

The role of animal traction in the Molopo District of the North West Province, South Africa.

M. Makaota¹ and D. Motiang²

¹*Department of Agriculture, North-West Province, Private Bag X 804, Potchefstroom 2520, South Africa.*

²*Department of Agricultural Economics and Extension, Faculty of Agriculture, University of North-West, Private Bag X 2046, Mmabatho 2735, South Africa.*

Abstract

Thirty one farmers using animal traction were interviewed to investigate the contribution of animal traction in agricultural development in Molopo district. Farmers were generally old, 64 years on average, and predominantly male. Although farmers with tractors ploughed all their land they have access to, only 4.5% of the land to which draught animal owners had access, was ploughed. No significant relationship was established between farmers attributes and productivity. It was therefore concluded that animal traction may be appropriate for small farm sizes.

Introduction

Animal traction has been an integral part of rural life and traditional agriculture. Many success stories have been reported in some parts of Africa (Simalenga, 1997), and more recently in South Africa (Starkey *et al.*, 1995; Auerbach, 1990). In addition, this technology seems to be expanding into large-scale commercial farms (Fowler, 1995).

Although there is evidence of an increase in the equine population of the North-West Province there is still little documentation on the contribution of draught animals in the Province. The purpose of this study was to determine the role of draught animals in this Province. The objectives of the study were: To identify farmers involved in animal traction and to determine the extent of use and productivity of using animal traction.

Methods

Sampling and data collection

Thirty one of the 120 farmers from the Ratshidi ward were randomly selected from the 1998 Molopo district equine register. A questionnaire was constructed to collect data from respondents. The first part of the questionnaire consisted of questions on human characteristics of respondents while the second part consisted of questions on land, animals and animal traction functions. Data was collected between the first week of December 1998 and the second week of January 1999.

Data analysis

Data were analysed using statistical package for Windows (1993). Descriptive statistics including modes, means, medians, frequency and standard deviations were calculated to summarise the data. This analysis attempted to achieve the first objective

of the study. To achieve the second objective, correlation analysis was performed to test the relationship between animal traction with other attributes reported by the respondents.

Results

Personal characteristics

The age of respondents ranged between 34 and 85 years with an average age of sixty four (64) years and the majority (84 %) over fifty years old. Most (83%) of respondents were male (Table 1) thus suggesting that animal traction might be dominated by men. About 64% of respondents did not receive any formal education and were therefore virtually illiterate while others only spent between four and eight years at school.

On average, there are about nine members per family in the study area with the smallest family consisting of four members and the largest, fourteen members.

Land utilization in the study area

Table 1, shows land utilization by gender. The total accessible land to all farmers was 3475 ha, 99.7% of which is accessible to male farmers while female farmers have access to a mere 0.3%.

The land ploughed by all farmers was 269 ha, 96% of which was ploughed by males while the remaining 4% was ploughed by women. This may support Sylwander and Simalenga (1997) that women generally do not have access to land.

About 87% of respondents interviewed used animal draught power to plough whilst only 13% use tractors. All respondents using tractors to plough have ploughed 100% of the land they have access to, whilst those using animal draught power used only 4.48% of their accessible land. Of the total land

ploughed 57% used animal draught power whilst the rest, 43% used tractors (Table 2). Overall, only 7.74% of land accessible to all respondents is under cultivation.

About 16% of farmers indicated that they acquired their donkeys and mules from breeding on the farm while 77% acquired from outside their place of residence and even district. The 1984 and 1985 droughts during which a large number of animals died, might have contributed, though to a very less extent, to the lack of breeding stock in the area.

The role of animal traction

The respondents collectively owned 244 donkeys (20.3%) out of the total population of donkeys, 1200, in the study area, with the largest span of fourteen and the smallest of two donkeys. Farmers owned an average of eight donkeys. About 85% of farmers owned a span of more than five donkeys while the remaining 15% owned less than five.

According to farmers, animal draught power was primarily used for ploughing, whilst most farmers also use their animals for transport as a secondary role.

It was difficult to determine the yield of farmers. Most of the responses were based on rough estimates. On average farmers produced 0.65 tons/ha. Animal traction farmers produced about 0.3 tons/ha. The correlation results showed no significant relationship between farmers attributes and productivity. Age, education and the number of draught animals owned by a farmer did not show any correlation with total production.

Problems faced by animal traction farmers

Animal traction farmers face many hassles as compared to farmers using tractors. During droughts, for example, these farmers must care for their animals by buying feeds, medication and still ensure household food security. All farmers in the study area complained about animal theft which negatively affect the timing of the production process because of the delays caused by a search for lost animals. To overcome this farmers would normally assist each other in the case of theft by either selling excess donkeys and mules among themselves or giving animals as gifts.

Table 1: Land utilization in the Ratshidi Ward by gender (1998) (N= 31)

Gender	No. respondents	Size of accessible land (ha)	% of accessible land	Land ploughed (ha)	% of land ploughed
Male	26	3465	99.7	257	96
Female	5	10	0.3	12	4
Total	31	3475	100	269	100

Table 2: Size of land ploughed by tractor and animals in the Ratshidi Ward (1998) (N= 31)

Means of ploughing	Number of farmers	Size of land ploughed (ha)	% of land ploughed (ha)	Land accessible (ha)	% of accessible land
Tractor	4	117	43	117	3
Animals	27	152	57	3388	97
Total	31	269	100	3475	100

Table 3. Correlation results

Variable	Age	Gender	Schooling	Prod '95	Prod '96	Prod '97	Land	Donkey No
Age	1.00*	0	0.29	0.09	0.1	0.1	0.07	0.35
Gender	0	1.00*	0	0	0	0	0	0
Schooling	0.29	0	1.00*	0.29	0.28	0.28	0.27	-0.14
Prod '95	0.09	0	0.29	1.00*	1.00*	1.00*	1.00*	-0.6
Prod '96	0.1	0	0.28	1.00*	1.00*	1.00*	1.00*	-0.61
Prod '97	0.1	0	0.28	1.00*	1.00*	1.00*	0.99	-0.61
Land	0.07	0	0.27	1.00*	.99*	.99*	1.00*	-0.61
Donkey No	0.35	0	-0.14	-0.60	-0.61	-0.61	-0.61	1.00*

* = p< 0.5

Discussion

The average age of respondents is 64 years and this shows that farmers are generally in the old age category and may not be that productive, though they may be rich with farming experience. Farmers in this category have a tendency of not adopting new technologies. With the highest age at 85 years, it is unlikely that even with the help of government in the form of giving ploughs and planters that they can be used effectively for increased production.

The majority of respondents (64%) did not receive any formal education and it is therefore unlikely that their production level will be anything but low. Education and skilled labour increase productivity. Males (83%) dominate animal traction in the study area and females still remain a marginalised group. Females have access to a mere 0.3% of land, whilst the rest (99.7%) is accessible to men. Socio-cultural issues may be playing a role here, since it is taboo in certain societies for women to handle animals and even own land. Ironically, women have done well, by ploughing more than 100% of the land accessible to them, i.e. 12 ha instead of 10 ha (Table1). This may be the case because of the historical background that rural women work the fields when their husbands are away in towns and cities seeking better incomes.

About 87% of respondents in the study area use animal power, whilst 13% use tractors. The reason for this scenario may be a lack of capital to have access to this kind of technology (converters of fossil fuel). Resorting to tractors may require at least 100ha of land to be worked otherwise it will be uneconomic. Farmers using tractors ploughed all the land (100%) they had access to whilst those using animal draught power ploughed only 4.48% of their accessible land. This may be attributable to the size of land they have, it is too large for effective use of animals. Most farmers own on average 8 ha per household.

Respondents generally could not recall the exact amount of money they pay on a monthly basis for household expenses. This was the same when asked about their other means of income since other

References

- Auerbach, R.M.B.**, 1990. Sustainable Agriculture: proceedings of a seminar. Institute of Natural Resource, University of Natal
- Department of Agriculture., North-West.**, 1997/98., Stock Census
- Fowler, R.**, 1995, Paper presented by the Institute of Agricultural Engineering, Agricultural Research Council, Animal Draught Power in South Africa
- Jones, P., & Hanekom, D.**, 1996, Donkey use in achieving food security, an interim report for North-West province
- Merryweather, F.R.**, 1998, Important role of subsistence farming and draught animals, Eastern Cape., Land., July.,p4-5

members of the household working elsewhere were not consistent in sending money home.

Acquisition of stock by the majority, 77% of respondents, is from outside area of residence, 16% on their farms and 6.45% from both buying and later breeding on the farm. This was done after animal numbers reduced in the 1980's, probably due to droughts of 1984 and 1985. When droughts set in it does not discriminate all farmers get affected.

With an average family size of about nine per household, respondents in the study area have enough labour to work the land. Respondents using tractors would normally hire people to work for them whilst animal draught power worked by pooling their resources together and that includes spans of donkeys and labour to work one another's land.

Conclusions and recommendations

Evidence on age shows a generally old age farming group. This may suggest potential problems in terms of decision making and sustainable development programmes. Evidence on education shows an illiterate farming sector. However, the lack of correlation between education and productivity shows that this may be a unique farming system. An average family size of nine members suggest that there may be enough family labour to assist in animal traction related activities. It can therefore be concluded that the provision of labour may not be a constraint in the study area. Evidence on land utilisation shows that most farmers are male. This suggests that animal traction in the study area is a male domain. In contrast, the fact that women have used 120% of the land accessible to them suggests that they may be good land users.

In general, results on land utilization shows that the vast amount of land was worked by animals. In addition, the fact that the land ploughed by animals was very small means that animal traction may be a relevant technology for the study area. It is therefore logical to recommend that this study be conducted on a larger scale to enhance an understanding of this unique farming system.

- Seobi, N.**, 1991, Rural Land Use in the North-West, Situational Analysis, p 18-22
- Simalenga, T.**, 1997. Animal power development and Networking challenges: A regional perspective. In Simalenga T. E. and Joubert A.B.D. (eds). Animal Traction, in South Africa: Today and tomorrow. SANAT proceedings, p 31-40
- Sylwander L and Simalenga T. E.** 1997. Gender issues in animal traction: An ATNESA publication.
- Starkey, P., Jaiyesimi-Njobe., F. and Hanekom., D.** 1995 (ed.s) Animal Traction in South Africa: Empowering rural communities. South African Network of Animal Traction (SANAT) publication.
- Von Keyserlink, A.**, 1998, Animal Traction training for development in Mozambique, South African Network of Animal Traction (SANAT) Newsletter, p 23-24.