

Full Length Research Paper

Socio-economic Effects of Animal Traction on Agricultural Development in the North West Region of Cameroon

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The aim of this study was to examine the effect of animal traction on agricultural development in the North West Region of Cameroon. The study sought to analyze the effects of the intermediate technology on agricultural development, specifically on farm sizes, time it takes to prepare a given piece of land, productivity and production, feeding, farmers' incomes, family health, education of children, housing and savings. The purposive sampling method was employed in the selection of communities and respondents. A sample of 80 respondents using the technology in Ngoketunjia, Donga Mantung and Menchum Divisions was retained. Data collected was analyzed with the help of the SPSS software. The results revealed that animal traction has reduced drudgery and improved on the wellbeing of the farming population in the North West Region as shown by an increase in farm size, reduction in time to prepare land and increased family incomes. For second generation agricultural policy of the government of Cameroon to be attained in the North West Region, it is recommended that more farmers be trained in animal traction and provided with implements at subsidized rates, and local artisanal manufacturing of the animal traction implements be encouraged and supported.

Keyword: Animal Traction. Drudgery, farm size, income!

INTRODUCTION

Agriculture contributes an estimated 20.6% to the Gross Domestic Product of Cameroon (GDP) and engages 70% of the labour force but 48% of the population still lives below the poverty line. Because of its modest oil resources and favorable agricultural conditions, Cameroon has one of the best-endowed primary commodity economies in sub-Saharan Africa (Mundi Index, 2014). This notwithstanding,

it faces many of the serious problems confronting other developing countries, such as stagnant per capita income, a relatively inequitable distribution of income, a top-heavy civil service, endemic corruption, and a generally unfavorable climate for business enterprise. Since 1990, the government has embarked on various International Monetary Fund (IMF) and World Bank programs designed to spur business investment, increase efficiency in agriculture, improve trade, and recapitalize the nation's banks. Despite the enormous available agricultural potentials and with the representation of all the agro

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ecological zones in the North West Region, only about 47% of the 904,785ha arable land is effectively being cultivated (GP-DERUDEP, 2006).

One of the main challenges hindering expansion of production land has been difficulties in opening up new farms due to the drudgery in farm operations like land preparation, weeding, and transportation of inputs as well as farm produce amongst the rural farming population of Cameroon in general and of those of the North West Region in particular.

The Government of Cameroon in collaboration with its German partners set up the PAFSAT programme in Menchum Division in 1976 after the use of draught animal technology was earlier introduced into the North West in Ndop in 1968 and in RTC-Mfonta in 1969. Animal traction became a major extension programme of the Wum Area Development Authority (WADA) in the Menchum Region. With demographic growth, shifting cultivation which was practiced by most farmers could no longer be carried out and the active work force has been moving in their numbers into the cities to look for jobs thus leaving few people to work with rudimentary tools to feed themselves as well as the huge number of others swept by rural exodus to the cities.

The Project has succeeded over the years to bring on board groups of people who hitherto never carried out any form of crop farming or did very little crop farming. The technology is therefore seen to be a bridge linking the traditional cattle grazing populations of the North West Region, (who are the Fulani nomadic populations – the Mbororos and the Akus), and the traditional crop farming populations. The AT technology is used as a tool to curb farmer-grazer conflicts which are very rampant in the Region (MIDENO, 2010).

METHODOLOGY

Presentation of the North West Region

The North West Region is situated between latitudes 5°40' and 7°00'N and longitudes 9°20' and 10°30'E. It is bordered to the southwest by the Southwest Region, to the South by the West Region, to the east by the Adamawa Region and to the North by the Federal Republic of Nigeria. The Region is made up of seven Divisions namely: Boyo, Bui, Donga Mantung, Mezam, Momo, Menchum and Ngoketunjia Divisions.

The data sources employed for the study included collection of data from both secondary and primary sources. Secondary data was collected from existing literature in the North West Development Authority office, delegations of agriculture and livestock and google search engine. The primary data was collected on the field through administration of a structured questionnaire to the users of the intermediate technology, observation of field realities

with oxen farmers and conducting interviews with some selected institutions supporting or promoting the technology (that is using observation guides and interview guides respectively). The purposive sampling method was used to come up with the sample from the sampled population. Collected data from the study was manually stripped, coded and after quality control entered into SPSS (Statistical Package for Social Sciences) Version 17.0 software for statistical analysis.

RESULTS AND DISCUSSION

Two Divisions of the three sampled - Donga Mantung and Menchum Divisions had the highest number of animal traction farmers (Figure. 2). This may be due to the land availability, poor state of roads, good climate and trainings received by farmers from these two divisions. It should be noted that animal traction started in Wum (Menchum) and was later expanded to Mbiyeh in Ndu Sub-Division of Donga Mantung Division.

For gender, 96.25% of the respondents were males and 3.75% of the respondents were females. Animal traction is carried out by a man and his wife or wives; with the children coming in for feeding of the animals or assisting in the farm. It was however interesting to note that the Fulani men in Menchum and Donga Mantung Divisions work with their male children. This situation is different from what obtained at the beginning when the AT technology was introduced into the Region as there were many women groups who took loans for oxen and implements and used the technology on their group farms as well as on their individual farms. Today, access to credits for agriculture in general and for AT in particular is almost impossible to come by, thus the women who in most cases lack collaterals to get loans from standard banking institutions seem unable to get the technology on their own. Also, the AT technology is bringing in the male folks who in the area of the study have over the years not been seen doing agriculture with the hand hoe due to the drudgery it entails.

Farm sizes as on Table 1 are greatly affected by the AT technology. Of the 80 respondents, it was observed that the mean farm size before the use of AT was 0.5ha but with the use of AT technology, it increased to 3ha. Also, the highest the farmers could do before becoming AT farmers was 3ha but with the use of AT, some of them are doing up to 15ha.

Most respondents were between 31-40 years old (Figure 4). Farmers have been passing down the technology to their offspring. This has made animal traction a way of life for most families and by so doing, ensuring sustainability. The fact that the highest numbers of farmers are young is an advantage as it could help in curbing the high rate of unemployment amongst the youth; thus contributing to the attainment of the Growth and Employment Strategy of Cameroon.



Figure 1: Map of the North West Region of Cameroon

Table 1. Farm Sizes Before AT and with AT

Description	Farm size before AT	Farm size with AT
Number of respondents	80	80
Mean farm size (ha)	0.5854	3.0875
Minimum farm size (ha)	0.1	1.00
Maximum farm size (ha)	3.00	15.00

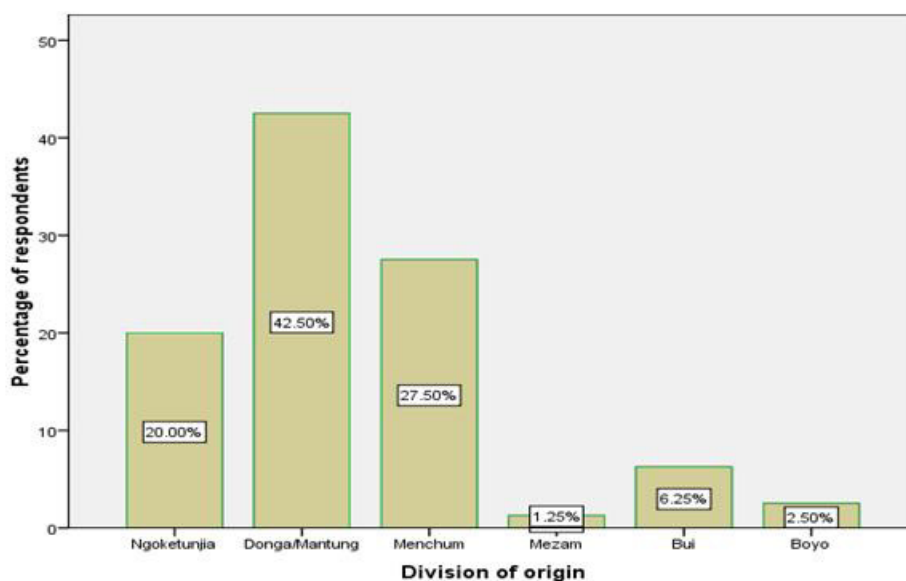


Figure 2: Distribution of respondents according to Division of origin

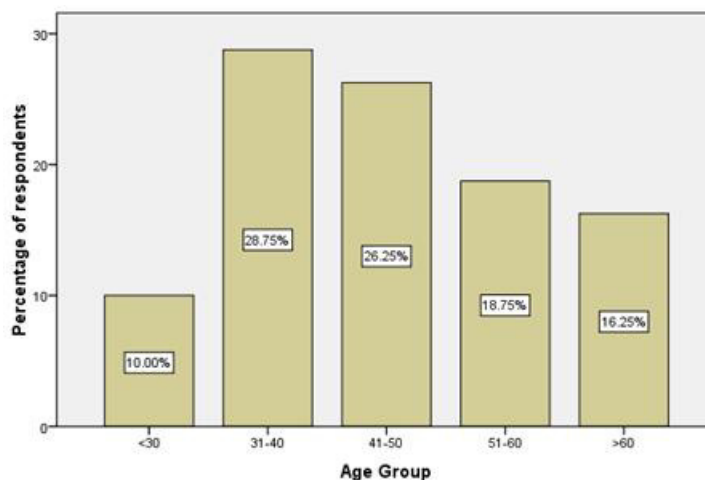


Figure 4: Distribution of respondents according to age groups

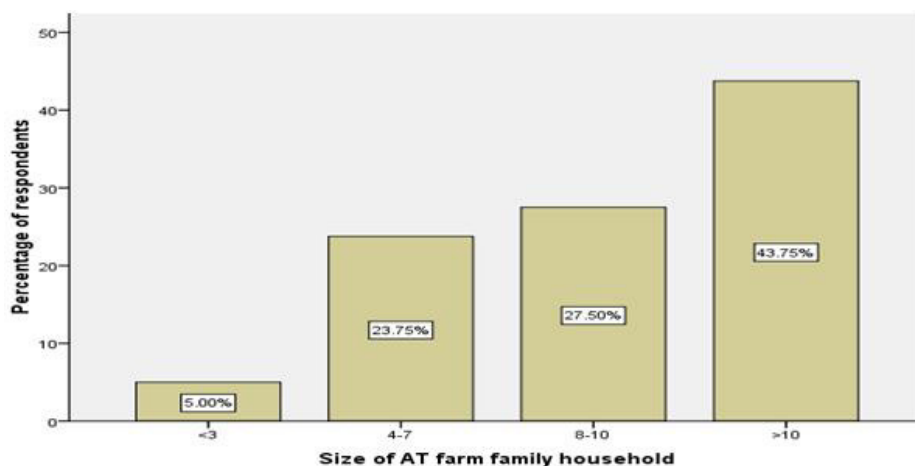


Figure 5: Distribution of respondents according to size of farm family household

A majority of the respondents (95.0%) were married, working together with their spouses and children, thus ensuring the sustainability of animal traction. Only 2.5% of respondents were unmarried, while 2.5% had lost their spouses. According to the tradition and religions of the North West Region, the singles and the widow(er)s are people looking for partners as singlehood is discouraged.

From Figure 5, 43.75% of respondents have household sizes of more than 10 persons. By implication, those respondents with big households have a greater percentage, substantiating the fact that some of them grow food only for household consumption as is the case with the Fulani families.

Farmers adopted animal traction to increase their farm sizes (46.25%), thus increasing their wellbeing (Figure. 6). Another group embraced the technology (37.5%) because they wanted to increase their farm sizes as well as reduce drudgery since it is very difficult to do so with the help of the hand hoe.

Almost half of the respondents were trained through MIDENO/PAFSAT programme while a third MIDENO/GP-DERUDEP project. MIDENO and its structures have had more influence on building capacity of farmers on animal traction than any other organization (Table 2). The implication of the community-based organisations is low.

Traditional medicine practitioners were highly visited by farmers before becoming oxen farmers (Table 3). This could be attributed to culture, peer pressure and poverty. The village health centre was visited by patients who could afford to pay for the drugs. With the hand hoe, the farmers had very small farm sizes which generated very little income for them to take care of their health. Consequently there might have been a high prevalence of diseases that could not be managed as a cumulative percentage of 95 fell in the group visiting native doctors, road side vendors, and village health centers without acquiring complete or no drugs.

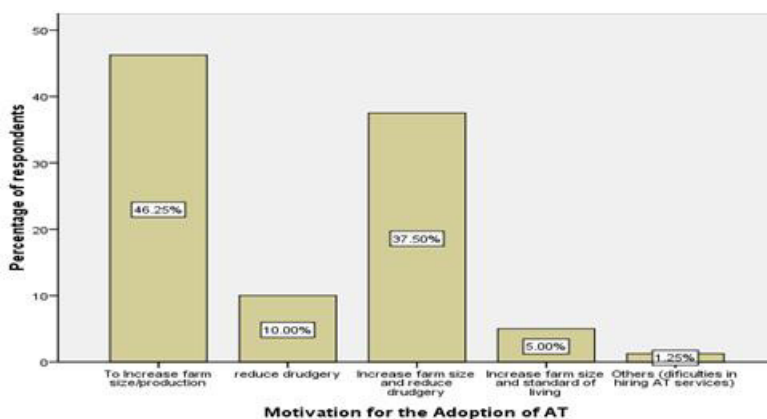


Figure 6: Motivation for the Adoption of AT

Table 2: Source of Training for Animal Traction

Source of Training	Frequency	Percentage
MIDENO/PAFSAT	39	48.8
MIDENO/GP-DERUDEP	25	31.3
NGO	6	7.5
Animal traction farmer	6	7.5
Subject matter specialist	4	5.0
Total	80	100.0

Table 3: Methods of handling Health Problems before AT and with use of AT

Method of Handling Health Before AT	Frequency before AT	Percentage before AT	Frequency with AT	Percentage with AT
Visit native doctors for treatment	22	27.5	0	0
Road side vendor (incomplete or wrong treatment)	23	28.8	0	0
Village health center but could not acquire all drugs	31	38.8	1	1.2
Health center or good hospital and acquired all drugs	4	5.0	79	98.8
Total	80	100.0	80	100

After the adoption of animal traction technology, 98.8% of the respondents visited health centres and good hospitals to take care of their health and that of their family members. This increase in number of visits to improved health institutions could be attributed to an increase in incomes for the farm families thanks to the intermediate technology.

Before the introduction of animal traction, 19, 15% of the respondents were not able to send their children to school due to the limited income obtained from the use of the hand hoe (Table). Also, 46.2% of respondent saw their children driven from school for school fees and books resulting in a very high level of illiteracy and drop outs. For

Table 4: Payment of school needs of the children before and after the introduction of animal traction

Education of Children	Before Introduction of AT		With use of AT	
	Frequency	Percentage	Frequency	Percentage
Unable to send children to school	12	15.0	0	0.0
Children went to school but were driven for school fees and had no books	37	46.2	1	1.2
Paid installmentally	27	33.8	4	5.0
Paid timely and bought all books	1	1.2	75	93.8
Others	3	3.8	0	0.0
Total	80	100.0	80	100

Table 5: Housing types before and after the introduction of animal traction

Type of Housing used by oxen farmers	Before using oxen		After using oxen	
	Frequency	Percentage	Frequency	Percentage
Semi-permanent with grass or thatch roof	29	36.2	0	0
Permanent with grass/thatch roof	31	38.8	1	1.2
Permanent with corrugated iron roof	7	8.8	54	67.5
Spacious and plastered	1	1.2	23	28.8
Not a house owner	12	15.0	2	2.5
Total	80	100.0	80	100

farmers who could afford to pay school fees, they did it installmentally.

By adopting oxen farming, respondents with timely payment of fees and text books bought rose to 93.8% compared to the near hopeless situation of children's education before. Income generated by oxen farmers has been seen to have a positive and trickledown effect on the education of the children.

As quoted within one small survey in Sierra Leone in the literature review, it was found that children of draught animal owners were less likely to attend primary school (Allagnat et al, 1984). On the other hand the general relation between draught animals and wealth might make it easier for animal-owners to afford secondary school fees. Thus AT has probably gotten a positive impact on the education of children within the communities using the technology in the North West Region of Cameroon. This might reduce the rate of vulnerability in children especially the girl child school dropout, child trafficking, child prostitution and child labour.

A majority of respondents before using oxen were unable to get good houses with corrugated iron roofs and 36.2% (mostly the Fulani) had semi-permanent houses with grass or thatched roofs and 38.8% had permanent grass/thatched roofs (Table 5). Farm families had poor housing conditions which directly affected their health, life styles and social status in the communities. With poor housing, there was probably easy transmission of malaria and other infections which were detrimental to the active population thus reducing the productivity of the working population. According to Hewes (1983) within the context of integrated rural development, he explained that the term 'integrated' defines the comprehensive efforts of several disciplines and activities with objectives of national economic growth and industrial output. Thus, the use of the hand hoe probably contributes very little to rural development.

After the adoption of oxen farming, majority of the farmers live in permanent buildings (Table 5 & Picture 1). Also, migration to other urban areas by the rural youth was



Picture 1: Housing before and after the Adoption of Animal Traction in Ndop

Table 6: Tests of the effect of AT on some variables

Income generated using oxen & hiring of oxen services	Motivation to adopt AT		Increase farm size and reduce drudgery	Increase farm size and standard of living	Others (difficulties in hiring traction services)	Total
	Increase farm size and production	Reduce drudgery				
≤100,000	7	0	8	0	0	15
100,000-200,000	20	2	11	2	1	38
200,001-300,000	6	2	5	1	0	14
300,001-400,000	0	2	3	0	0	5
400,001-500,000	2	1	2	0	0	5
>500,000	2	1	1	1	0	5
Total	37	8	30	4	1	80

Table 7: Percentage of harvest destined for family consumption and gifts

Consumption/gifts	Frequency	Percentage
<20%	11	13.8
21-40%	41	51.2
>40%	28	35.0
Total	80	100.0

reduced due to the infrastructural development, access to information and communication technologies and a means of transport. Many urban disorders are caused by rural

exodus. It is better to provide the needs of someone in his socio-cultural environment than transferring him out of his environment.

One sample Kolomogorov-Smirnov test shows a significant increase in income due to the introduction of oxen farming. This test has a highly significant positive influence on the livelihood of the oxen farmers shown by an increase in agricultural production, a reduction in drudgery and increase in the standards of living.

A total of 75 of the 80 respondents in the study, with incomes from ≤100,000 to >500,000FCFA adopted AT mainly to increase farm sizes/increase production and reduce drudgery. This ties with the main objective for the introduction of draught animal power in most Regions of Africa especially the area under study; the North West Region (MIDENO, 2011; Panin, 1988; Munyaradzi, 2011).

Farmers who consume or donate between 21-40% constituted 51.2%, implying that farmers using this technology could feed their families and sell surpluses to increase family income. The respondents who were seen to be consuming a greater percentage of their harvest made up 35.0% of the respondents. This might be those who are not having implements and are at the mercy of their peers for hiring of the implements; in which case farming operations might not be timely and areas cultivated might not be as desired.

Some of the farmers within this 35% of those consuming more than 40% of their harvest, were those having their implements but with very large household sizes like one Ardo in Upkwa - Wum who was seen with a household size of 62. Though this category of respondents were consuming almost all of their harvest, they were happy with the technology because their families had enough to eat without spending a lot of their meager earnings to acquire food for their households.

CONCLUSIONS, RECOMMENDATIONS AND PERSPECTIVES

This study showed that if farmers are supported through implements, draught animals and the training it could make farming more economically viable, improve the farmer's quality of life and be self-sustaining, widen the farmers' income base, reduce external inputs and dependence.

There is a need for greater Government support in terms of a definite animal traction policy as well as training, research, development and extension in animal traction. The Government needs to create centers for innovation and skills transfer in communities. This can be done through organization of training workshops and short-term or long-term training courses in animal traction implement production.

More fulani pastoralists need to be encouraged to embrace the use of AT technology as many of them are increasing becoming herdless due to cattle rustling. Non grazers need to be encouraged to embrace mixed farming if they can afford it because in the long run, it makes Animal Traction very affordable and sustainable and above all, reduces the dependency of farmers on external funding or loans which might not always be available as is the case with MIDENO now.

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