AGROFORESTRY SYSTEMS AND PREFERENTIAL AGROFORESTRY TREES AMONG FARMERS IN EJIGBO LOCAL GOVERNMENT OF OSUN STATE NIGERIA

BY

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ABSTRACT

Agroforestry systems and preferential Agroforestry trees among farmers were studied in Ejigbo Local Government of Osun State, Nigeria.

For this study, 10 villages were randomly selected for assessment using structured questionnaire to collect necessary information. One hundred questionnaires were administered in the selected villages with 10 questionnaires per village. The result revealed that all the respondents were farmers and had heard about Agroforestry. Agrofoestry was mainly introduced to them through radio (95%) and extension agents (65%). Seventy four percent of the farmers were engaged in Agrisilvicultural system. The result showed that these farmers derived cash (87%) and subsistence (63%) from the practice. Cashew (93%) Palm tree (77%), orange (41%) Iroko (40%) and Teak (34%) are the most preferred. It was discovered that the trees are preferred because of the benefits they derived from them ranging from fruits (91%) and medicine (51%) to wood (35%) and fuelwood (22%).

CHAPTER ONE

1.0   INTRODUCTION

Agriculture and Forestry, two important components in rural development are closely integrated with civilization and development in a long history of human existence where tree planting was found to stabilize income and ecological status; they were integrated into farming system. However, the use of trees on farm is an ancient art, thus for millennia, farmers have nutured trees on their farms and pasture lands and around their homes.

In Nigeria, Agroforestry was introduced into Forest Reserves far back as 1926, with peasant farmers assisting the government to establish plantation (Lowe, 1987).

Agroforestry is a forest-related analogue of agriculture. In Agroforestry, trees are usually cultivated under intensively managed conditions, to eventually be harvested as a source of lumber, pulp-wood, or fuelwood. In many regions, this sort of intensive forestry is being developed as a high yield alternative to the harvesting of natural forest.

Agroforestry intentionally combines agriculture and forestry to create integrated and sustainable land use systems. It combines agricultural and forestry technologies to create more diverse, productive, profitable, healthy and sustainable system.

Agroforestry, being a system of cultivating trees and food crops, simultaneously on a piece of land, increases the number of crops on the land and ensures that they are harvested at different times without any of the products disturbing one another, and also without necessarily depleting the soil of its nutrients (Okojie, 1998).

1.1   Impact

Agroforestry systems can be advantageous over conventional agricultural and forest production methods through increased productivity, economic benefits, social outcomes and the ecological goods and services provided.

Biodiversity in Agroforestry systems is typically higher than in convectional agricultural systems (Bruce, John W. 1988).

Agroforestry incorporates at least several plant species into a given land area and creates a more complex habitat that can support a wider varieties of birds, insects and other animals. Agroforestry also has the potential to help reduce climate change since trees take up and store carbon at a faster rate than crops.

1.2   Statement Problem

Land is the pivot of man's existence. Land is perhaps the single most important natural resource in the sense that it affects every aspect of people's live; with respect to their basic needs that is, food, clothing and shelter. The use to which a piece of land is put at a given period of time is very important for it to yield it maximum derivable benefits (it could be single use or multiple use). Land use is a non-static concept; it changes in accordance with changes in factors such as, season (wet and dry season), population, Land Tenure System, level of technological development.

These factors constitute the major problems of Agroforestry development in the tropics (Lat $27^{o}30^{1}$N and Lat $27^{0}30^{1}$S of the equator).

With increasing realization of the world environment crisis and the worsening food situation in developing countries like Nigeria, Kenya, and more integrated outwork have begun to emerge in the last decades such as Agroforestry. In view of this, this project examines the Agroforestry practices and preferential Agroforestry trees among farmer in the study area.

1.3   Objectives

a)   Broad objective:

The main objective of this study is to assess the Agroforestry practices and preferential Agroforestry trees among farmers in Ejigbo Local Government of Osun State.

b)   Specific objectives:

- To examine the different Agroforestry practices used in the area.

- To assess the preferential Agroforestry trees used by the farmers and why they use them.

1.5   Justification:

Agroforestry is an example of Multiple Land Use Systems (Adedire, *Pers. Com.*) which helps to enhance crop yield, conserve soil and recycle nutrients while producing fuelwood, fodder, fruits and timber. This research examined the agroforestry practices and preferential agroforestry trees among farmers in Ejigbo Local Government of Osun State. Therefore, the knowledge of the practices will enable us to know the widely used agroforestry tree species in the study area and the reason(s) for theier uses.

This study also will give an insight to those species that require tree domestication in the study area.

CHAPTER TWO

2.0   LITERATURE REVIEW

2.1   Concept of Agroforestry

The concept of Agroforestry encompasses trees and shrubs combined in one way or another with crops and/or livestock. Agroforestry is the combination of agriculture and forestry technologies to create integrated, diverse and productive land use systems (Garret *et al.* 2000).

The concept of Agroforestry can simply be defined as: Using the same land or a portion of it simultaneously or sequentially, for food, wood and fodder, due attention being given to interaction among various uses aiming to obtaining greater sustained production and securing both immediate benefits and long-term environmental concerns in harmony (FAO, 1985)

Tracing the history of Agroforestry, king (1987) stated that it was the general customs in Europe to clear fell derelict forest, burn the slash, cultivate food crops and plant or sow tree species. This "farming system" is of course no longer popular in Europe. But, it was still widely followed in Finland and Germany as late as 1920's.

However, the situation was a little different in Africa. Indeed, the Yoruba of western Nigeria, who have long practiced an intensive system of mixed herbaceous shrubs and trees cropping, claimed that the system is a means of conserving energy. They also claim that it is an inexpensive means of combating erosion and leaching and of maintaining soil fertility (Ojo, 1966).

Agroforestry is a popular concept among agricultural development and environmental specialist and often invoked by scientists and planners as a solution to rural development needs in Africa. While the word and optimism associated with it are widely shared, the actual meaning of Agroforestry is often misunderstood. Agroforestry is defined as all

practices that involve a close association of trees or shrubs with crops, animals and/or pasture.

This association is both ecological and economic. Agroforestry may involve a combination of practices in the same place at the same time (intercropping and related practices), practices in the same place but at different time (rotational practices). Dianne Rocheleau *et al.* 1988).

2.2   Roles of Agroforestry

Agroforestry has the ability to provide short-term economic benefits while the farmer awaits for traditional longer-term forestry products. An example of Agroforestry system is a riparian buffer planting that can attenuate flooding effects and protect water quality, while providing wildlife habitat, recreational opportunities and harvestable products like edible fruits and medicinal herbs.

More details on the roles of Agroforestry were given by ICRAF (2000) in the following ways: Incorporating trees into farming system leads to greater prosperity at the farmers' level.

Trees provide farmers with marketable products such as lumber; building poles, fuelwood, animal fodder, fruits and medicines all of which earn extra income.

A key advantage of Agroforestry is that it provides benefits for poor farmers in developing countries and global environmental pay off.

According to Michael Baumer, (1990) Agroforetry strengthens solidarity among farmers, regulated their income to make them less dependent on weather variation especially, by better conservation of water and soil resources, and by a combination in space and time and to their mutual benefit of woody perennial crops and other products.

2.3   Agroforestry systems and practices

A general classification developed by Nair, (1985), puts the many Agroforestry practices existing worldwide into three major types based on the combination of the components:

Agrisilvicultural systems: which consist of trees (including shrubs and vines) associated with crops.

Silvopastoral systems: which consist of plants, animals and/or pasture.

Agrosilvopastoral systems: which consist of trees, crops and animals and/or pasture.

A fourth category, other systems, is also included to catch those practices that do not quite meet any of the prior three types, such as Apiculture, Aquaforestry, Sericulture, Vermiculture and Moriculture.

Table showing different Agroforestry systems and practices

	Major systems	Subsystems	Description
A.	Agrisilvicultural: (Agricultural crops and trees).	1. Improved fallow	Woody species planted and left to grow during the fallow phase
		2. Taungya	Combined stand of woody and agricultural species during early stages of establishment of plantations.
		3. Alley cropping	Woody species in hedges, agricultural species in alleys in-between hedges.
		4. Multi-layer tree gardens	Multi-species, multi layer, dense plant association with no organized planting arrangement.
		5. Plantation crop combination	Integrated multi storey (mixed, dense) mixtures of plantation crops or shade trees for plantation crops.
		6. Multi purpose trees on crop land	Trees scattered haphazardly or according to some systematic patterns on bonds, terraces of plot field boundaries.
		7. Home gardens	Intimate multi storey combination of various trees and crops around homestead.
		8 Trees in soil conservation and reclamation	Trees on bonds, terraces with or without grass strips. Tree for soil reclamation.
		9 Shelter belt and wind breaks, live hedges	Trees around farmland plots.
		10 Fuelwood production	Interplanting firewood species on or around agricultural lands.
B.	Silvopastural system (trees and pasture and/or animal	11 Trees on range land or pasture	Trees scattered irregular or arranged according to some systematic pattern.
		12 Protein banks	Production of protein rich tree fodder on farm/range lands for cut and carry fodder production
		13 Plantation crops with pasture and animals	For example, cattle under coconuts in South East Africa and South Pacific.
C.	Agrosilvopastoral system (trees, agricultural crops and pasture or animals	14 Home gardens involving animals	Intimate multistory combination of various trees and crops and animals around homesteads.
		15 Multi purpose wood hedge rows	Woody hedges for browse, mulch, green manure, soil conservation, e.t.c.
D.	Other systems	16 Apiculture with trees	Trees honey production
		17 Aquaforestry	Tree lining fish ponds, tree leaves used as forage for fish.

Source: Nair (1989)

2.4   Contribution of Agroforestry to food security

FAO (1989) states that forest foods are often particularly important for poorer groups of rural people. They provide an available and accessible source of a diver's range of foods. Especially important are wild animals and fish as well as seasonally available fruits, leaves, nuts and mushrooms.

Traditionally, in Africa at least, trees have been important in emergency periods, especially in time of drought, famine and wars. They provide food for consumption when crops fail as well as products, which can be gathered for cash income (e.g. gum Arabic).

2.5   Agroforestry and medicine development

Medicinally, no plant is useless: In other words, all plants have medicinal uses. If a plant is deemed "medicinally useless", it is just that its virtues are not yet known.

Since all plants are medicinally useful, Agroforestry as a practice of cultivating plants and tree species contributes a lot to the development of medicine. For example quinine for treatment of malaria is got from back of *Conchona calisaya*, *Cinchona officinates*, and *Cinchona ledgeriana*. *Zingiber officinale* is used to treat hepatitis and other liver problems (Inyang Etukodo, 2000).

Bakare *et al*, (1993) say that the back of *Cylicodiscus gabunensis* cures rheumatism while the leaves attack migraine successfully.

2.6   Agroforestry and rural development

Agroforestry can contribute to rural development by:

(i)   Increasing the variety and stability of food supplies.

(ii)   Providing a sustained supply of fuelwood.