

Socio-economic assessment of farmers' participation in agroforestry system in Ekiti State, Nigeria

Oyewole S. O.*, Dahunsi O. M. and Akintola A. L.

Forestry Research Institute of Nigeria, Federal Ministry of Environment, Forest Hill, Jericho, Ibadan, Nigeria.

Accepted 3 August, 2015

ABSTRACT

The study assessed factors influencing the participation of farmers in agroforestry system in Ekiti State, Nigeria. Data were collected from 157 sampled farmers with the aid of structured questionnaire. Data were analysed using descriptive statistics and multiple regression model. The findings of the study revealed that the farmers were still in their agricultural active age group with average age of 46 years. Majority (42.7%) of the respondents had tertiary education. The average land size cultivated by the farmer was 4.97 hectares. The results of farmers' participation in agroforestry showed that more than half (52%) of the farmers always practice agro-forestry system. The average score (2.34) obtained from Likert scale indicates that sampled farmers in the study area are practicing agroforestry system of farming. The socio-economic and institutional variables influencing rate of participation in agroforestry system were: level of education, size of farmland, membership of association, farming experience and extension contact. The study recommends that government should review the Land Act Decree and pay attention on land consolidation program in order to reduce land scarcity and fragmentation of farm holdings. This is because agroforestry farming requires large area of land.

Keywords: Land scarcity, forest, descriptive statistics, multiple regression, farmland.

*Corresponding author. E-mail: shola4delord@yahoo.com.

INTRODUCTION

Agricultural production requires successful management of resources on sustainable basis to satisfy human needs, while maintaining environmental quality and natural resource conservation. Loss of forest has been extensive in Nigeria as much of the wood goes for household cooking as nine of every ten (10) African household burn wood for cooking (Barnes, 1990). The forest loss is closely related to the increase in farming population as most households cannot afford other fuels and demand for wood. Soil and water are major threats to improving agricultural productivity, which underpins the livelihoods of the vast majority of the rural poor and is a cornerstone of poverty reduction strategies in many countries. Current estimates are that up to 1 billion people are affected by soil erosion and land degradation due to deforestation and overgrazing (DFID, EC, UNDP and World Bank, 2002).

Forest is reflected as an important source of re-investible capital and a source of income. It serves as a

foundation for industrialisation and enhances the stability of the rural population. Giving the fact that these resources are of great importance to millions of people, especially those whose livelihoods directly depend on them, Boon et al. (2009) stated that the past two decades have witnessed an increased attention by the world community to the issue of conservation and wise use of forest resources. Many programmes are introduced by governments and institutions to protect forests but without local people involved the efforts will yield little results. There are many reasons for supporting forestry conservation activities by local people so as to ensure the sustainability of forest resources.

The indiscriminate conversion of the forest for agricultural use and fuel wood extraction has become a common practice. This activity is a significant feature of global environmental change. Tropical deforestation has severe consequences for climate change, loss of biodiversity, flooding, siltation and soil degradation. Also,

deforestation poses threats to the livelihoods and cultural integrity of forest dependent people and the supply of timber and non-timber forest products for future generations.

Based on the environmental degradation threat as a result of deforestation, agroforestry system remains one of the most common strategies proposed in recent years for addressing environmental degradation in rural areas of the tropics. It is an agricultural practice that has been advocating for in the past years. Also it is one that has been used by many indigenous peoples as a traditional land use option, providing sustenance for early agriculturists while preserving forest resources and biodiversity.

However, in some other parts of Nigeria, research report has shown that the success of agroforestry system among farmers has been threatened due to lack of people's commitment to the system (Brown, 2003). Reference to the study area, since the introduction of agroforestry system, information on the underlying factors influencing the extent of farmers' participation in agroforestry program and how to sustain same requires empirical assessment. Consequently, it is therefore necessary to critically assess those factors that determine the participation of farmers in agroforestry practice as it affects the livelihood of the practicing farmers in the study area.

MATERIALS AND METHODS

The study was conducted in Ekiti State. The State lies between longitudes 4°51' and 5°45' east of the Greenwich meridian and latitudes 7°15' and 8°5' north of the Equator. The Ekiti State has a total land area of 5887.890 sq km with the capital located at Ado-Ekiti. The main occupation of people in Ekiti State is farming. Therefore, the state is agrarian in nature and therefore has many rural settlements (Oluwasusi and Tijani, 2013).

Multistage sampling technique was used for the study. One Local Government Area was purposively selected from each of the three agro-ecological zones of the state on the basis of availability of natural forest in the area. Five villages were selected purposively in each Local Government Area (15 villages in total) and 20% of farmers that practice agroforestry farming were selected randomly from the three Local Government Areas. Therefore, a total of 157 farmers were used for the study. Data were analysed using descriptive statistics and multiple regression analysis.

Likert scale which is descriptive was used to determine the extent of farmers' participation in agroforestry practice. A three-point Likert-type scale was utilized. The response options ranged from "rarely" = 1; "often" = 2 to "always" = 3. The values were added to obtain 6, which was divided by 3 to get a mean score of 2.0. Mean scores of 2.0 or above were classified as participation in agroforestry, while scores less than 2.0 were regarded otherwise.

Multiple regression analysis was used to identify factors influencing farmers' participation in agroforestry system. The model is expressed as follows:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + e.$$

Where:

Y= Level of participation in farming practice which was measured

using Likert scale:

1= rarely, 2 = often, 3 = always

X₁ = Age (years)

X₂ = Level of education (Number of years in formal schooling)

X₃ = Household size (number in household)

X₄ = Farm size (hectares)

X₅ = Farming experience (years)

X₆ = Income (Annual income in naira)

X₇ = Access to credit (actual amount received in Naira)

X₈ = Membership of association (years of membership)

X₉ = Extension contact (number of visits)

RESULTS AND DISCUSSION

Socio-economic characteristics of agroforestry farmers

As shown in Table 1, about 38.2% of the respondents fall within the age bracket of 40 to 49 years. Twenty four percent of the respondents are between 50 and 59 years while the young farmers, those who fall below 40 years constitute 24.2%. The respondents' mean age was 46 years. This implies that the respondents are mainly of the middle age. A total of 51% had 6 to 10 members. Only 6.4% had household size which ranged between 1 and 5 members. The average household size was 8 members. The significance of household size in agriculture is associated with availability of labour for farm production. About 42.7% of the respondents had tertiary education, 24.2 and 15.3% attended secondary and primary education, respectively. This revealed that the level of tertiary education of the respondents is very high. This means that the farmers can access any form of information and this will increase the rate of awareness which will invariably increase the rate of participation in agroforestry system. Level of education of the household decision maker is important in determining the household's ability to obtain and process information and to implement knowledge intensive conservation practices and agricultural technologies (Zbinden and Lee, 2005).

The study further showed that majority of the farmers in the study area had small farm sizes indicated by the average size of 4.97 hectares. The implication of this is that the farmers could be classified as subsistence farmers. About 43.9% of the farmers have been farming between 1 and 10 years and about 12% between 21 and 30 years. Only 33.4% of the farmers in the study area had no contact with extension agent while 41.1 % had between 4 and 6 contacts with the extension agent. Limited extension contact may reduce farmers' accessibility to information on improved farm technologies which in turn can make farmers to diversify into non-farm activities. Contact with the extension can lead to improvement in participation agroforestry system. The study also reveals that 49% of the respondents were member of social organisation, while 51% of the respondents did not belong to any social organisation. More than three quarter (82.8) of the respondents do not have access to credit.

Table 1. Socio-economic characteristics of the farmers.

| Variables | Frequency (n = 157) | Percentage |
|----------------------------|----------------------------|-------------------|
| Age | | |
| 20-29 | 12 | 7.6 |
| 30-39 | 26 | 16.6 |
| 40-49 | 60 | 38.2 |
| 50-59 | 38 | 24.2 |
| 60-69 | 21 | 13.4 |
| Household size | | |
| 1 - 5 | 28 | 6.4 |
| 6 - 10 | 80 | 51.0 |
| 11 - 15 | 22 | 14.4 |
| 16 - 20 | 10 | 6.4 |
| 21 - 25 | 3 | 1.9 |
| Level of education | | |
| No formal education | 17 | 10.8 |
| Adult education | 11 | 7.0 |
| Primary education | 24 | 15.3 |
| Secondary education | 38 | 24.2 |
| Tertiary education | 67 | 42.7 |
| Farm size | | |
| 1 - 3.0 | 38 | 24.20 |
| 3.1 - 5.0 | 58 | 36.94 |
| 5.1 - 7.0 | 45 | 28.66 |
| 7.1 - 9.0 | 6 | 3.82 |
| 9.1 - 12.0 | 9 | 5.73 |
| 12.1 - 15.0 | 1 | 0.64 |
| Farming experience | | |
| 1 - 10 | 69 | 43.9 |
| 11 - 20 | 49 | 31.2 |
| 21 - 30 | 19 | 12.1 |
| 31 - 40 | 7 | 4.5 |
| Extension contact | | |
| No contact | 53 | 33.4 |
| 1 - 3 | 36 | 22.9 |
| 4 - 6 | 64 | 41.1 |
| 7 - 9 | 2 | 1.3 |
| Above 9 | 2 | 1.3 |
| Membership of organisation | | |
| Yes | 77 | 49.0 |
| No | 80 | 51.0 |
| Access to credit | | |
| No | 130 | 82.8 |
| Yes | 27 | 17.2 |

Table 2. Respondents based on the extent of farmers' participation in agroforestry farming system.

| Extent of participation | Frequency | Percentage |
|-------------------------|-----------|------------|
| Rarely | 6 | 3.82 |
| Sometimes | 68 | 43.31 |
| Always | 83 | 52.87 |
| Total | 157 | 100 |

Average score of participation = 2.34.

Table 3. Factors influencing farmers' participation in agroforestry.

| Variables | Coefficient | Standard error | t-value |
|---------------------------|-------------|----------------|---------|
| Constant | 2.140 | 0.627 | 3.41*** |
| Age | -0.043 | 0.078 | -0.55 |
| Education | 0.093 | 0.041 | 2.23** |
| family size | 0.008 | 0.015 | 0.58 |
| Farm size | 0.085 | 0.027 | 3.15*** |
| Farming experience | 0.037 | 0.008 | 4.25*** |
| Income | 0.017 | 0.019 | 0.60 |
| Membership of association | 0.015 | 0.007 | 2.30** |
| Access to credit | 0.069 | 0.062 | 1.13 |
| Extension contact | 0.037 | 0.019 | 1.98** |

R-Square = 0.54; F-value 183.07***; **Significant at 5%; ***Significant at 1%.

Extent of farmers' participation in agroforestry farming system

As indicated in Table 2, farmers that rarely participate in agroforestry constitute 3.82%, while 52.87% always practice agroforestry farming and 43.31% practice the system sometimes. The average score (2.34) obtained from Likert scale imply that sampled farmers in the study area are practicing agroforestry farming. The greater participation of farmers in this practice indicates that the practice has been successful in the study area as a means of plantation establishment and that many farmers are willing to be involved. Agroforestry farming is a practice for achieving land sustainability. Moreover, the system has the potential for increasing food production, and enhancing the household income.

Factors influencing farmers' participation in agroforestry

Table 3 shows the results of the socio-economic and institutional factors that were significantly related with farmers' participation in agroforestry system. Thus, the coefficient obtained for education was positive and significant at 5% level of probability, implying that increases in years of education would lead to an increase in rate of participation. The implication of this is that

educated farmers adopted agroforestry practice more than the less educated farmers. The estimated parameters obtained for the size of land was positive and significant at 1% level of probability. This suggests that the larger the farm size of the farmers the higher the rate of participation in agroforestry farming. It means that farmers with large farms practice the system more than those with smaller farms. The estimated parameter for farming experience was positive and significant at 1% level of probability. This indicates that increases in farming experience would lead to increases in rate of participation in agroforestry farming. More experienced farmers tend to possess greater ability to predict possible outcomes of a farming system and identify associated problems to a particular farm practice thus enhance his participation in such practices.

More so, the coefficient obtained for extension contact was positive and significant at 5% level of probability. This suggests that rate of participation in agroforestry practice by farmers in the study area increased as contact with the extension agents and farmers become more frequent. Membership of association was positive and significant at 5% level of probability. This implies that rate of participation in agroforestry increase as farmer spends more years in cooperative association. Membership of association can provide means of interaction with other farmers and this can also provide avenue or forum through which innovation can be

diffused among farmers. It can also enhance the accessibility of farmers to information on the possible advantage of agroforestry farming system thereby increase the rate of participation. Amount of credit received had a positive coefficient and was significant at 5% level of probability. The implication of this is that increase in the amount of credit received would lead to increases in agroforestry participation.

CONCLUSION AND RECOMMENDATION

The findings showed that some socio-economic characteristics of the farmers have significant influence on their decision to participate in agroforestry. These variables include farmers' level of education, size of farm land, experience in farming, membership of social organization, and extension contact. It was established from the findings of this study that farmers understand the importance of agroforestry. This is because majority of the farmers always practice agroforestry system. The study therefore recommends that government should review the Land Act Decree and pay attention on land consolidation program in order to reduce land scarcity and fragmentation of farm holdings. This is because agroforestry farming requires large area of land.

REFERENCES

- Barnes DF, 1990.** Population Growth, Wood Fuel and Resource Problem in Sub-Saharan Africa. Energy Series paper No. 26, Washington D.C. pp16.
- Boon E, Ahenkan A, Baduon BN, 2009.** An Assessment of Forest Resources Policy and Management in Ghana. Proceedings of the 29th Annual Conference of the International Association for Impact Assessment and Human Well-Being, May 16-22 May, Accra International Conference Centre, Accra, Ghana, pp6.
- Brown K, 2003.** Three challenges for real people-centred conservation. *Global Ecol and Biogeogr*, 12(2):89–96.
- Department for International Development, United Kingdom (**DFID**), Directorate General for Development, European Commission (**EC**), United Nations Development Programme (**UNDP**), **World Bank, 2002.** Linking Poverty Reduction and Environmental Management Policy Challenges and Opportunities. In: The International Bank for Reconstruction and Development/THE WORLD BANK 1818 (Eds.), H Street, NW Washington, DC, pp80.
- Oluwasusi JO, Tijani SA, 2013.** Farmers' adaptation strategies to the effect of climate variation on yam production: A case study in Ekiti State, Nigeria. *Agrosearch*, 13(2):20-31.
- Zbinden S, Lee DR, 2005.** Paying for environmental services: An analysis of participation in Costa Rica's PSA program. *World Develop*, 33:255-272.

Citation: Oyewole SO, Dahunsi OM, Akintola AL, 2015. Socio-economic assessment of farmers' participation in agroforestry system in Ekiti State, Nigeria. *Net J Agric Sci*, 3(4): 99-103.
