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ASSESSMENT OF ADOPTION OF AGROFORESTRY PRACTICES AMONG RURAL FARMERS IN BOKI LOCAL GOVERNMENT AREA OF CROSS RIVER STATE, NIGERIA

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Abstract
This study assessed adoption of agroforestry practices among farmers in Boki Local Government Area of Cross River State, Nigeria. The population of this study consisted of all rural farmers in the study area. Multistage sampling technique was used to select a total sample size of 125 respondents. Data were collected from primary sources and were analyzed using descriptive statistics. The findings revealed that majority (62.6%) of the farmers were males, while 37.4% were females. 49.65% fell within the age of 36-45 years, while 21.6% fell within the age of 25 -35 years old. About 53.6% were married, 40% attended tertiary institution, 49.6% had household size of 6-10 persons, 50.4% had farming experience of between 1 to 5 years, 54.4% were involved in farming, 49.6% earned an annual income of between ₦51,000.0 and ₦100,000.0. About 38.4% obtained information on agroforestry practices from radio and television, 28.8% of the respondents were aware of taungya farming. About 28.0% of Agroforestry practices were known to the respondents and they were aware of many benefits of practising agroforestry. It is recommended that extension workers should educate farmers more on the importance of agroforestry practices.

Keywords: Assessment, adoption, agroforestry, practices, farmers.

1.0 Introduction

In Nigeria and other developing countries, there is an inextricable link between forest resources and the livelihoods of rural communities. Increase in population and upsurge demand for forest products as well as expanding economy are already placing considerable stress on natural resources in the country (Consultative Group on International Agriculture Research Program, 2011). The National Population Commission (NPC, 2020), estimated Nigeria's population at 200,000 million people in 2021 from 45.2 million in 1960, changing 29.5 percent during the last 50 years (NPC,

2021). The rapid population upsurge induced pressure on the existing forest reserves, which resulted into rapid loss of biological diversity through anthropogenic activities such as deforestation and forest degradation (Otorokpo *et al.,* 2010). Nigeria's forest ecosystem with its numerous biodiversity is under pressure, sixteen million hectares of natural forests and tree cover are estimated to be lost annually, which has led to the loss of critical ecosystem services that formerly sustained the livelihoods of local communities (Food and Agriculture Organization, 2010; Umar, 2013).

Loss of biological diversity results from various causes, some of which are natural but aggravated by human activities as well as climate change. The earth is subjected to many humans induced natural pressures that have significantly altered, degraded, displaced and fragmented terrestrial ecosystems, often leaving biologically impoverished landscapes. One of the major challenges for much of Sub-Saharan Africa is how to design agricultural landscapes to resolve livelihood environmental conflict and maintain forests' ecosystem benefits such as land, either simultaneously or sequentially offers the best solution to soil infertility and land degradation problems (Fagbemi, 2002).

With the rising population in the country and the world at large today, the demand for food as well as land for habitation has therefore been on the rise. The demand for food has led to increased area of land for farming purposes to feed the rising population, thus increasing the rate of deforestation, which in turn comes with its effects or consequences. On the other hand, the increased demand for land to habit the population as well cannot be overemphasized. These needs arise and must be met but a balance must be achieved or attained in the ecosystem with less negative and higher positive effect.

2.0 Objectives of the Study

The broad objective of the study was to assess adoption of agroforestry practices

among rural farmers, while the specific objectives were to:

i. describe the socioeconomic characteristics of the respondents;
ii. identify sources of information on agroforestry practices by the respondents; and
iii. identify agroforestry practices adopted among rural farmers.

3.0 Methodology

The study area was Boki Local Government Area (LGA) of Cross River State, Nigeria. Boki was created on August 28, 1991 and its capital is Boje. Its geographical territory is in Cross River State of Nigeria. It has a population of about 300,000 and a contiguous territories border with the Republic of Cameroun. Boki bears a national and international reputation for being a major commercial centre, where forest and internationally quoted agricultural commodities such as cocoa, coffee, timber, palm products etc. are sourced and supplied for international consumption (Wikipedia, 2021).

According to NPC (2006), Boki is said to be populated by 95,154 males and 91,457 females. It has 11 council wards, namely: Abo, Boje, Bueustebe, Alaukwu, Beebo/Bumayi, Buda, Bunyia/Akubuchi, Ekpashi, Ogep/Osokom, Oku/Borum/Njua and Kakwagom. The first five are grouped under Boki 1 (Eastern Boki or constituency) and the remaining six, Boki 2 (Western Boki or constituency). Primary data for the study were collected using structured questionnaire and administered through interview technique. The collected data were analysed using descriptive statistics such as frequency distribution tables and percentages.

4.0 Results and Discussion

4.1 Socio-economic Characteristics of the Respondents

Table 1 reveals that majority (62.6%) of the farmers were males while 37.4% were

females. This implies that males were more involved in agroforestry practices in the study area. There are times work done by females is not reported because the African nations mostly recognized men at the detriment of women. Table 1 also shows that most (49.6%) of the respondents were between 36- 45 years. People between 36 -45 years are young and energetic to carry out agroforestry activities. The practice of agroforestry requires energy to perform activities like planting of trees, weeding and pruning among others. People who are weak may have to hire labourers who may not be able to do a good job, however, a farmer who is young with a lot of energy can do most of the activities required for proper functioning of the farm. It was found that most (53.6%) of the respondents were married. Marriage confers people with responsibilities and in African culture, somebody of marriageable age, who is not married is not respected. In the past, most farmers marry many wives to give birth to children who can assist on the farm. Marriage is also used as a means of procreation. In the modern day, however, people are more careful not marrying many wives as it used to be in the past.

Table 1 further shows that 40% of the respondents attended tertiary institution. Education plays an important role in sharpening the perspective of the people who are educated. Education helps farmers in taking decision; people who are educated are more disposed to adopting innovations. Agroforestry practices are new ideas that can help farmers improve their soil fertility, generate more income and above all use the soil in a sustainable manner. This finding agrees with FAO (2012) that educated people are favorably disposed to adoption of agroforestry practices. Results on farming experience depict that 50.4% of the respondents have been practising agroforestry between 1 -5 years. This implies that agroforestry practices in the study area were relatively new. Experience is one of the best teachers on the planet earth and the respondents' needs extension agents to expose them to agroforestry practices to enable them benefit from

them and make use of the farmlands in a sustainable manner. The finding is in tandem with Oyer *et al*. (1990) who stated that agroforestry is relatively a new practice in many nations and extension service delivery is needed to adequately teach farmers on how to properly practise agroforestry.

Table 1 on family size shows that 59.0% of the respondents had family size of between 1- 5 persons. This is an indication that the respondents had moderate family size. In the farming communities, farmers do marry many wives in order to have large family size. The purpose of marrying many wives is to give birth to many children and have many family members who can assist in carrying out farm operations. Nowadays, technologies like agrochemicals and simple farm machines among others are been used and as such many farmers no longer marry many wives with the hope of getting many children like in the past. The finding is in contrast to Nakabugu (2001) who stated that the household size of many farmers is between 5 and 10 persons.

Table 1 also reveals that most (54.4%) of the respondents were farmers. Farming is one of the major occupations that is practised by many people. In Nigeria today, white-collar jobs are not easily accessible and as a result, many people have resorted to farming. One major thing with farming is that, the farmer may not have the riches as people in other occupations do, but has a reasonable quantity of farm produce to feed the immediate family.

Table 1 further reveals that 49.6% had estimated annual income of ₦51,000 - ₦100,000. This implies that the respondents were peasant farmers who generally lack access to formal credit and farm inputs to efficiently go into farming as a business. Farming has to do with many things like capital, land, farm inputs and machines. In the absence of the required inputs and capital among others, the farmer may continue to operate in the poverty circle. Most farmers prastise farming as a way of life, but not as business. Farmers

Table 1: Socio-economic characteristics of the respondents (n=125)

Variables	Frequency	Percentage
Sex		
Male	78	62.6
Female	47	37.6
Age (years)		
36-45	62	49.6
25-35	27	21.6
at least 24	20	16.0
45 and above	16	12.8
Marital status		
Married	67	53.6
Single	25	20.0
Divorced	17	13.8
Widowed	16	12.8
Education level		
Attended Tertiary education	50	40.0
Attended Secondary education only	34	27.2
Attended primary education only	23	18.4
Never attended school	18	14.4
Farm size (ha)		
6-10	62	49.6
1-5	29	23.2
11-15	21	16.8
16>	13	10.4
Farming experience (years)		
1-5	63	50.4
6-10	23	18.4
11-15	16	12.8
16-20	15	12.0
20>	8	6.4
Household Size		
6-10	59	47.2
11-15	24	19.2
1-5	22	17.6
16 and above	20	16.0
Major Occupation		
Farming	68	54.4
Agro-processing	22	17.6
Civil service	19	15.2
Trading	16	12.8
Annual Income (₦)		
N51,000– N100,000	62	49.2
N40,000– N50,000	31	24.8
N101,000– N150,000	20	16.0
N151,000 and above	12	9.6

4.2 Sources of Information on Agro-Forestry Practices

Table 2 reveals that 38.4% of the respondents got information from radio and television and 22.4% from extension agents. This implies that only few of the respondents

acquired information from radio and television. Radio and television are one of the cheapest means of obtaining information. For radio, signals are almost everywhere and radio is also portable, relatively cheap also, means of powering it, the dry battery is similarly cheap. Most farmers own radio and always turned to it to listen to news and entertainment. For television, its signals may not be able to penetrate the interior areas like that of radio, except for those with a decoder, however, information disseminated on television has the capacity to change farmers for good more than that obtained from radio as it has both audio and visual. This finding agrees with Nakabugu (2001) that radio can be used to disseminate agricultural research information in the following ways including dissemination of research findings to Non-governmental Organizations (NGOs) dealing in agriculture, extension workers, farmers themselves, academic institutions, etc., collection of feedback from communities, announcement of research extension work and venues for meetings with extension workers.

Table 2: Distribution of the Respondents based on Sources of Information (n=120)

Variables	Frequency	Percentage
Radio and television	48	38.4
Extension agents	28	22.4
Print media	18	14.4
Cooperative society	13	10.4
Neighbors	13	10.4
Other farmers	10	8.0
Family members	5	4.0

*Multiple responses

4.3 Agroforestry practices adopted

Table 3 reveals that taunga farming (28.8%) and planting of trees at the edges of the farm (16.0%) were some of the agroforestry practices adopted by to the respondents. Only very few (28.8%) of the respondents were aware of taungya farming. Taungya farming is practised in places where the land owned by farmers may be very small and

the practice provides the opportunity for farmers to plant trees and cultivate crops alongside the trees crops planted. The finding contradicts that of Otorokpo (2010) who stated that farmers rarely practise taunga farming as a result of insufficient land for planting of arable crops.

Table 3: Agro-forestry Practices adopted by the Respondents (n=125)

Variables	Frequency	Percentage
Taungya farming	36	28.8
Planting of trees at the edge s of the farm	20	16.0
Shelter belt/windbreak	15	12.0
Fuelwood production	10	8.0
Woody plant perennials	9	7.2
Use of livestock manure	8	6.4
Alley farming	8	6.4
Planting of multipurpose trees	7	5.6
Live fence, apiculture and home garden	7	5.6
Crop rotation	6	4.8

*Multiple responses

5.0 Conclusion and Recommendations

5.1 Conclusion

The role of Agroforestry in sustainable land use system cannot be over emphasized. Agroforestry practices offer practical ways of applying various sustainable land use in producing both arable crops and economic trees to farmers. It evolves a synergy between agricultural production and forestry that is beneficial for increased food production, sustainable wood production and improvement of the quality of the soil. This is a win-win situation.

5.2 Recommendations

Based on the findings, these recommendations were made; 1. extension agents and other stakeholders should intensify efforts to disseminate adequate knowledge on agroforestry practices to farmers, 2. more awareness should be created on the benefits of agroforestry to rural farmers.

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