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EFFECTIVE TRACTOR UTILIZATION FOR AGRICULTURAL MECHANIZATION IN CENTRAL CROSS RIVER STATE, NIGERIA

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ABSTRACT

Agricultural Mechanization is not only important for accelerating agricultural development but also for improving farmers' efficiency. Over the years, there has been an increasing demand for tractor use due to general awareness of agricultural mechanization in Nigeria. The use of farm machineries including tractors in farming has great potentials in alleviating rural poverty. This study was prompted by a desire to find out the extent to which farmers in Central Cross River State are efficiently using tractors for agricultural mechanization. A sample of 120 farm families was randomly selected from Central Cross River State using stratified random sampling technique. Interview of the 120 farm families was done using structured and semi-structured questionnaires. Data obtained from respondents were analyzed using simple percentages and bar chart. This shows that 9 tractors were available in the study area of which 89% of them are owned by the Local Government Council and 7% are owned by individual farmers. 73% of the respondents have general awareness of Agricultural Mechanization. Whereas only 21% of them revealed that tractors are used in Local Government Farms. While 40% of the respondents stated that tractors are hired to farmers. On the otherhand, 63% of the respondents emphasized that tractors are not used in their during cultivation. In general, a total of 20% of the respondents stated that the available tractors are not functional. The research suggests among others more tractors should be purchased by government, cooperate groups and individuals. Moreover, tractors should be hired to farmers at very low cost and as well as improve maintenance and provision of spare parts with the training of more operators and technicians. Finally, agricultural mechanization in Central Cross River State would be enhanced if more awareness is created couple with the provision of soft loans directly to farmers

KEYWORDS: Tractor, Effective Utilization, Agricultural Mechanization.

INTRODUCTION

Efficient food supply in any country depends to a large extent on the level of agricultural mechanization of such nation. Agricultural mechanization is the selection, operation, utilization and maintenance of technical devices and systems in large-scale agricultural production. According to (Claude, 1986) and (Ojha and Michael, 2003) benefits of mechanization which have attracted the attention of farmers are timely field operations, higher field efficiencies, higher productivities and reduction in human drudgery. Tractor is one of the major machineries that come into play in agricultural mechanization.

Most government policies are designed to improve the welfare of the society. Some of these policies range from increasing the available food supply in the economy. The primary focus of increasing agricultural productivity is not only to grow "sufficiently" food with minimum societal sacrifice, but to make the food crop produced to be affordable (Abang, 1985).

In the recent years, one way that some farmers in Nigeria are responding to the increasing food shortage problem in the country is to result to agricultural mechanization. This amount to leaping from the traditional farming system characterized by low technology to scientific farming which involves high technology. Adinya et al (2006) stated that the real cost of food in Nigeria has increased substantially in the last two decades because of the low quantity of food produced and the demand for food has exceeded the supply, therefore resulted to increased in price of foods in the markets. But to the producer, this may mean that the proportion of consumer's income accruing to him for his contribution to the food supply would be very big indeed. This may be as a consequence of the price and income instability that would follow.

The increasing number of modern machines and (tractors) used in agriculture production in Nigeria is a good index of the progress made during 1990-2006. This use of modern agricultural machines in Nigeria has brought a number of important facts to light.

(i) That the Nigeria farmers, though belonging to a less developed country, are quick in adopting new methods, techniques and machines, provided they are convinced of their utility.
(ii) That there are fewer number of trained personnel/tractor operators
(iii) That it is very true that an average Nigerian lacks maintenance culture
(iv) That there are few tractor service stations and spare-parts in the country
(v) That farmers in Nigeria are under utilizing the few available tractors

THE TRACTOR MACHINE

A tractor is a machine which can propel itself with the aid of an internal combustion engine (ICE) (Kaul and Egbo, 1986). According to the same authors, a

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tractor is generally referred to as a 'central power station'. This is because of the fact that tractor is very useful in the farm for various operations which are either stationary or mobile. Tractor provides power for stationary operations such as threshing, shelling milling, winnowing, heating, lighting and many more. Tractor power is also useful in field operations (mobile operations) such as tillage operations, planting, fertilizer application, weeding, harvesting and many others (Nakra, 1990).

The tractor remains, worldwide, the most important piece of farm equipment in the past decades for agricultural mechanization. It represented the largest share of the total machinery investment in the farm. For example, in West Germany in 1990, it formed 42% of the total cost. In the Unified Germany in 1991 it had 40% and 45% in Japan in 1990. Thus, annual sales of wheeled, two-axle tractors in the western world has been estimated to be around 650,000 for 1991 covering a range from 12 to 300 KW rated engine power.

BRIEF HISTORY OF TRACTOR

In the latter part of the eighteenth century when the German Scientist, Nicholas Auto developed an internal combustion Engine (I C E), the engine was used to pull agricultural implements in the fields. During this time the steam engines were also developed for working in the fields (Jacobs and Harrel, 1983).

Real tractors were introduced in the beginning of the nineteenth Century when a three-wheeler tractor was developed. America and other countries started making tractors run by both steam and internal combustion engines. These tractors had iron wheels and were very heavy in weight.

According to Nakra (1990) one of such tractors, called the IVEL was made in the year 1902. This tractor had Iron wheels and was very heavy. Tractors run by steam were slowly replaced by tractors run with internal combustion engines, and iron wheels were replaced with rubber tyres.

Jacobs and Harel (1983) stated that the word "TRACTOR" was derived from Traction and Motor. In the year 1856, all such machines used for traction purposes were known as traction motors and latter on in the year 1906, these were designated as tractor by taking halve the word from traction i.e TRAC and the other half from motor i.e TOR. The tractor is such a machine, which is used to pull or push agricultural implements in the fields.

The greatest change in farming technology during the twentieth Century was the application of the internal combustion engine to agriculture. Like the steam engine, it was taken up first and most quickly as a stationary engine to drive chaff cutters, seed dressers, mills and other barn machineries. In this form it was already becoming established in farm work by 1900 (Shippen et al,1980).

TYPES OF TRACTORS

Generally, tractors are classified into Wheel Tractor, Half-Track and Crawler tractor based on their locomotive parts. According to Nakra (1990) tractors are made up of the following types according to the type of jobs they perform: Row Crop Tractor, Standard tractor, Tool Carrier tractor, Industrial tractos, Garden tractor, Utility tractor, Orchard tractors and a host of others.

SOME MAKES OF TRACTOR

According to Jacobs and Harel, (1983) some makes of tractor and their horse powers are shown in table 1.

Table 1: Some makes of tractor and horse powers (hp.)

S/N	MAKE OF TRACTOR	HORSE POWER (HP)
1	Messey Ferguson	35
2	International	35
3	Eichor	26
4	Hindustan	50
5	Escorts	27 & 37
6	Ford 3000 & 3,600	46
7	H. M. T. Zetor	20
8	Swaraf	20
9	Harsha	20
10	Duetz	25

Source: Jacobs and Harrel (1983)

The main objective of this paper are:

(i) To investigate the ownership, quantity and distribution of tractors in Central Cross River State.

(ii) To bring to light how efficient tractors are being put to use for agricultural mechanization in Central Cross River State

METHODOLOGY

The area of study is Central Cross River State and this is shown in figure 1. The study area lies along the humid coastal region of Cross River State. The topography is fairly flat with a good drainage system suitable for agricultural mechanization. The area has an annual rainfall distribution which ranges from 3,500mm to 5000mm with an annual temperature of 25-27°C.

The area is situated in the rainforest belt, which promotes the growth of crops such as cocoa, oil palm, orange, plantain, banana and guava. Food crops commonly grown by the inhabitant include rice, yam, cassava, potato, cocoyam, maize and vegetable. Fishing and keeping of animals like goats, sheep and poultry birds are among the area of interest of the people of Central Cross River State. However, a good number of them are involved in civil service, marketing of agricultural products and other forms of non-farming activities or business.

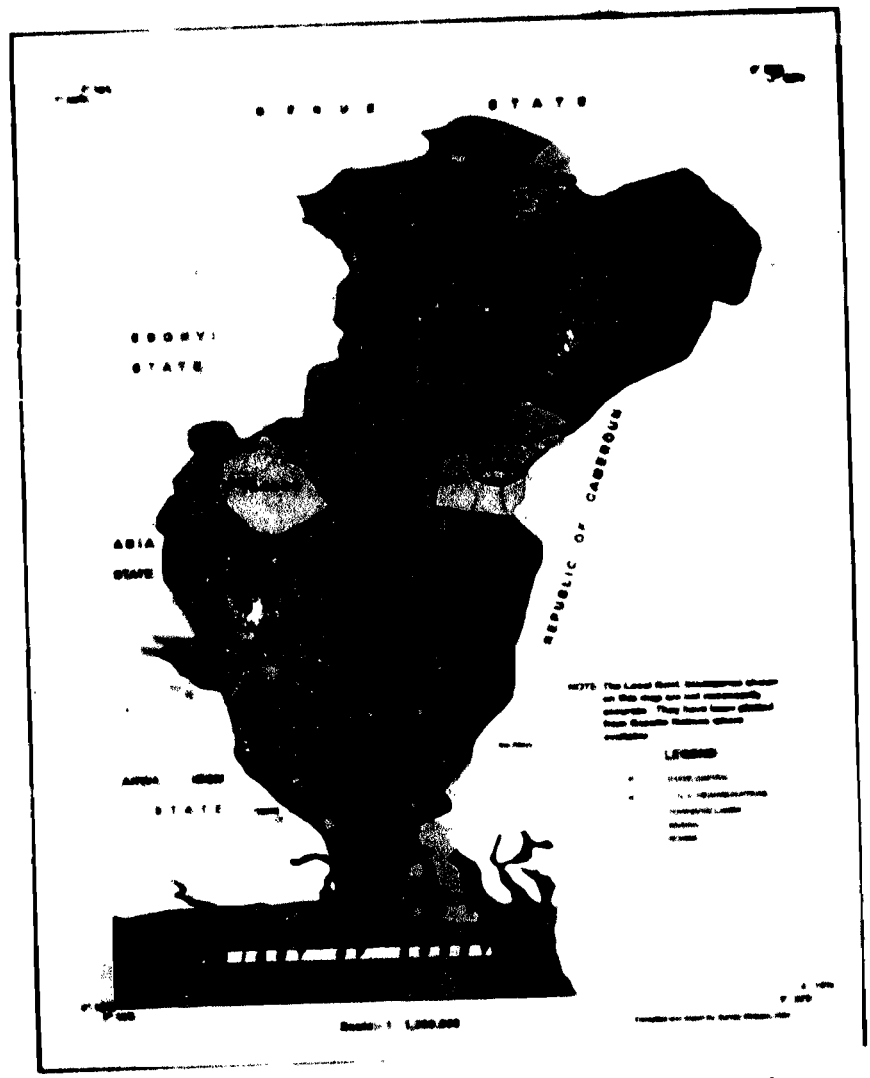

Figure 1: Map of Cross river State showing the study area.

STUDY POPULATION AND SAMPLE OF SIZE

A sample of 120 farmers was randomly (multistage random sampling) selected for the study in Central Cross River State. This served as the population for the study.

The first stage involved selection of five Local Government Area (Abi, Yakurr, Obubra, Etung and Ikom) in the study area. This was followed by a random selection of villages in the local government in the study area. The 120 respondents were randomly selected from each of the villages. A total number of 24 respondents were selected from each, making a total of 120 respondents.

DATA COLLECTION AND ANALYSIS

The instrument used for data collection was structured and semi-structured Questionnaires The researchers interviewed each respondent personally. Data obtained from the study were analysed using descriptive statistics such as tables and sample chart.

RESULTS AND DISCUSSION

The result of the survey as shown in table 2 below revealed that respondents were mainly adults from 31- 50 years however, 21.67% of the respondents were aged between 51 years and above Only 13 33% were aged between 21 – 30 years.

Table 2: Age distribution of Respondents

Age Group	Abi	Yakurr	Obubra	Etung	Ikom	Total	% Distribution
21-30	3	5	3	2	3	16	13.33
31-40	10	8	5	6	8	37	30.83
41-50	7	8	10	9	7	41	34.17
51 and Above	4	3	6	7	6	26	21.57

Source: Field Survey, 2006

In table 3 it can be observed that 90 respondents or 75 percent of the respondents were males whereas 30 respondents or 25 percent of the respondents were females.

Table 3: Sex Distribution of Respondents

S/No	Gender	Number of Respondents					Total	% Distribution
		Abi	Yakurr	Obubra	Etung	Ikom		
1	Male	18	16	17	19	20	90	75
2	Female	6	8	7	5	4	30	25
	Total	24	24	24	24	24	120	100

Source: Field Survey, 2006

Table 4 revealed that 60% of the respondents were married, while 20.83% of them were widowed. Only 19.17 were single.

Table 4: Marital Distribution of Respondent

Marital status	Abi	Yakurr	Obubra	Etung	Ikom	Total	% Distribution
Married	18	16	17	10	11	72	60.00
Widowed	4	5	3	6	7	25	20.83
Single	2	3	4	8	6	23	19.17
Total	24	24	24	24	24	24	100

Source: Field Survey, 2006

Analysis presented in table 5 reveals that 57.50% of the respondents had secondary education, 15.83% attended high education while 12.50% had First School Leaving Certificate. Only 14.67% never had any format education.

Table 5: Distribution of Respondents According to Educational Attachment/ Qualification

Educational Attachment	Abi	Yakurr	Obubra	Etung	Ikom	Total	% Distribution
No Education	4	3	5	2	3	17	14.67
FSLC	3	2	3	4	3	15	12.50
Secondary Cert.	14	16	12	13	14	69	57 50
OND/HND	3	3	4	5	4	19	15 83
Total	24	24	24	24	24	120	100

Source: Field Survey, 2006

Table 6 shows the distribution of respondents according to farm size. Specifically, 60% of the respondents had 0.1 – 3 hectares whereas 20.83% of the respondents had 4 – 6 hectares. Only 19.17 of the respondents have 7 hecatares and above.

Table 6: Distribution of Respondents According to Farm size (hectares)

Farm size	Abi	Yakurr	Obubra	Etung	Ikom	Total	% Distribution
0.1-3	17	10	11	16	18	72	60 00
4-6	3	6	7	5	4	25	20 83
7 – above	4	8	6	3	2	23	19 27
Total	24	24	24	24	24	120	100

Source: Field Survey, 2006

Table 7: Effective Tractor Utilization for Agricultural Mechanization in Central Cross River State, Nigeria.

Local Govt. Area	Number of tractors	Agricultural Mechanizati on Awareness		Tractor use in LGA farms		Tractors own by Local Govt.		Tractors own by farmers		Tractor hired to farmers		Tractor not used		Tractor not functional	
Abi	2	18	75%	3	13%	22	92%	2	0.7%	4	17%	14	58%	2	8%
Yakurr	1	17	71%	4	18%	21	88%	1	0.4%	2	8%	15	63%	12	50%
Obubra	2	18	75%	6	25%	23	96%	3	13%	14	58%	16	67%	3	13%
Etung	2	17	71%	8	33%	22	92%	1	0.4%	15	63%	13	54%	4	17%
Ikom	2	18	75%	4	17%	19	79%	1	0.4%	13	54%	17	71%	3	13%
Total/Ave.	**9**	**88**	**73%**	**25**	**21%**	**107**	**89%**	**8**	**8%**	**48**	**40%**	**75**	**63%**	**24**	**20%**

Source: Field Survey, 2006

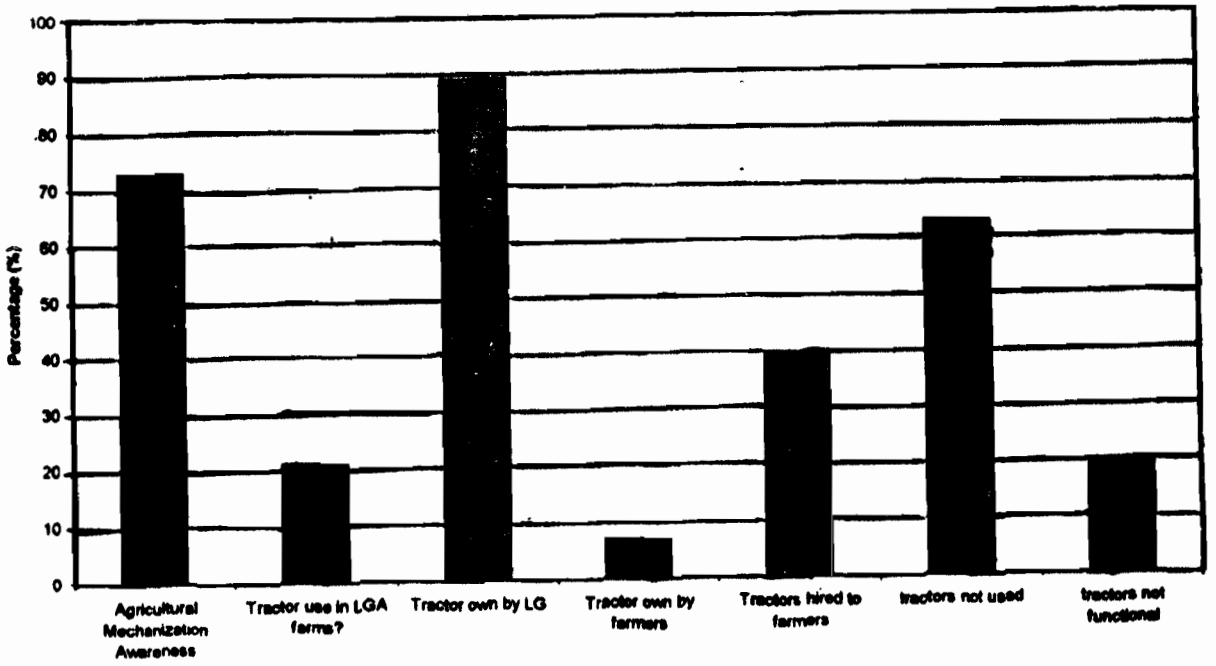

Fig. 2: Effective Tractor Utilization for Agricultural Mechanization in Central Cross River State, Nigeria.

Table 7 and figure 2 revealed that a total of 9 tractors were available in the study area with its distribution as shown. 73% of the respondents affirmed that there was general awareness of agricultural mechanization among the people of Central Cross River State. While 89% of the tractors were owned by the Local Government Authority and only 21% were been used in Local Government farms. 7% of the respondents stated that tractors were been owned by farmers and out of the available tractors, 40% were been hired to farmers for use. On the otherhand 63% of the total respondents revealed that the available tractors were not been put to use while 20% stated that the tractors were not functional.

CONCLUSION

Central Cross River State is blessed with large area of fertile land. Land constitutes a major input in agricultural mechanization. With the availability of tractors accessible to the farmers, effective agricultural mechanization can be carried out. Priority should be given to the creation of more awareness on agricultural mechanization with the use of tractors and implements. More tractor operators and technicians should be trained. Supply of tractors to farmers at subsidized rate by relevant authorities should be the main focus. Moreover, the available tractors should be leased to farmers at a considerable rate. Attention should be on the provision of soft loans to farmers directly by relevant agencies. It is only when all these points are considered that effective utilization of tractors in the Central Cross River State of Nigeria is guaranteed.

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