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Involvement and perception of small holder farmers in tree planting in Ondo State, Nigeria

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Abstract
The study examines the involvement and perception of smallholder farmers in tree planting in Ondo State, Nigeria. Two of the three ecological zones in the study area were purposively selected. Five villages were randomly selected from a compiled list of villages in each ecological zone while 20 smallholder farmers were randomly selected out of 50 that were initially identified in each sample village to make a total of 100 respondents. The results of the study showed that only 32% and 23% of the respondents in the rainforest and savanna ecological zones of the study area respectively plant trees. Chi-square test ($p>0.05$) shows that there is no significant relationship between educational qualification of smallholder farmers and their involvement in tree planting in the study area. However, chi-square test (<0.05) shows that there is a significant relationship between the income earnings of smallholder farmers and their involvement in tree planting in the study area. The study showed that the common tree species planted by smallholder farmers in the study area include *Tectona grandis, Gmelina arborea, Cordia millenii Mansonia altissima* and *Nauclea diderichii*. Smallholder farmers are however faced with some problems that hinder them from planting trees. These include weak land tenure, poverty, small land holdings, competition between trees and agric crops, long gestation period of trees and poor access to source of tree seedlings.The state government can help to solve many of these problems by helping to provide land to smallholder farmers that are willing to plant trees as well as provide tax relief to those that have planted stipulated number of trees. The State Forestry Department should improve upon their tree seedling production and distribution to farmers as well as their forestry extension programme in order to encourage more smallholder farmers to plant trees.

Introduction

Trees are known to be important renewable natural resources to man. They provide numerous products to the people and a continuous flow of benefits throughout the year. Sene (2000) noted that trees of the forest provide food, flavourings, medicines and beverages to the people. Trees are also important in risk management especially in the arid and semi-arid lands where most other vegetations are seasonal (Barrow, 1996). They retain their quality and can continue producing when other sources of food and fodder dry up. They can also be used to meet contingencies, for instance by selling firewood to provide money and also by providing food and fodder (Barrow, 1996). Adedayo (2005) noted that the trees of the forest are wealth creating assets to the rural dwellers. To many of them the tree of the forest is life and there is often little or no alternative to the use of tree and its products because they rely on it for their subsistence needs and for the support of their livelihood. In the same vein Adeyoju (2001) noted that trees and their products play critical roles in human environment, situation, needs or even lifeline.

It is however sad to note that availability of trees for the use of the people has dwindled considerably in the past few years. The reason for this has been the low rate tree planting compared to the rate of population growth. The involvement of government agencies and private individuals in tree planting in the country has been very low. Government tree planting programmes operating with limited resources is unable to establish trees at the required rate, thereby gradually causing wood shortage in the country (Gwandu, 2001). The involvement of private individuals in tree planting has also not been encouraging. This is especially so among the rural dwellers majority of whom are small scale holder farmers. The result of this is that there are increasing scarcity of tree products, loss of vegetation cover, soil exposure and erosion problems. This There is the need to stem this trend by encouraging tree planting among the small holder farmers in the country. Small holder farmers are the majority of the farmers in Nigeria and involving them in tree planting will

no doubt help to increase availability of tree products to the people. It is in view of this that this study seek to examine the involvement of small holder farmers in tree planting, to assess their perception to tree planting, identify tree species they prefer to plant, know the reasons why they plant trees and identify the problems that hinder them from planting trees and how they can overcome these problems.

Methodology

The Study area

Ondo state lies between latitude $5^{o}45^{'}$ and $8^{o}\ 15^{'}$ North and longitude $4^{o}35^{'}$ and $6^{o}\ 5^{'}$E (Figure 1). Its land area is about 15,823.317 km^2 (Adetula, 2008). The state is bounded on the east by Edo and Delta states , on the west by Ogun and Osun Sates, on the north by Ekiti and Kogi States and to the south by the Bight of Benin and the Atlantic Ocean(Augusta, 2002)

Method of data collection

Two ecological zones in the study area were purposively selected (i.e. rain forest and derived savannah). Five villages were randomly selected in each ecological zone. An initial survey was carried out in each sample village to identify smallholder farmers. Farmers having a farm size of less than two hectares are regarded as smallholder farmers. As such 20 smallholder farmers were randomly selected from among the identified smallholder farmers in each village to make a total of 200 respondents (Table 1). Primary data was collected from these respondents with the use of pretested structured questionnaire.

Method of data analysis

The data for this study was subjected to descriptive statistics is in form of frequency and percentage distribution tables and bar chart. Chi square was used to carry out statistical test on hypotheses.

Table 1: Questionnaire Administration in the Study area

Savanna				Rainforest			
Name of village	No of questionnaire administered	No of questionnaire retrieved	%	Name of village	No of questionnaire administered	No of questionnaire retrieved	%
Kajola	23	20	87	Ibule soro	25	20	80
Akowonjo	25	20	80	Ipogun	21	20	95
Gbegun village	22	20	91	Kajola	23	20	87
Aba oka	22	20	91	Aba Oyo	20	20	100
Alapoto	24	20	83	Isarun	21	20	95
Total	116	100			110	100	

Results and Discussion

Involvement of smallholder Farmers in tree planting

The results of the study showed that not many of the smallholder farmers were involved in tree planting in the study area. Only 23% of the respondents planted trees the savanna zone of the study area while 77% did not (Table 2). In the rainforest zone of the study area 32% of the respondents planted trees why 68% did not. This shows that many of the smallholder farmers don't plant tree because they are resource poor farmers. They cannot afford to tie their meager resources down to tree planting because trees take a long period of time to grow. Gwandu (2001) noted that not many people in Nigeria are interested in growing trees because of the long gestation period of trees. Many resource poor farmers were interested in crops that will give them quick returns. They were not ready to wait for a long period of time before they can get the benefit of their investment. Chi-square test ($p>0.05$) shows that there is no significant relationship between educational qualification of smallholder farmers and tree planting in the study area. This implies that educational qualification of smallholder farmers is not an important determining factor in tree planting in

the study area. This is however contrary to the findings of Adesina and Chianu (2002) who noted that farm experience and education (both formal education and informal training) of the farmer were important characteristics that influenced decisions made in farm tree planting. It follows that other factors play important and prominent role in enabling smallholder farmers plant trees in the study area. These include ownership of land by smallholder farmers and their economic status. As such chi-square test ($p<0.05$) shows that there is a significant relationship between tree planting and income earnings of smallholder farmers in the study area This shows that the income earnings of small holder farmers which is a good reflection of their economic class had a significant influence on tree planting among smallholder farmers in the study area. Ewnetu and Bliss (2010) noted that income (among others) was a strong determinant of the farmers' tree growing decisions.

Table2: Involvement of respondents in tree planting in the study area

Involvement in tree planting	Rainforest		Savanna	
	Frequency	percentage	Frequency	percentage
Yes	32	32	23	23
No	68	68	77	77
Total	100	100	100	100

Source: Field Survey,2011

Many of the poor farmers cannot plant trees either because they do not own land or they cannot afford to tie their meager income down to planting trees that will take a long period of time to reach maturity and provide benefits for them. Hence many of them tend to shy away from tree planting. Sood (2006) and Mahapatra and Mitchell (2001) noted that higher income increases the risk bearing capacity of smallholder farmer' decision making and the willingness to wait for the returns from long term investment such as trees. As such, the income earning of smallholder farmers in the study area has a significant influence on their tree planting decision.

Table 3:Chi-square values of hypotheses tested

Hypotheses tested	Chi-square calculated	Chi-square tabulated	Degree of freedom	Remark
1.Tree planting and educational qualification of respondents	15.74	16.90	9	ns
2 Tree planting and income earnings of respondents	94.46	25.0	15	*

NB: ns = not significant; * = significant

Perception of Smallholder Farmers to Tree Planting

Many of the smallholder farmers in the study area perceive trees as renewable natural resources with many direct and indirect benefits. Among the respondents that grow trees 50% and 48% of them in the rainforest and savanna zones of the study area respectively plant trees because they get income from trees. Thirteen percent of the respondents in the savanna zone of the study area plant trees to get fruits (Table4). These are category of smallholder farmers that believe they can get income and food from trees and tree products especially during period of drought or famine or dry season. These groups of farmers therefore perceive trees as a wealth creating asset that can provide many valuable products or that can support their livelihood for better productivity. Thirty one and thirty percent (31% and 30%) of the respondents in the rainforest and savanna zones of the study area respectively plant trees to get fuel wood (Table4).This is not

so surprising because fuel wood is the dominant fuel use by rural dwellers not only in Nigeria but all over Africa. From the foregoing it therefore follows that smallholder farmers in the study area plant trees because of the benefits such as income, fruits and fuel wood which they get from trees. Kung'u *et al* (2008) stated that farmers major motivation for planting trees in Siakago division in Kenya are provision of fuel wood, building materials, income, fruits, soil fertility improvement and provision of shade. In addition to perceiving trees as a wealth creating asset some smallholder farmers in the study area use trees to lay claim to land ownership. As such, 9% of the respondents in the savanna zone of the study area plant trees to specify their land boundaries (Table4). This is especially so because trees are perennial plants. They can be used to indicate land boundaries and by extension land ownership.

Tree Species Planted by Smallholder Farmers

Common tree species planted by smallholder farmers in the study area include *Tectona grandis, Gmelina arborea, Cordia millenii Mansonia altissima* and *Nauclea diderichii*. Table 5 shows that 28% and 30% of the respondents in the rainforest and savanna zones of the study area respectively plant *Tectona grandis*. This is because many of the smallholder farmers perceive teak as a valuable tree that can be used for many things. Malomo (1997) noted that teak is widely used in Nigeria for house building, furniture, cabinet work and electric poles. Forty four percent (44%) of the respondents in the savanna zone of the study area plant *Gmelina arborea*. *Gmelina arborea* tree is another very useful tree to the people of the study area. Adedayo and Oyun (2010) noted that *Tectona grandis* and *Gmelina arborea* are the most popular tree species planted in Nigeria. It is therefore not a surprise that 44 % of the respondents in the savanna zone of the study area plant *Gmelina arborea* . Twenty two percent (22%) and three percent (3%) of the respondents in the rainforest zone of the study area plant *Cordia millenii* and *Nauclea diderichii* respectively (Table 5). The State Forestry Department encourages the planting of these tree species by engaging in the production of their seedlings especially those of *Tectona grandis* and *Gmelina arborea*.

Table 4: Factors influencing the interest of respondents in tree planting in the study area

Factors	Rainforest		Savanna	
(Benefits)	Frequency	Percentage	Frequency	Percentage
Income from trees	16	50	11	48
Fruits from trees	4	13	3	13
To specify land boundaries	2	6	2	9
Firewood	10	31	7	30
Total	32	100	23	100

Source: Field Survey, 2011

Table 5: Common Tree Species planted by respondents in the Study area

	Rainforest		Savanna	
Tree species	Frequency	Percentage	Frequency	Percentage
Tectona grandis	9	28	7	30
Gmelina arborea	12	38	10	44
*Cordia millen*ii	7	22	3	13
Mansonia altissima	3	9	3	13
Nauclea diderichii	1	3	0	0
Total	32	100	23	100

Source: Field Survey, 2011

Problems that hinder Smallholder Farmers from planting trees

The problems that hinder smallholder farmers from planting trees in the study area include: weak land tenure, poverty, small land holdings, competition between trees and agricultural crops long gestation period of trees and poor access to source of tree seedlings. Table 6 shows that 65% and 62% of the respondents in the rainforest and savanna zones of the study area respectively stated that weak land tenure is a problem that hinders them from planting trees. These are likely to be tenant farmers or squatters. It is difficult for such farmers to plant trees because land owners will not allow them. Adedayo (2004) noted that tenant farmers and squatters find it difficult to plant trees on their farmland due to tenurial restrictions. 60% of the respondents in the savanna zone of the study area stated that poverty is the problem that hinders them from planting trees. This category of farmers believe they do not have enough capital or financial resources that can enable them venture into tree planting. Resource poor farmers usually find it difficult to plant trees because they cannot afford to wait for a long period of time before they get benefits from the trees they planted. They therefore prefer to plant crops that can provide benefit for them within a few months of planting. Another problem identified by the respondents is small land holdings. Fifty two percent of the respondents in the rainforest zone of the study area said they were unable to plant trees because they possessed small land. Farmer with small land holdings finds it difficult to plant trees because there will be no enough spacing between the trees and the agricultural crops. The trees will therefore cast heavy shadows on the crops thereby preventing proper growth of agricultural crops. In such situation trees compete with agricultural crops for light, space, air and soil nutrients leading to poor growth of agricultural crops. Closely related to the above problem is the problem of competition between trees and agricultural crops. Many of the respondents see the competition between trees and agricultural crops as a problem that hinders them from planting trees in the study area. Thirty percent of the respondents in the savanna zone of the study area were not planting trees because trees compete with agricultural crops and lower their productivity. Another problem identified by the respondents is poor access to the source of tree seedlings. A large proportion (38% and 44%) of the respondents in the rainforest and savanna zones of the study area respectively were being hindered by poor access to source of tree seedlings (Table 6). These are likely to be farmers that are remotely located in the study area. Getting to the source of tree seedlings at the state capital either by the State Forestry Department or by private commercial nursery owners has been very difficult.

Table 6: Problems that hinders respondents from planting trees in the study area

	Rainforest		Savanna	
Problems	Frequency	Percentage	Frequency	Percentage
Weak land tenure	65	65	62	62
Poverty	59	59	60	60
Small land holdings	52	52	55	55
Long gestation period of trees	48	48	53	53
Competition b/w trees and agric crops	32	32	30	30
Poor access to source of tree seedlings	38	38	44	44

NB: There is multiple choice by respondents
Source: Field Survey, 2011

Recommended Solutions to the problems that hinder Smallholder Farmers from planting trees

In view of the findings of this study the following are recommended solutions to the problems that hinder smallholder farmers from planting trees in the study area:

The state government should come to the aid of smallholder farmers in the state by providing land for those that are willing to plant trees. Government can do this in collaboration with the State Forestry Department. This will help the tenant and squatter farmers to have their own land and plant trees.

The state government should also put in place rural poverty reduction strategies that will help to reduce poverty among smallholder farmers and the entire rural populace. This is because this study has shown that there is a significant relationship between income earnings of smallholder farmers and tree planting. It therefore follows that if many of the smallholder farmers are to be involved in tree planting then the government should find a way of reducing their level of poverty through increased income earnings. Some of these strategies could be provision of interest free loans to rural dwellers for small scale business, integrated rural development through provision of electricity, good roads, pipe borne water and basic health centres as well as enlighten rural dwellers on adding value to the forest products which they offer for sale.

The state government can also introduce a policy of giving tax relief to smallholder farmers that have planted a stipulated number of trees. This will help to stimulate tree growing interest among smallholder farmers in the study area and it will help to increase availability of tree products for the use of the people. The State Forestry Department should improve upon their services of producing and distributing tree seedlings to smallholder farmers. The distribution of tree seedlings should be extended to all the nooks and crannies of the state such that farmers that are remotely located will also benefit from the tree seedling distribution and they will be encouraged to plant trees. In view of this, the State Forestry Department should endeavour to find out from the smallholder farmers the tree species they will prefer to grow. It is the seedlings of these preferred tree species that will now be raised by the State Forestry Department and distributed to smallholder farmers and others that are interested in planting trees. This will help to encourage tree growing all over the state.

There is also the need for the State Forestry Department to improve upon the forestry extension programme in the state. Many of the smallholder farmers in the state need to be enlightened more on the direct and indirect benefits of planting trees. This will go a long way in convincing them to plant trees on their lands. Small holder farmers should be encouraged to form cooperative societies. Cooperative societies can help many of them during difficult financial periods. As such many resource poor farmers that are not willing to plant trees because they cannot afford to wait for a long period of time can also embrace tree planting. This is because their cooperative society can come to their aid by making money available to them during period of financial hardship or while waiting for trees to mature.

Conclusion

The study has shown that many of the smallholder farmers in the study area are not involved in tree planting. Even though many of them perceive trees as a wealth creating and livelihood supporting asset they are hindered from planting trees by a number of problems. These problems include: weak land tenure, poverty, small land holdings, long gestation period of trees and poor access to source of tree seedlings. Government can help to solve some of these problems by making land available to farmers that want to plant trees and by developing rural roads to ensure easy distribution of tree seedlings to the rural areas. The state Forestry Department should improve on their tree seedling production and distribution as well as improve forestry extension services. Smallholder farmers should also be encouraged to form cooperative societies in order to overcome their financial problems.

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