traction technology use are very low with virtually all cultivation done by hand using a tongued hoe set in a wooden handle. Only 5% of households own draft animals, 4% own

animal-drawn plows, and 2% own animal-drawn ridders. The use of intensive inputs is also low; in 1980 only 6% of households applied fertiliser, and 6% of the cultivated area was under improved groundnuts (Statistics, 1984). Very few farms have adequate storage facilities, and significant post-harvest losses occur. The majority of farmers have very low cash incomes estimated at 300 Malawian Kwacha in 1984/85, of which about 80% was from crops and livestock and 20% from off-farm activities (World Bank, 1987).

Mwinjilo (1987) reported that farm power was limiting smallholder production through the failure to meet crop labour requirements during critical periods (planting, fertilising and weeding). He also found that use of draft animals and animal-drawn implements reduced labour requirements, resulting in increased labour productivity. Coupled with improved inputs, this led to improved land productivity through increased yields.

Utilisation of animal traction

It is widely believed that there is a low level of utilisation of draft animal power in Malawi. The major reasons put forward include land availability, availability of or access to credit, supply of equipment and spare parts, and diseases (Mwinjilo and Kasomekera, 1989; Mwinjilo and Ng'ong'ola, 1990). Mwinjilo and Kasomekera (1989) reported that 50% of all draft animal owners used their animals for tillage and transport but the type of use varied somewhat: there are areas where farmers use their animals predominantly for transport, notably the Central Region, whereas in the Northern Region, farmers use their draft animals predominantly for tillage. However, Mwinjilo and Matenje (1993), who carried out a survey of labour-saving technologies for rural women, reported that all respondents used a hoe for weeding. Mwinjilo and Kasomekera (1989) also reported that farmers without draft animals hired animal traction for land preparation (26%) and transport (53%).

Contracting of animal traction is constrained by poor timing of operations which leads to unnecessary pressure on the resource. Farmers usually wait until the onset of rains to start land preparation. With proper training and extension this approach to land preparation can change, possibly leading to greater contracting.

The predominant animals used for traction are cattle (oxen). The number of donkeys was 2200 in 1991, 2450 in 1992 and 1950 in 1993. The cattle numbers have not changed much over the years. However, the human population has been growing resulting in much grazing land being converted to cropping. The end result has been poor nutrition of animals, overgrazing and subsequent land degradation. The supply of draft animals is limited due to competition with demand for beef.

There have been efforts to introduce donkeys into smallholder agriculture since colonial days. Soon after independence, the government intensified the effort but has met with minimal success. In areas where donkeys are prevalent, it is only because of cattle theft that farmers resorted to donkeys and they are used only for transport.

Due to limited holding sizes, most smallholder farmers have low incomes which do not permit them to purchase draft animal power packages with their own funds. The government has credit funds for the purchase of draft animal power packages, among other things, but these are extended to individuals who can show ability to service the loan, which usually means those with holdings greater than 3 hectares.

Improving utilisation of animal traction

The major constraint to access or ownership of draft animals is finance. As indicated above, the government provides seasonal credit to farmer groups and credit for the purchase of draft animals and implements to individuals who can show ability to service the loan, meaning those with more than three hectares under cultivation. Since the majority of smallholder farmers cultivate less than three hectares, most of them would not qualify for a loan. The only way to assist such farmers is to create credit groups to be issued with loans to purchase animal traction packages, on the understanding that they would provide contract services to other farmers. The government should consider weaning farmers off seasonal credit to make funds available for animal traction packages.

The availability of draft animals appears to be a constraint as butchers offer better prices than farmers. Consideration should be made of the use of cows for traction. Studies in Malawi (Chamdimba, 1991) and elsewhere have shown that it is possible

to use cows for traction as long as management takes into account the needs for reproduction and lactation. For farmers to accept the use of cows for traction, intensive efforts to educate farmers would be needed. Donkeys would offer an alternative source of draft animals for transport and possibly for tillage if appropriate tools and implements can be identified and made available to farmers. This would require education of farmers on the benefits of using donkeys for traction.

The implements currently in use are for conventional tillage, typically requiring a high draft force. There is a need to identify tools and implements for minimum tillage with light draft which could be drawn by comparatively large single ox or a pair of donkeys.

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