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Attitude of Farmers Towards the Use of Animal Traction Technology in Savannah Zone of Oyo State, Nigeria

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Finding revealed that majority of the respondents were males and married. They were literate and had fairly large family size. They were within active age range of 21-50 years and had over 20 years farming experience. They practiced mixed cropping, exhibited a neutral attitude towards the use of animal traction technology.

Keywords : *Traction, Technology, Farmers, Contact, Farmers.*

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Finding revealed that majority of the respondents were males and married. They were literate and had fairly large family size. They were within active age range of 21-50 years and had over 20 years farming experience. They practiced mixed cropping, exhibited a neutral attitude towards the use of animal traction technology. Chi-square test revealed that age, family size and farming experience of respondents were significantly related to their attitude towards the use of animal traction technology while farm size and cropping pattern were observed not to be significantly related to their attitude.

The study concludes that since respondents were neutral in their attitude towards the use of animal traction technology, a well-designed extension based animal traction programme should be put in place to arouse the interest of farmers in the technology to combat shortage of labour in the agricultural sector.

Keywords : Traction, Technology, Farmers, Contact, Farmers.

I. Introduction

Manual labour is becoming scare and increasingly expensive and the farmers are already tired of muscle power (Olomola, l998). This shows that there is shortage of hand in the agricultural sector of the economy. This is no doubt a disturbing development in the view of the fact that labour is one of the main factors of agricultural production. Shortage of labour should be of great concern to all considering the fact that Nigeria agriculture is in the hands of the peasant farmers who rely on manual labour. Agricultural practice is carried out by small holder farmers cultivating between 2-3 hectares of farm holdings using human labour and simple hand tools (Oyeniyi, 1997)

In order to avert the devastating effect of inadequate supply of labour on our agriculture, especially at the village level, looking in the ways of technologies that are capable of reducing heavy dependence on manual labour may be the right focus. This in line with Pannim and Ellis-Jonnes (1999) who stated that with the current rates of population growth, the main way to avoid food storage in African countries is to focus attention on technologies that could raise productivity of labour. This suggests that the logical answer to shortage of hands on the farm is mechanization or hand operation that could be mechanized provided it would be profitable to the farmers. The use of tractors and farm animals for examples, require a few hands.

Animal traction technology is being widely advocated in the savannah areas of Africa considering the account of realization of its benefit in several countries in Asia, Middle-East and the Mediterranean (Le Moigue, 1979). Nigeria is one of African countries with long history of animal traction. Alkali (1969) posited that the long history of animal traction dates back to1922 when the use of cattle as a source of power for agricultural production was first demonstrated with long history, it would not be out of place to think the entire savannah belt of Nigeria would have been covered. However the introduction of tractors in 1940s impeded the spread of the technology. The prevailing economic situation has made other alternative such as manual cultivation and tractorization inadvisable and unaffordable has however made the need for animal traction technology imperative.

Animal traction technology is already in use in the savannah zones of Northern Nigeria. Farmers in the areas are already taking full advantage of the technology while their counter parts in Oyo state, South-West Nigeria are yet to harness the enormous potentials of the innovation despite the suitable ecology and availability of resources for its use. It is in realization of this that the Oyo State Agricultural Development Programme introduced animal traction technology to farmers in the state. This is actually possible because Oyo state cuts across two ecological zones of savannah and rain forest.

Draft animal power is potentially an appropriate technology. It is relatively inexpensive not too

complicated and can help to increase productivity (Norman, et. al., 1981) Introducing an innovation like animal traction with great potentials is no doubt a laudable effort. However there is need to ascertain the feelings of the target beneficiaries if there will be meaningful record of its success. In the case of animal traction technology, Panin and Eills-Jones (1992) established that farmer's attitude, choices and perception could have an important bearing on the choice of power source.

It is against this background that this research tries to find out the attitude of farmers towards the use of animal traction technology in Oyo State and consequently, the following research objective were addressed by the study:

1. identify the personal characteristics of the farmers in the study area.
2. determine the influence of animal traction technology on farmers' farm size.
3. ascertain the influence of animal traction technology on farmers' cropping pattern.
4. ascertain farmers' attitude towards the use of animal traction technology.

II. Methodology

The research was carried out in the savannah area of Oyo State, South-Western Nigeria.

The state is bounded by Benin Republic in the West, in the North and East by Kwara and Osun states respectively and Ogun state in the South. Oyo state covers a land area of 27,000 sq kilometres and is made up of 33 Local Government Areas. The state is divided into four agricultural zones by ADPs namely: Ibadan/Ibarapa, Oyo and Saki zones. Based on the prevailing climatic and soil characteristic, three vegetation zones are identifiable in Oyo state. These are forest Guinea savannah, and derived savanna. The forest zone with high relative humidity favours the cultivation of tree crops such as Cocoa, Kola. Citrus, and Oil Palm as well as arable crops like Maize, Cassava, Yam and Rice. Areas within Ibadan Zone and up to Fiditi town fail within the forest zone. The derived savanna has a mixture of forest and savannah vegetation. Oyo Ogbomoso, Ilora, Fasola, Eruwa and Lagelu fall within this zone.

The savannah zone favour mainly arable crops such as Sorghum, Maize, Cowpea and Yam with some parcel of land, which supports tree crops. The wide expanse of land covered by Oyo/Ogbomoso zone in the south to Saki zone is savannah (MANR, 2001). All farmers in the savannah zone of Oyo State constitute the target population. This is due to the fact that animal traction could only take place in savannah belt therefore, Saki and Ogbomoso (ADP) zones were purposively selected for the study. There were 59 and 27 agricultural (ADP) cells in Saki and zone ten percent (10%) of cells in each of the sampled zones were randomly selected for the study i.e. 6 cell from Saki zone and 3 cells study from zone. There were 8 groups of farmers in each of the sampled cells. Each group comprises 10 contact farmers, giving a total of 480 contact farmers for Saki and 240 for zone. There were 480 and 240 non contact farmers in the sampled cells in Saki and zones respectively; this was based on 1 contact farmers to 10 non contact farmers. Ten percent (10%) of non contact farmers were randomly selected for the study resulting to 48 and 24 non contact farmers for Saki and zone respectively. A total of 144 respondents comprising 72 contacts fanners and 72 non contact farmers were used for the study. Interview schedule was used to generate information from respondents. The data was analyzed using frequency, percentage and chi-square.

III. Results and Discussions

a) Personal characteristics of respondents

Table 1 shows that majority (66.6%) of contact farmers belonged to the age range of 21- 50 years while the remaining 33.3% were above 50 years of age. However, majority (55.5%) of non contact farmers were between 21 - 50 years of age. The result generally is an indication of the fact that majority of the respondents were within the middle age group and hence expected to be very active and adventurous and desirous of innovations that are capable of improving their lives and farm work. The table further shows that majority (81.9%) of contact farmers are males and 18.1% are females. Similarly, majority of non contact farmers are males (79.2%) and 20.8% are females. The above result implies that majority of respondents are males. This could be due to the fact that women do not have access to farm land. Corroborating this, Rwelamira (1990) affirmed that the right to own land is often determined by traditional community leaders such as tribal chiefs, and land is allocated to male family members even if the household is female headed.

Furthermore, the table revealed that majority of contact farmers (87.5%) were married 6.9% were single and 5.6% were widowed. Similarly, majority (79.2%) of non contact farmers were married. Also, 15.3% were single and the remaining 5.6% were either widowed of separated and divorced. This implies that most of the respondents were settled family men and women with responsibilities and would most likely be willing to seek innovations that could increase their income earning capacity and improve their standard of living.

The table shows the ethnicity of the respondents as majority (89.6%) is predominantly Yoruba and 10.4% are non Yoruba. The table further shows that in the overall majority (61.1%) of the contact, and non contact respondents were full time farmers and

the remaining (38.9%) were civil servant and artisans. This is an indication that the respondents are likely to be serious with their farm work and be positively disposed to matters that can enhance the progress of their farm work. The result also implies that the study area is a completely rural area where basic occupation is farming. This may be due to readily available vast arable farmland. Corroborating this, Ogunbile and Olukosi (1991) asserted that the main occupation of rural people is agriculture while Olawoye (1993) affirmed that farming is a peculiar characteristic of rurality.

With regards to educational attainment of respondents, table 1 reveals that majority (55.7%) of the two categories of respondents attended formal school setting ranging from primary school to tertiary education as 30.5% attended adult literacy classes while the remaining 13.9% had no formal education. This is an indication that majority of respondents are literate and this is expected to favour innovativeness of the respondents. This is in line with Ogunfiditimi (1981) assertion that a positive and significant correlation exists between literacy level and use of recommended practice. However, this is contrary to Abubakar and Ahmad (2010), who found that farmers using animal traction in Jigawa state, Nigeria had low level of formal educational background. Majority (90.3%) of two categories of respondents had 20 years farming experience while 9.7% had between 10-20 years farming experience. The above result implies that most of the respondents are experienced famers and are therefore in good position to exhibit independent disposition towards the use of innovation that has to do with farming business.

Concerning the family size of respondents, the table reveals that majority (50.0%) of the categories of respondents had family size ranging between 6-10 members, 31.9% had 1-5 members in their household, 12.5% had over 10 members and only few did not disclose their family size. The above result implies that most of the respondents have a fairly large family size with fairly large labour force. This is expected to influence their attitude towards the use of animal traction. In many cases, households, which use drift animal power, have a larger labour force than household, which do not have (Panin,1987, Sumberg and Gilbert1992).

b) Respondents' Farm Characteristics

Table 2 reveals that overall result of 45.1% of the two categories of respondents cultivated less than 3ha of farmland, 34.0% had 3-6 ha, 15.3% cultivated between 6 -10 ha and 5.6 % had over 10 ha of land. The above result is an indication that majority of the respondents were small scale farmers. This confirms that agricultural practices in Nigeria are carried out by small holder farmer cultivating between 2 and 3 ha of farm holdings; using human labour (Oyeniyi, 1997). The small holding of respondents implies that they should be desirous of technology such as animal traction that could be applied to increased farm size thereby improving their income.

c) Score categories on attitude scale

Table 3 shows that majority (68.0%) of the categories of farmers were undecided on the use of animal traction technology while 15.3% had unfavourable attitude towards its use but few (16.7%) were favourably disposed to its use. This implies that, majority of the farmer in the area are yet to decide on the use of animal traction technology. Reason might be that they are not aware of the benefit accruable from the use of animal traction technology more so that the method has not been put into practice in the area. This is in line with the finding of Daramola, (1999) that majority of farmers in Nigeria have very little knowledge about animal traction. This might also be because majority of the farmer were small scale farmers. Table further shows that 62.5% of the two categories of respondents practices mixed cropping while few (24.3%) engaged in mixed farming and 13.2% practiced mono-cropping.

The above result agrees with the finding of Ogunkunle and Olukosi (1991) who established that mixed cropping is common practice among traditional farmers in Nigeria.

The result also brings to fore the age long practice of growing two or more crop as a form of insurance against crop failure and for maximum use of the above result the farmer may not be favourably disposed to any innovation that is not compatible with prevailing cropping pattern. Daramola (1999), in a research on potentials for animal traction in South Western Nigeria established that favourable consideration would be given to animal traction in the region as long as its adoption would not serious jeopardize farmers' subsistence nor impose additional strain on their limited resources.

d) Hypotheses testing

Table 4 shows that there is a significant relationship between contact farmer's age and attitude towards the use of animal traction technology while attitudes of non contact farmers were found to be independent of their ages. Furthermore test of relationship between respondents' farming experience and attitude showed a significant relationship towards the use of animal traction technology. Also test of relationship between family size and attitude of respondents showed that there was a significant relationship between contact farmer's family size and their attitude towards the use of animal traction technology but family size had no relationship with attitudes of non contact farmers.

Table 5 shows that test of relationship between respondents' attitudes were not influenced by their farm

size but significant relationship exist between contact farmer's cropping pattern and their attitude towards the use of animal traction technology while attitudes of non - contact farmers were found to be independent of their cropping pattern. This result corroborates the finding of Ajav (1989) that an extension programme can break the resistance to the use of animal traction.

IV. Conclusion

This study concludes that majorities of respondents were undecided on the use of animal traction technology, though they consider it to be a viable option to tractor and human labour. Therefore extension based enlightenment programme should be put in place to sensitize farmers before the actual introduction of the technology. Based on the findings of the study, farmers who are supposed to be primary beneficiaries of animal traction technology are yet to make up their mind on its use; the following recommendations were made:

- Government should design animal traction oriented programme and use the appropriate extension organ to disseminate well packaged animal traction related information to propagate the use of the technology in the zone
- Animal traction training centre should be established at suitable or strategic locations to demonstrate the use and benefits of animal to demonstrate the use and benefits in the zone.
- Government should ensure availability of draft animal at reasonable cost and encourage local fabrication of animal traction implements in the zone.

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Table 1 : Distribution of personal characteristics of respondents

Personal Characteristics	Contact farmers	Non-Contact farmers	Total
Age(Years)			
21-30	5(6.9)	0(0.0)	5(3.5)
31-40	19(26.4)	12(16.7)	31(21.5)
41-50	24(33.3)	20(27.8)	44(30.6)
51-60	16(22.2)	26(36.1)	42(29.2)
Above 60	8(11.1)	14(19.4)	22(15.3)
Sex			
Male	59(81.9)	57(79.2)	116(80.6)
Female	13(18.1)	15(20.8)	28(19.4)
Marital status			
Single	4(6.9)	11(15.3)	16(11.1)
Married	63(87.5)	57(79.5)	120(83.3)
Widowed	4(5.6)	1(1.4)	5(3.5)
Divorced	0(0.0)	2(2.8)	2(1.4)
Separated	0(0.0)	1(1.4)	1(0.7)
Ethnic Group			
Yoruba	68(94.4)	61(84.7)	129(89.2)
Edo	2(2.8)	2(2.8)	4(2.8)
Egbede	1(1.4)	2(2.8)	3(2.1)
Ghanaian	1(1.4)	1(1.4)	2(1.4)
Ibo	0(0.0)	4(5.6)	4(2.8)
Ibaru	0(0.0)	1(1.4)	1(0.7)
Hausa	0(0.0)	1(0.7)	1(0.7)
Primary Occupation			
Farming	45(62.5)	43(59.7)	88(61.1)
Civil Service	21(29.2)	24(33.3)	45(31.3)
Tractor operator	2(2.8)	1(1.4)	3(2.1)
Craftsmanship	1(1.4)	0(0.0)	1(0.7)
Business	1(1.4)	4(5.6)	5(3.5)
Security	1(1.4)	0(0.0)	1(0.7)
No response	1(1.4)	0(0.0)	1(0.7)
Educational attainment			
No formal education	12(16.7)	8(11.1)	20(13.9)
Adult literacy	11(15.3)	33(45.8)	44(30.5)
Primary education	13(18.1)	8(11.1)	21(14.6)
Secondary education	2(2.8)	5(6.9)	7(4.9)
Technical	16(22.2)	11(15.3)	27(18.8)
Tertiary education	18(25.0)	7(9.7)	25(17.4)
Farming experience			
10-20	18(11.1)	6(8.3)	14(9.7)
21-30	22(30.6)	26(36.1)	48(33.3)
31-40	21(29.2)	15(20.8)	36(25.0)
41-50	16(22.2)	19(26.4)	35(24.3)
Above 50	5(6.9)	6(8.3)	11(7.6)
Family size (Person)			
1-5	34(47.2)	12(16.7)	46(31.9)
6-10	23(31.9)	49(68.1)	72(50.0)
Above 10	7(9.7)	11(15.3)	18(12.5)
None	8(11.1)	0(0.0)	8(5.6)

Figures in parentheses are percentages

Table 2 : Distribution of respondent's farm characteristics

Farm Size (Ha)	Contact farmers	Non-Contact farmers	Total
0.1-2.99	32(44.4)	33(45.8)	65(45.1)
3.0-5.99	26(36.1)	23(31.9)	49(34.0)
6.0-9.99	10(13.9)	12(16.7)	22(15.3)
10 and above	4(5.6)	4(5.6)	8(5.6)
Total	72(100.0)	72(100.0)	
Cropping pattern			
Mono-cropping	11(15.3)	8(11.1)	19(13.2)
Mixed cropping	52(72.2)	38(52.8)	90(62.5)
Mixed farming	9(12.5)	26(36.1)	35(24.3)
Total	72(100.0)	72(100.0)	

Table 3 : Distribution of respondents according to score category on attitude towards animal traction technology.

Score category	Contact farmers	Non-Contact farmers	Total
Unfavourable	10(13.9)	12(16.7)	22(15.3)
Undecided	51(70.8)	47(65.3)	98(68.0)
Favourable	11(15.3)	13(18.1)	24(16.7)
Total	72(100.0)	72(100.0)	

Table 4 : Chi-square analysis showing relationship between selected personal characteristics and attitude of farmers towards use of animal traction technology.

Variable	Category of farmer	χ^2	df	P-value	Decision
Age	Contact	17.183		0.028	S
	Non contact	4.729	8	0.597	NS
	Both	15.817		0.045	S
Sex	Contact	1.158		0.560	NS
	Non contact	4.203	2	0.122	NS
	Both	5.122		0.077	NS
Marital status	Contact	14.072		0.090	NS
	Non contact	3.167	8	0.923	NS
	Both	11.049		0.199	NS
Primary occupation	Contact	7.603		0.815	NS
	Non contact	9.616	12	0.142	NS
	Both	9.819		0.632	NS
Educational level	Contact	8.701		0.561	NS
	Non contact	13.130	10	0.217	NS
	Both	13.632		0.190	NS
Farming experience	Contact	16.891		0.043	S
	Non contact	15.094	10	0.046	S
	Both	19.672		0.033	S
Family size	Contact	21.492		0.010	S
	Non contact	4.126	6	0.389	NS
	Both	16.688		0.010	S

Table 5 : Chi-square analysis showing relationship between respondents' farm characteristics and their attitude towards use of animal traction technology.

Variable	Category of farmer	χ^2	df	P-value	Decision
Farm size	Contact	8.758		0.188	NS
	Non contact	6.686	6	0.351	NS
	Both	8.316		0.216	NS
Cropping pattern	Contact	10.379		0.035	S
	Non contact	2.987	4	0.560	NS
	Both	8.449		0.076	NS