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The Impact of Land Tenure on Resource Allocation, Land Conservation and Agricultural Productivity in Rural Areas of Enugu State

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TITLE PAGE

THE IMPACT OF LAND TENURE ON RESOURCE ALLOCATION, LAND CONSERVATION AND AGRICULTURAL PRODUCTIVITY IN RURAL AREAS OF ENUGU STATE

A THESIS SUBMITTED TO THE DEPARTMENT OF AGRICULTURAL ECONOMICS, UNIVERSITY OF NIGERIA, NSUKKA, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE IN AGRICULTURAL ECONOMICS

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Certification

Obeta, Georgina Nwanyiamaka, a post-graduate student in the Department of Agricultural Economics and with the Registration Number PG/M.Sc./97/24000 has satisfactorily completed the requirements for the degree of Master of Science (M.Sc.) in Agricultural Economics. The work embodied in this thesis is original and has not been submitted in part or full for any other diploma or degree of this or any other University.

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Dr. E. C. Eboh
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10/10/2003
Date

Dedication

To

My Dear Parents,
Mr and Mrs L. C. Obeta

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Abstract

This study was conducted to critically determine the impact of land tenure on resource allocation, land conservation and agricultural productivity in rural areas of Enugu State. The study was carried out as a result of persistent problems imposed by land tenure arrangement especially in the area of agricultural production in Nigeria despite the introduction of various policies and programmes.

The orientation of this study was guided by three hypotheses namely; land tenure has no significant impact on resource allocation patterns of farmers; land tenure has no significant impact on land conservation practices of farmers and land tenure has no significant impact on agricultural productivity of farmers . A random selection of 120 farmers was made from the six agricultural communities randomly selected. The data obtained were analysed using descriptive statistics, analysis of variance and test of differences between means.

It was found that there were basically four types of land tenure systems in the study area namely, Communal, family, individual and state land ownership. However, individual land tenure which is characterized by high degree of permanence and security was the most common.

With respect to resource allocation patterns, family labour, hired labour, purchased seeds and organic manure were highly employed in almost

all the land tenure categories. Among the land conservation practices, mounding and crop rotation were mostly adopted in all the land tenure categories. Farmers' cropping patterns showed that maize and cassava were dominant in all the land tenure categories.

In determining whether there is significant difference in resource allocation patterns, land conservation practices and agricultural productivity under different land tenure regimes, mixed results were obtained. Whereas some variables showed significant differences, others did not indicate that the differences are statistically significant. Specifically, the results obtained from the resource allocation patterns showed that there were significant differences in the amount of family labour, hired labour, purchased seeds, inorganic fertilizers and organic manure used while there was no significant difference in the amount of agro-chemicals used under the different land tenure regimes. The land conservation practices that showed significant differences in the amount of money used under the different land tenure regimes include drainage, mounding, contour cultivation, boundary fencing, ridging, organic manuring, crop rotation, tree planting and tree maintenance. The differences in the amount of money used for terracing, earth bank, mulching and tractorization were not statistically significant. Results also should that there were significant differences in both physical and monetary value of crops such as maize, cowpea, yam, cocoyam, sweet potato, melon,

okro and groundnut while the differences in cassava, pigeon pea and tomato did not show any significant difference.

The results, however, depend on the specific variable and the types of land tenure under comparison. Based on their mean values and the number of significant variables, individual land tenure showed the highest level of performance.

Considering the fact that land is the primary means of agricultural production, government efforts should be geared towards adopting land policies that will enhance and promote better land tenure arrangement (privatization of land) for progressive and sustainable agricultural development.

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Chapter One

1.0 Introduction

1.1 Background Information

As the most fundamental factor of production in the agricultural sector, land has an essential role to play in increasing as well as sustaining agricultural production. The extent to which this role is performed is determined in part by methods of land acquisition and arrangements for the ownership and use of land (Arua and Okorji, 1997). Land tenure system can be defined as the body of rules and practices that regulate people's rights and obligations, in relation to land, including any conditions and time limits to the use of land resources (Adedipe et al, 1997). It involves the system of rights, duties and responsibilities concerning the use, transfer, alienation and ownership security of land and its resources.

Under African customary land tenure, various forms and arrangements of land tenure and land rights exist. Ownership and rights to land may be permanent, semi-permanent or temporary. This distinction depends on the mode of acquisition of land. Permanent right to land is mainly obtained through inheritance or purchase. Under impermanent land right, individuals acquire usufructuary rights in form of tenancy, pledging, borrowing , and share cropping (Nwosu,1991).

Land tenure in Nigeria can be broadly classified into three types,

namely; communal, individual (private) and public (state). At the earliest stage, characterized by the predominance of pastoral and sylvan economies, all land was communally owned, and the group of authorized users was clearly defined as well as the rules guiding their rights and obligations with respects to land and its resources(Migot-Adholla et al, 1991). In the study carried out in eastern Nigeria, Arua and Okorji (1997) observed that communal land tenure still exists, and it is even the dominant system in many communities as it accounts for 8 to 65 percent of the total land holdings in the community. In some of the communities studied, all the land is communally owned except residential quarters which have been allocated to individual families by the community leaders. In many of the communities, only distant farm lands are communally owned; in others, it is the forest lands; while in a few, it is just the market square and other festive grounds. The same study showed that individual ownership accounted for 43 to 89 percent of the total number of land holdings in the eastern Nigeria where as State land tenure is of relatively low significance. The State land represents all land that are under the control of government. However, due to rapid changes in socio-economic structures of the society the customary land tenure tends to break down resulting in a marked increase in both individual and state land tenure in Nigeria.

There are wide ranges of factors that potentially determine the system of land tenure and land rights in Africa. These factors includes: Culture and

tradition, social pressures such as acculturation, breakdown or weakening of social control that are communal-based, demographic pressures, economic changes and commercialization or the growth of the market economy and increased role of private enterprise, political systems and agroecological factors such as riskiness of land niche in terms of degradation and marginal or fragile nature of the area's ecosystem. In order to buttress this, Famoriyo (1981) and Nwosu (1991) observed that customary land tenure systems are breaking down under the impact of cash cropping, growing population density, increasing non-agricultural enterprises and urbanization and /or rapid transactions in landed property which have forced the establishment of permanent land rights as well as increased individualization of land tenure in many parts of Nigeria, especially in the south. Arua and Okorji (1997) in their own contribution, noted that the general performance of land tenure in Nigeria is affected by socio-economic, sociological and cultural factors including traditional and religious as well as institutional factors.

Obviously, the system of land tenure regimes and rights existing in Africa has great impact on agricultural development. Land tenure can either constitute an incentive or a constraint to agricultural production, farm development and overall economic development. In the study carried out in sub-saharan Africa by Migot-Adholla et al (1991), there was a growing debate about whether the indigenous land tenure systems are a constraint on agricultural transformation. Some authors such as Dorner (1972), World

Bank (1974) and Harrison (1987), see the indigenous tenure system as static constraints on agricultural development, providing insufficient tenure security to induce farmers to make necessary land improving investment. Others, however, such as Cohen (1980), Boserup (1981), Noronha (1985), and Bruce (1988), have countered that the indigenous tenure arrangements are dynamic in nature and evolve in response to changes in factor prices. In particular, it is argued that there is a spontaneous individualization of land rights over time, where the farm households acquire a broader and more powerful set of transfer and exclusion rights over their land as population pressure and agricultural commercialization proceed.

The above debate needs to be empirically enriched. Hence, a study on impact of land tenure and land rights on agricultural production is therefore very crucial. Such a study would help to clarify what directions land reform policy should take to promote the contributions of land tenure to agricultural productivity and sustainable agricultural development.

1.2 Problem Statement

An efficient system of land tenure and land right contributes to the general economic development by assisting agriculture in contributing to industrial development through the production of food, capital, raw-materials, labour, foreign exchange and expanded market. Consequently, the system of land tenure in any place to a large extent determines the pattern

of agriculture that prevails in that society. It has potential to the allocation of resources, systems of conserving land and the general productivity of the farm. According to Eze (1990), land right system determines the type of farming systems, decisions regarding investment of factors of production such as capital, labour and management as well as the productivity of such farming systems.

Even though land tenure is believed to strongly impact upon agricultural production in rural areas of Nigeria, relatively little is known about how and the extent of the impact and in what specific areas of agricultural activities the impact is evident. Much of the little that is known about the impact of land tenure and land rights on agricultural production and rural development in eastern Nigeria (where this study is located) is merely speculative and not sufficiently substantiated or clarified by empirical evidence.

This present study is intended to contribute to ameliorating this knowledge gap, by subjecting the land tenure-agricultural production hypothesis to empirical test. The study would determine whether the widely acclaimed theoretical relationship between land tenure and agricultural production and productivity growth in the agricultural sector is upheld by the empirical evidence in eastern Nigeria.

1.3 Objectives of the Study

The broad objective of the study is to determine the interrelations of land tenure and resource allocation, land conservation and agricultural productivity among farmers in Enugu State with a view to clarifying how and to what extent the existing land tenure constitute an incentive or constraint to agricultural development.

The specific objectives are as follows:

1. to describe the various forms and characteristics of land tenure and land rights among the farmers.
2. to determine the resource allocation patterns of farmers under the various land tenure regimes.
3. to determine the relationship between land tenure and observed differences in resource allocation
4. to determine the effect of land tenure on land conservation behaviour and practices of farmers.
5. to determine the impact of land tenure on agricultural productivity.
6. to derive policy implications for land tenure reform and sustainable agricultural development.

1.4 Research Hypotheses

This study was guided by the following hypotheses:

(1) Land tenure has no significant impact on the resource allocation patterns of farmers.

(2) Land tenure has no significant impact on the land conservation practices of farmers.

(3) Land tenure has no significant impact on the agricultural productivity of farmers.

1.5 Justification for the Study

The study of the impact of land tenure on resource allocation, land conservation and agricultural productivity is necessary because it will bring to focus the various forms and patterns of land tenure and land rights existing in the study area as well as the various resource allocation patterns and land conservation practices of farmers under different land tenure regimes. This will enhance the understanding of the possible incentives and constraints each system has in order to determine whether or not, they can support agricultural development in future.

Specifically, this study will help the government as well as the land use and land reform policy makers in formulating and executing appropriate policy that will enhance better relationship between land tenure and agricultural development.

1.6 Limitations of the Study

The study was limited to farmers in rural areas of Enugu State. The research was carried out where illiteracy was widespread and where most farmers kept no formal records of their farming activities and the yield of their crops. In most cases, therefore, information given was based entirely on what the respondents were able to remember at the time of interview.

The problem of relaying the questions in the questionnaire in the form the farmer would comprehend was encountered during the process of data

collection. The farmers's suspicious attitude made the process more difficult because greater effort had to be put to gain their confidence. Another problem was that posed by the high transportation cost due to bad roads and scarcity of fuel at that time of data collection.

There were also time and financial constraints. These and other constraints made the collection of all the relevant data required for the study difficult.

Chapter Two

2.0 Literature Review

2.1 Concept of Land Tenure

Land tenure is a broad term covering all those relationships established among men that determine their varying rights in the use of land. It deals with the splitting of property, rights, or their division among various owners, between owner and occupant, and creditor, and between owners and the public, it includes assessment of taxes on private rights, and regulation of land use through various social control devices. It refers also to the period during which rights in land are held (Renne, 1958).

The system of land tenure in a rural community is the system of rights and duties of the people with regards to the use of land (Bohannan, 1966). Fabiyi (1977) defined land tenure as the relationship among men in the use and control of land resources and also sometimes, as the body of rights and relationships that exist between men as individuals, as groups and as public entities in the use and control of land. This system embodies those legal and contractual or customary arrangements, whereby people in farming gain access to productive opportunities on the land. It constitutes the rules, procedures governing the rights, duties, liberties, and exposure of individuals and groups, in the use and control over the basic resources of land and water (Dorner, 1972).

Under customary land tenure, group ownership is practised where by individuals derive rights of ownership from the group to which they belong (Adedipe et al, 1997). Goody and Buckley (1973) described the customary land tenure system in Africa as a communal tenure system of public ownership and private use rights of land. They said that even though communities have control over land, individuals "appropriate use rights of land and the products".

2.2 Types of Land Tenure

Land tenure system differs from one country to another and among different communities within the same country (Fabiyi, 1977). Under the Nigerian customary land tenure system, there are different kinds of right to land, including the right of individual, the right of the group and the right of the sovereign nature (Famoriyo, 1979). Arua and Okorji (1997) identified three types of land tenure in the southern part of Nigeria to include communal, individual or private and public (state) land. They noted that examples of communal land tenure, as well as some examples of private land tenure, are found in customary or indigenous land tenure systems while other examples of private land tenure and all examples of state land tenure are found in the state land nomenclature, which is analogous to the western or Euro- American land rights systems.

2.21 Communal Land Tenure

Communal land is a land that is held under an arrangement which provides for joint or communal use of the land (Federal Office Of statistics, 1980). Famoriyo (in FAO 1983) stated that under communal land tenure, land is held by corporate bodies . These lands are held as corporate aggregate identified in Nigeria in the form of socio-political groups such as rural towns, villages , patrilineal and matrilineal groups, extended and nuclear families. This agrees with Adedipe et al (1997) who noted that communal land is sometimes known as village land, clan land, community land or tribal land.

The basis of land –holding in Nigeria is the family. The family head in of the smallest social unit (the family) exercised authority in consolation with the elders and the chief held the land in trust for the benefit of all families (Arua and Okorji , 1997). Originally and traditionally , all land belong to the community and the customary land tenure system guarantees each member of the extended family some use rights to communal land (Nwosu, 1991). However, individuals who need land for personal or private uses (residential, agriculture, etc) obtain such land from the community leaders on payment of stipulated fees and/or performance of the requisite rites. Land so acquired belonged to the individual and would be inherited by his or her descendants as their private property with absolute right to use it as they wished (Arua and Okorji, 1997) . Steven and Jabara (1988) noted that this communal arrangement involves social control of land

with periodic or hereditary, reallocation of land for use by farming families.

The occurrence of communal land tenure varies from community to community and is related to farming practices, ethnic heterogeneity and stability of leadership (Arua and Okorji, 1997). They pointed out that this land can be used jointly, it can be used freely by any member of the community, or it can be divided among the families to use as they wish. A unique feature of communal land tenure system is that joint decisions are taken on which land to cultivate, which crops are to be grown, the number of seasons during which the land is to be cultivated and the length of the fallow period (Arua, 1981b). Stevens and Jabara (1988) noted that some permit large scope for independent farm decision making, while others exhibit high levels of local group control in production and consumption decisions. In some cases, crops may be produced jointly on communal land and then distributed on the basis of traditional rules implemented by the group leader. In the case of some African groups, social custom prescribes distribution of products of some plots to persons other than the producer.

In Igbo land, some cardinal principles of land tenure are that the land belongs to the community and cannot be alienated from it without its consent; within the community, the individual shall have security of tenure of the land required for his compounds, gardens and farm; and no member of the family will be without land (Adegboye, 1966). Nwosu (1991), in support of the above view, noted that since communal land belong to a clan

or kindred, even though individuals have use rights, they may not alienate the land permanently without the consent of the other members of the clan or kindred. And that, when a piece of communal land is due for cultivation, as prescribed by the practice of shifting cultivation, each adult male member of the clan or kindred has a portion allocated to him. He may cultivate it or rent it to other farmers for the cropping season; The right he exercises over his portion of communal land usually terminates at the end of the cropping season; the right does not extend to harvesting of tree crops such as oil palm. However, he pointed out that in some years, no communal land may be due for cultivation, and given the fallow system, allocation of communal land may be available only once in two years.

Chubb (1961) observed that communal land tenure no longer exists, and that other forms of tenure have begun to emerge. Migot - Adholla et al (1991) supported this line of thought when he noted that land rights have evolved towards full privatization in the presence of increasing commercialization and population pressure. But despite this individualization process, economic trees (such as oil palm, Iroko, etc) remain the property of the community (Eboh and Lemchi, 1994).

In the eastern Nigeria, however, communal land tenure still exists and it is even the dominant system in many communities in the rain forest zone where it accounts for as much as 65 percent of the total number of land holdings in the community (Arua and Okorji, 1997) It was also observed that

communal control over land under indigenous tenure systems today occurs mainly in areas characterized by relative land abundance and low intensifications; but even then, farmers typically have secure use and inheritance rights (Migot - Adholla et al, 1991).

2.2.2 Individual Land Tenure

Individual land tenure system represents the situation where an individual has full ownership and right of use of land (Arua and Okorji, 1997). In eastern Nigeria, individuals become entitled to parts of family land by virtue of birth into a family or clan or under statutory law. The family heads grant land use rights for food production to members of the family, as well as to "Strangers" who are found acceptable to the community at large. Grants to land made to the individual entitle him and his children after him to use of land (Famoriyo, 1979). Individual members of the family can also enjoy absolute rights of ownership on the basis of being the first to clear and occupy a plot of land (Arua and Okorji, 1997). Bishop and Toussaint (1958) identify the following categories of land users: Owner-occupiers, share tenants, cash tenants, mortgage owners and part owners.

There are various means of acquiring individual land in Nigeria. Arua and Okorji (1997) observed that the commonest mode of land acquisition in eastern Nigeria is through inheritance followed by leasing or purchase in some areas, pledging in others. Acquisition through gift is less common, and

even least common is acquisition through marriage, borrowing or share cropping. They also observed that land acquisition through inheritance is usually patrilineal, but in rare cases, a matrilineal system is practised and that this mode of acquisition is the major form of social security. In Nigeria, over 77 percent of personal land is acquired through inheritance. This is due to the fact that when a man dies, his sons usually inherit his lands. It is also customary for a man to allocate some of his land to his sons as they come of age to help them establish farms and build houses before they marry (Nwosu,1991).

Land ownership in Nigeria is shifting from communities to individuals. Migot - Adholla (1991) noted that agricultural intensification, which typically involves more continuous use of land, enhances the process of privatization of rights over land . It has been long observed that the earliest individualization of a broad range of transfer and exclusion rights over land in Africa arose largely in response to the cultivation of commercial crops, primarily oil palm, Cocoa, groundnuts, cotton, coffee (Hill, 1963; Jones, 1980; Moore, 1986). Recently, in Eastern Nigeria, individual ownership of land has been becoming more common, as lineages or communities no longer exercise use and management control over farm lands once allocation is made to an individual family member (Arua and Okorji, 1997).

Under individual land tenure, land is available to individual owner for agricultural purposes, but may be given out to others on rental basis,

especially for cultivation. In many rural areas in eastern Nigeria, outright purchase of such land is difficult; in a few, it is even prohibited by the lineage or clan. In spite of these restriction, the outright sale of land to individuals by either family members or even whole communities is becoming a lucrative business in some rural communities in eastern Nigeria, especially in peri-Urban areas. (Arua, 1978, 1980). This has resulted in a class of well to do landed gentry, members of which have bought out the rural poor in an effort to promote market economy which in most cases has turned out to be a "money economy illusion" (Arua 1978). Nwosu (1991) also pointed out that individual land-holding fosters inequality and emergence of a landless class. In support of this, Arua (1978;1982) viewed the individualization of tenure as the cause of creation of a class of land - owners and a mass of dispossessed and landless people, as well as the introduction and perpetuation of a lack of territorial security which was formally provided by the traditional system.

In contrary, Johnson (1982) states that individual landowners have the advantage of almost complete security of tenure, no rent exploitation, the ability to mortgage their land for capital, and the knowledge that improvements are for their own benefit.

2.2.3 State Land Tenure

When the rate of change in the socio- economic structure of society is faster than the rate of change in the customary law, the state often intervenes

with policies to facilitate change (Arua and Okorji, 1997). They defined state land as all public lands in eastern Nigeria which were subject to the control of British Crown on 30th September 1960 and held for public purposes. It also include all land thereafter acquired by or on behalf of the government of Nigeria held for such purposes. Famoriyi (1973) noted that public rights were exercised whenever land was to be used for the ultimate benefit of the public in general.

The important statutory interventions into land tenure in eastern Nigeria include the Acquisitions by Aliens law, the Registration of Titles and Acquisition of public lands Act and the land use Decree. The land use Decree of 1978 was an attempt by the Federal Military Government to try to correct some of the problems with the existing land tenure regimes in the country, to provide the country with a uniform land tenure system and to ensure equitable and secure access to land for productive purposes.(Arua and Okorji, 1997). By this legal instrument, the state replaced the traditional institutions of Obaship and Chieftaincy in their roles as keepers of communal land (Adedipe et al, 1997). They also noted that the strategy of the federal military Government was similar to that described by cleaver and Schreiber (1990) in which government in developing countries nationalize the ownership of land relying on customary law to govern the use of some land, but allocating other lands to private investors and political elite groups.

Land acquired for public purposes under customary tenure was used as sites for grazing, defence, marketing, shrines and worship; but with rapid population growth and urbanization, the large- scale acquisition of land has become rampant. Land is now expropriated to build schools, hospitals, universities, airports, recreation parks and game reserves (Nwosu, 1991). The public acquisition of land has meant increasing incursion into agricultural land. Thousands of farmers have become landless and unemployed (Famoriyo, 1981).

A case study of Famoriyo (1981) illustrated the principles of compulsory land acquisition under the existing customary tenure system. His results indicated that western Region of Nigeria had about 500 cases of compulsory land acquisition between 1952 and 1972. The regional government acquired 51% of this land, the Federal government, 49%. Building hospitals and developing farm settlements, each accounted 15% of the total number of acquisitions. Other major products for which land was acquired were agricultural estates (13%), rest houses (13%), educational institutions (11%) and roads (8%). Before the acquisition, 60% of the land was used for farming , 6% for non-farming purposes, and 34% for undisclosed purposes. (Nwosu 1991).

Iwunze (1986) also lamented that big business' acquisition of large expenses of arable land is a trend that would culminate in the dispossession of the peasant farmers. The groups that had benefited immensely according

to Iwunze were "millionaire farmers" and big business men, most of which are multinational cooperations. Nnomeh (1985) Shared Iwunze's views, likening the enactment of the land use Act to "acting out of the biblical proverb" that says, "to those who have, more shall be given, but as for those who do not have, even the little they have shall be taken away". The land considered undeveloped was often the only property owned by the rural poor; thus, the act confiscates the land of the poor and redistributes it to the wealthy. In the same line of thought, Adedipe et al (1997) also noted that granting of rights of occupancy under land Use Act has radically modified previously existing notions of ownership, control and other interests in land and this is particularly manifested in the granting of land rights to wealthy individuals, corporate bodies and cooperatives in the name of "public purposes" for development.

2.3 Factors Affecting Land Tenure System

Various factors have been identified which affect the system of land ownership as well as land use in Nigeria. Population increase is said to be putting increasing pressure on available land and creating problems such as land Fragmentation, land litigation, shortening of fallow period, and complexity in social relationships and individual rights get emphasized over collective interests (Ega, 1985).

In the face of rapidly growing populations in south-eastern Nigeria, there is a growing debate about whether indigenous land tenure system are dynamic or static in nature. Some argued that if the indigenous land tenure systems are static irrespective of changing socio-economic circumstances (especially growing population pressure), then the ambiguity of land use and transfer rights which characterise traditional tenure arrangements would constitute major obstacle to agricultural and rural development. But others opined that if the indigenous land tenure systems are dynamic, then population pressure will facilitate the transformation of land tenure from systems of communal control towards individualized rights of use and transfer (Eboh and Lemchi 1994).

Evidence of the reality of link between population pressure and indigenous land tenure has been shown in the historical records from three communities (Obowo, Ikeduru and Ohaji/Egbema/Oguta) in Imo state. According to the traditional ruler in Obowo LGA, the pattern of land tenure has changed from communal ownership to total family and /or individual ownership. As people increased in large numbers, land become very scarce and families or individuals started claiming total ownership to portions of land that were hitherto communal lands. Today, the land tenure system is predominantly individualistic. It was further observed that with increasing shortage of land, the mode of land transfer and /or acquisition move progressively towards pecuniary land exchanges (that is, land for money

transactions). Comparing the present land transactions with what contained in the past (15 to 20 years ago), there is diminishing incidence of land gifts and other forms of non-monetarised land exchanges as against the prevailing upsurge in land rentals, pledging and sale. There is gradual emergence of land markets where land could be rented, loaned, pledged or sold/bought outrightly (Eboh and Lemchi, 1994)

However, different regions of the country have varying degrees of population pressure on land, resulting in varying land use patterns (Adedipe et al, 1997). The population of the eastern Nigeria has increased rapidly over recent years; arable land per caput varies among states from as little as 0.078 ha to nearly 0.5 ha (Federal Office of Statistics, 1976). As population pressure increases, the period of fallow shortens and shifting cultivation is replaced by systems of rotation and soil improvement. These changes may also be precipitated by the introduction of commercial tree crop production, which tends to enhance rights of exclusion of individuals even though the basic control over outsiders' access to the land continues to be exercised by the community (Migot - Adholla et al,1991).In response to population pressure, agricultural commercialization and technological change, they emphasized that indigenous African tenure systems have moved along that continuum in the direction of greater individualization of land rights and that three broad categories of tenure regimes can be delineated in relation to the interplay of these forces. With rapid population growth and urbanization, the

large scale acquisition of land by the government had become rampant in Nigeria (Nwosu, 1991). He also noted that the government's land acquisition and various land consolidation programs have weakened the customary tenure system and encouraged individual land ownership.

Other evidence suggested that when commercial production and market strategies are pursued without regulatory land tenure policies, there is a tendency for land holding rights to become increasingly individualized even within a customary pattern (Uchendu, 1970). Specifically, he noted that as farmers improve their holding with new seed - fertilizer technologies, irrigation facilities, and other land improvement techniques, traditional land holding practices give way to individualized rights which limit the access of other members of the community to the land.

The performance of land tenure systems in eastern Nigeria have been recognized to be affected by some factors in which Arua and Okorji (1997) broadly classified as socio - economic, sociological and cultural factors including traditional and religious as well as institutional factors. Famoriyo (1973) noted that structural changes in the economy are likely to have some impact on existing tenure system, particularly, the advent of a monetized economy and increased aspirations for material well-being.

In eastern Nigeria, the advent of colonialism (British law), Christian missionaries and later, the Nigerian civil war hastened the productive use of land hitherto sacred lands and unpermitted foods, and also relaxed gender

restrictions on agricultural activities. Community sanctions weakened and in many places collapsed and were forgotten (Arua and Okorji, 1997).

2.4 Land Tenure in the Context of Property Rights

The system of property rights in land found in modern western economies is the product of centuries of economic, social, political and legal change (North, 1981). Property rights are an important class of institutional arrangement. In general, property as a social institution implies a system of relations between individuals. It involves rights, duties, powers, privileges forbearance, etc, of certain kinds (Feder et al,1991) Property rights are a bundle of characteristics; exclusivity, inheritability, transferability, and enforcement mechanisms (Alchian and Demsetz, 1973). Thus, property rights define the uses which are legitimately viewed as exclusive and who has these exclusive rights.

Property rights have two components; Property rights, which are bundles of entitlements defining owner's rights and duties in the use of a particular resource, and property rules, which are the rules under which those rights and duties are exercised (Bromley, 1991). The collection of entitlements plus the rules under which they are used make up a regime of property rights which embody people's expectations about their claims to resources (Bromley, 1989).

Property right regimes differ by the nature of ownership, the rights and duties of owners, the rules of use and locus of control. Feeny et al (1990) presented a simple taxonomy of four types of property rights regimes with their associated rights and duties: private property, assigns ownership to named individuals, guaranteeing to those owners control of access and the right to a bundle of socially acceptable uses. Common or communal property, is owned by an identified group of people, which has the right to exclude non owners and the duty to maintain the property through constraints placed on use. Such regimes are often implemented for common pool resources, those which are difficult to divide or bound (Ostrom, 1990). State property, is owned by citizens of a political unit who assign rule - making authority to a public agency (Black, 1968). Citizens have the right to use the resources within the established rules. Open access or none has no ownership assigned and is property open to all. The dynamics of open access are the basis for the "tragedy of the commons" (Stevenson, 1991). Under a regime of open access, claims to resources are realized at the point of capture, and owners have no specified duty to maintain the resources or constrain use (Berkes et al, 1989).

In the early stages of agricultural development, land rights may be split between individuals and communities. Individuals are assigned use rights (which can be long-term and inheritable) although the right to non-heirs is retained by the community (Feder and Feeny, 1991). They further noted that under circumstances where endowments are similar across

household and land is abundant, such arrangements provide incentives to individuals to exert effort in tilling land and preserving fertility (through secure and inheritable use rights) . In agreement with the above, Siamwalla and others (1990) noted that social unrest may emerge when individuals lose their land rights, especially to non-members of the community creating a landless class.

When technology advances, however, and endowments of labour and other productive assets different among households, the lack of transferability of property rights may adversely affect productivity (Feder and Feeny 1991). Migot - Adholla et al (1991) classified land parcels according to the breath of accompany transfer rights. The first group, "limited transfer" land includes those parcels for which the farmer has no permanent transfer or alienation rights, but may have some temporary transfer privileges. Second, the "Preferential transfer" categories describes parcels that may be permanently transferred but only within the family or lineage (that is through, gift or bequest). Third, "complete transfer" lands are those that may be alienated outside the lineage.

2.5 Land Tenure and Resource Allocation

Theories and evidence from elsewhere suggests that land tenure systems have some influence on resource allocation patterns of farmers. There is a reasonable belief that insecure title to land or lack of security of tenure will affect production and investment incentives; investment in land

will almost certainly not be efficient when title is insecure (Farugee and Carey, 1997). Besley (1996) presents three reasons why insecure land rights should affect investment incentives; fear of expropriation, credit access and collateral and lack of trading opportunities. Besley presents evidence that land rights are positively related to investment in two samples from Ghana. If the tenure system can give the efficient farmer security of occupancy and ensure that he will benefit from profits derived from his improvements to the land and from any improved method of farming, then a strong incentives will have been provided to create a competitive agrarian system (Famoriyo 1973; 1979; Ijere, 1972).

However, the customary principle of communal land tenure is said to block the flexibility in land use that is essential for modernizing agriculture since the ultimate land rights lie with the community, farmers are often too insecured and unable to adopt innovations or improve farm land. (Nwosu, 1985). Here, the presumption is that communal control discourages long-term investment and land improvements and most farmers are unlikely to develop assets they do not own. Individual farmers not having secure private rights to the land may not be able to claim fully the return on their investment. In the same line of thought, Arua and Okorji (1997) noted that when there is a feeling of insecurity of tenure, a farmer will be less likely to invest in long term improvements in the land that may be costly in terms of capital, time and labour.

It has also been noted that the customary principle of communal land tenure is considered a limitation to prospective "entrepreneurs", "innovators" and "investors" in land. It is contended that the appearance of innovators and progressive rural entrepreneurs who can use land as a commodity is blocked by non-alienability of land (Ega, 1985). More so, he argues that this principle inhibits access to land, credit and capital and does not provide adequate incentives to farmers to produce, invest and adopt new technology. Most lenders however, are unwilling to extend production or improvement credit to individuals who cannot back their borrowing with land as collateral. Arua and Okorji (1997) noted that the owner occupier can mortgage his land, the lease holder can mortgage his lease, but the share cropper and cultivator under communal tenure have no mortgageable rights in land.

Empirical work on tenure and efficiency by Carter and Olinto (1996) stated that the property rights regime under which an individual is observed to work is itself an endogenous variable, chosen by the individual who must invest real resources to secure and maintain the legally recognized property rights to the land. Following Feder and others (1988a) in their study of relationship between land rights and productivity, they hypothesized that increased individualization of rights improves farmers' ability to reap returns from investments on land. This leads to greater demand for land improvements as well as complementary inputs. They further pointed out that increased individualization of rights may also improve the credit

worthiness of the farmer and enhance his chances of receiving formal credit; and that both of these demand and supply-side mechanisms interact to increase investments in land and input use such as capital and labour, which in turn, lead to greater land productivity.

It has been noted that land transactions generally increase efficiency in resource allocation, as agents with high (potential) marginal productivity of land are induced to acquired land from agents with low marginal productivity (Feder and Feeny, 1991).

Communal land tenure system demands equal division of land resulting to small unit size of farming plots and fragmentation which results to widely dispersed plots. Efficient farm management is much more difficult with many small and distant farms. Many farmers spend much of their time and energy walking to and from their farms and livestock and household waste, which could be used to fertilize the soil are therefore used only on backyard gardens or not at all (Adedipe et al, 1997).

2.6 Land Tenure and Land Conservation Practices

Environmental degradation is a wide spread problem which is not only limited to one area of the country. It varies by region. Arua and Okorji (1997) observed that the occurrence of these environmental problems are directly related to land tenure practices. And that the problem of greatest concern are desertification (primarily in the north), soil erosion and loss of

fertility (primarily in the southeast). They also stressed that the major determinant factor of those great problems is population pressure on the land, which has rendered customary land tenure mechanisms for environmental protection ineffective. In support of this argument, Nwosu (1991) pointed out that continuous reduction of farmland per farming household leads to drastic shortening of fellow period with disastrous effects not only on production levels but also on the nature and composition of fragile tropical soils.

It is important to note that land tenure has great impact on land conservation practices of the farmer. It has been observed that under insecure tenure, a farmer is tempted to exhaust the soil in order to reduce production costs while the landlord and the country bear the final costs (Arua and Okorji, 1997). They also noted that owner occupiers of land plan ahead and maintain the land more then tenants, the purpose being to increase agricultural productivity. According to Raup (1967), Farm owners have a greater incentive to increase investment in the land, such as by digging better irrigation and drainage canals, than a tenant, who may lose control of the land next year. Owner operator of farms also induce government to invest in agricultural extension and primary education to accelerate farm development. Igbozurike (1980) supported this line of thought. He said that well designed individual freehold or long-term leasehold is essential for efficient agricultural production and resource conservation. With the

emerging increase in security of individual tenure, farmers access to formal credit is enhanced and when land rights are fully exclusive, transferable, alienable and enforceable, the appropriate incentives exist for free and active land markets that will promote longer-term investments. Land rights under these characteristics induce efficient and higher levels of labour and management as well as greater levels of land-improving, land - conserving technologies to enhance agricultural yields (Eboh and Lemchi 1994). However, when land rights are not well defined, farmers are reluctant to sink fixed (that is irreversible) investments in their land, even though doing so is socially efficient (Braverman and Guasch, 1990).

Investments on land are required for conservation purposes, but static indigenous tenure arrangements will also potentially promote land degradation (Migot-Adholla et al, 1991). There are various agricultural techniques which can help to prevent the breaking down or erosion of the soil, such as alley farming or composting but farmers are unlikely to invest in long-term development of the land when they believe that they will not benefit from such effort (Adedipe, 1991). In communal tenure arrangements, the pledgee does not make any major investment or put up any structures (Famoriyo, 1975). Rented lands are not also available for long-term investment and the development of the farm structures required for agricultural growth (Nwosu, 1991). However, Besley (1996) noted an additional possibility; that land rights may be endogenous, farmers may

invest in land over which they have insecure title in order to solidify their claim. This means that making major improvements would be tantamount to claiming ownership. However, Farugee and Carey (1997) related the importance of land rights and wealth in constraining investment. They observed that farmers find it difficult to make adequate investments, just to make claims if their income are low.

In the study carried out in sub-Saharan Africa, the effect of land right on investment in land improvements was examined based on the ability to bequeath land. In Rwanda, parcels which cannot be bequeathed ("limited transfer" parcels) are much less likely to be improved by farmers in any manner or with long-term investments. 78.7 percent of parcels which may be bequeathed were improved (by either boundary, short term or long-term) as opposed to 26.7 percent for those which could not be bequeathed. In Angola, only permanently held parcels were surveyed for investments, 61.8 percent of "complete transfer" parcels were improved (by drainage, mulching and excavation as opposed to 5.4 percent of "limited transfer" parcels. Moreover, the parcels which could be transferred freely were more likely to have been improved than those requiring prior approval (Migot - Adholla et al, 1991)

The practice of land leasing under customary land tenure is advantageous in giving of employment opportunities to landless migrant farmers and gives absentee land owners the chance to earn some extra income from rent, it generally does not lead to the best farm management

practices (Adedipe et al, 1997).

It is important that investment be interpreted broadly to include the notion of sustainability, to the extent that on going deterioration in the quality of a field can be traced to private actions (as opposed to externalities such as drainage), this should be considered as disinvestment in the field (Faruguee and carey, 1997).

2.7 Land Tenure and Agricultural Productivity

Nigeria has a land area of some 98 million ha, of which nearly three-quarters is arable (Olayide, 1980). FAO (1987) suggested that a much smaller area is available for cultivation leaving little room for agricultural expansion. And as a result, great difficulties are going to be faced in producing enough food to sustain future populations, and the impact of tenure on land use and productivity is critical.

The customary principle of communal land tenure are seen as setting limits on strategies that could be used to promote agricultural production or as warping the effects of the various strategies in use (Adegboye, 1966; Famoriyo, 1973) It is argued that this principle encourages fragmentation of holdings and land immobility which prevents progressive farmers from consolidating fragmented parcels or expanding their holding. The argument advanced by the critics of customary tenure emphasized the utility of private over communal (public) land-ownership, and the starting assumption

appears to be that only private tenure has the ability to quickly adjust to the rigid social and economic change brought about by modernizing agriculture.

There is evidence that an improvement in land rights is associated with greater efficiency (Carey and Farugee, 1997). Lin (1992) shows that the dominant source of output growth in Chinese agriculture during 1978-1984 was the change from collective - team large farms to individual household-based farming (despite the often small size of household plots). Private plots usually are highly productive and account for significant national agricultural output (Stevens and Jabara, 1988). Individualized tenure facilitates the establishment of commercial agriculture (Richards, Sturrock and Fortt, 1973). This argument lends support to an earlier finding of Van Hekken and Van Velzen (1972) that individual tenure contributed to increase farm size.

Communal tenure system under customary arrangement breeds uncertainty and insecurity of tenure (Nwosu, 1991). Ownership insecurity causes low farm productivity due to lack of investment incentives and limited access to credit (Dorner and Saliba, 1981). Tenant farmers have generally been found to be neglected for the purpose of allocating credit (Idowu, 1980). Yao (1996) treats tenure insecurity as an additional source of risk to farmers, so its impact on productivity depends on the ability of farmers to bear additional risk. Nwosu (1991) stated that the right an individual exercise over his portion of communal land usually terminates at the end of the cropping season. The right does not extend to harvesting tree crops, such

as oil palm. Because the use rights are temporary, communal lands are usually not planted with permanent crops. This argument is in line with Araka et al who quoted a tenant farmer from Ogun state: I would like to own land of my own to enable me to plant cash crops such as Cocoa, cola nuts and cashews instead of planting only one - season crops. The problem is I never know more than one year in advance whether I will have the same land (Araka et al, 1990).

The farmer who pledges the land loses access to it, but the recipient of the pledge uses the land only for farming. Pledgee cultivate only annual crops (Famoriyo, 1975). The increasing dependence on rented land does not augur well for agricultural development, rented lands are available only temporarily and are usually planted in arable crops that are harvested in one or two cropping seasons. At the end of the period, rights to the land revert to the owner. The use right on rented land does not include harvesting existing tree crops (Nwosu, 1991). He also emphasized that borrowed lands is usually not planted with permanent crops and the use rights do not include the right to harvest tree crops.

Evidence directly linking security of tittle to farm productivity is rather scant (Feder, 1987). However, a recent study of the economic value of secured ownership in the context of urban housing using hedonic price analysis offers a plausible indirect approach (Jimenez, 1984). Since the price of agricultural land is related to its productive potential over a long time

horizon, land values can be used to analyze the relations between ownership security and farm productivity and thus to provide estimates of private and social benefits of ownership security. A case study in Thailand reported in Feder and others (1988a, 1988b) compared the performance of squatters on state land, who lack titles on land they farm, with that of titled farmers. The results show that titled land rights to which had relatively little asymmetry in information bore little risk of expropriation, provided better access to credit, and had a significantly higher market value as compared with squather's land. Titled farmers had a larger volume of investment, higher likelihood of land improvements, more intensive use of variable inputs and higher output per unit of land.

2.8 Land Tenure and Gender Restrictions

There is a growing recognition of the intra-household inequality and the need to pay attention to decision making at the individual level. Specifically, women often face worse circumstance than men within the same household, and women and men may make different decisions. It is well-known that day-to-day agricultural decisions are often made by women, and that women have crucial role in land management. However, women often lack formal rights to the land they manage (Farugee and Carey, 1997).

Under customary land tenure, women in southwestern Nigeria are not considered eligible to claim land or share part of the land left by the deceased, and ownership of land by women is rejected or frowned upon

(Adegboye, 1966). According to him, when a man died, his land was divided equally among wives who had born him male children. The land did not go to the wives but rather to the sons of the wives. Women normally cannot own or inherit land under customary law, although, they retain use rights during their lifetime as long as they remain in the husband's household (Arua, 1978). To buttress this, Abu et al(1992) pointed out that women do not generally inherit land, although they help cultivate it, but have rights to use land only through their husbands or their fathers.

Women are disadvantaged in terms of restricted land ownership, and also because their farm are smaller, more widely dispersed and less secure in tenure (Saito and Weidemann, 1990). In the farm family, women do not just decide on which piece of land to cultivate. Men usually decide on the plots to be allocated to women, the size of the these plots and how long they are to be used (Mabogunje, 1989). He also noted that on some occasions, there many arise a need for joint decision between the man and his wife on a piece of land belonging to the farm family. In a study carried out in southwestern Nigeria, it was found that a large proportion of the rural women sampled had their own personal plots given to them by their husbands for production of crops for household consumption. Without clear ownership of the land, however, women are denied of access to other factors of production, notably credit for agricultural inputs, that could help them increase agricultural output (FEMCONSULT, 1990). Evidence that gender dimension of land rights is important for efficiency has been presented by

Udry. Using a detailed panel from Burkina Faso, Udry finds that plots controlled by women have significantly lower yields than those controlled by men for the same crop and year. This effect remains even after controlling for land quality, measurement error and risk management behaviour (Farugee and Carey, 1997). In a sample from Burkina Faso, Udry (1995) estimates that the effect of a female cultivator is to reduce yields by over 30 percent of the average yield. As he notes, this violates the basic equalization of marginal productivities that should govern pareto - efficient intra-household allocations. The households in his sample should reallocate labour and fertilizer from men to women. Udry finds that the differential is attributable to significantly higher use of labour and fertilizer inputs controlled by men.

Women's role as cultivators is dependent on land tenure practices in a particular community and in situations where they have no access to land via marriage, women have resorted to "leasing" arrangements (Mabogunje, 1989). But without access to land or capital, many women have no option but to sell their labour, particularly at times of highest agricultural labour requirements. The obvious result of these problems with the precarious access of women to land is that they are unable to increase their productive activities for their family's consumption and for sale (Adedipe et al, 1997). They added that while colonialism did much to erode women's access to land, the land use Act has increased the difficulties.

Chapter Three

3.0 Research Methodology

3.1 The Study Area

Enugu State is the study area. The selection of the state was purposive. The first criterion for selection is the fact that majority of the people living in rural Enugu State are farmers who depend mostly on agriculture as a primary source of livelihood. Secondly, land tenure has become a key factor militating against accelerated agricultural development particularly in Eastern Nigeria of which Enugu State is one.

Enugu State is located between the latitude 5°56'N and 7°06'N and longitude 6°53'E and 7°55'E (Ezike,1998) . The State is bounded on the north-east by Ebonyi State, on the north by Benue and Kogi State, on the South by Abia State, on the East by Cross River State and on the West by Anambra State. The State occupies an area of about 8,022.95km^2 with a population of 2,452,996 (NPC, 1992; Ezike, 1998).

Enugu State is made up of Seventeen (17) Local Government areas, delineated into three major agricultural zones namely:

(1) Awgu zone - which comprises Awgu, Aninri, Oji River, Nkanu East, Nkanu West, and Enugu South.

(2) Enugu zone - which consists of Enugu North, Enugu East, Ezeagu, Igbo-Etiti, and Udi.

(3) Nsukka zone - which consists of Nsukka, Igbo-Eze North, Igbo-Eze South, Isi-Uzo, Udenu, and Uzo-Uwani (ENADEP, 1997).

The state is predominantly rural economy with agricultural production as the major economic activity. It produces a number of arable crops which include cassava, yam, sweet potato, maize, rice, melon, okro, and groundnut as well as economic tree crops which include orange, mango, bread fruit, oil bean, African mango and cashew.

3.2 Sampling Procedure

A multi-stage random Sampling was employed. In order to have a good spread of respondents for the study, one local government in each of the three agricultural zones was randomly selected making a total of three (3) Local Government Areas. These include Aninri, Udi and Nsukka.

From each of the selected local government areas, two agricultural communities were randomly selected. They are Nenwe and Oduma from Aninri local government; Abia and Aboh from Udi local government and Obukpa and Eha-Alumonah from Nsukka local government. This gave a total of six (6) communities for the sample.

All the rural farmers in these six communities formed the sample frame. In each of the six communities selected, a list of farmers were drawn through the help of village heads or community leaders.

From the list, a sample of twenty (20) farmers were drawn from each of the six communities giving a total of one hundred and twenty (120) farmers for the study.

3.3 Data Collection Technique

Data for this study were generated from primary and secondary sources. The primary data were collected through the administration of questionnaire. The questionnaire was designed to collect information on farmers' characteristics such as age, sex, educational attainment and household size; forms or types of land tenure which include communal, family, individual and state as well as their characteristics. Data was also collected concerning the type and amount of resource allocation of farmers such as family labour, hired labour, purchased seeds, inorganic fertilizer, organic manure and agro chemicals; land conservation practices such as terracing, drainage, mounding, earth bank, contour cultivation, boundary fencing, ridging, mulching, organic manuring, crop rotation, tree planting, tree maintenance, strip cropping and tractorization and the physical and monetary value of the yield of the following crops; maize, cowpea, yam, cassava, cocoyam, sweet potato, pigeon pea, melon, tomato, okro, rice and groundnut.

Secondary data were collected mainly from journals, reports, textbooks, and other published and unpublished materials relevant to the study.

3.4 Data Analysis

Data from the study were analyzed using different tools and techniques . Both qualitative and quantitative analytical techniques were employed in order to achieve the specific objectives and hypotheses.

Specifically, objective `1' was achieved using descriptive statistics such as means, percentages and frequency distribution.

Objective '2', '3', '4' and '5' were achieved using Analysis of Variance (ANOVA) as well as statistical test of differences of means.

3.5 Data Analytical Framework

Types of Land tenure are conceptualized to embody the degree of performance or the security of land ownership - that is whether permanent, semi-permanent or temporary; the systems of land rights including right of use, rights of exclusion, types of ownership - communal, family, individual and state or public ownership.

According to Eboh (1999), the Framework for data analysis can be represented in the Chart below:

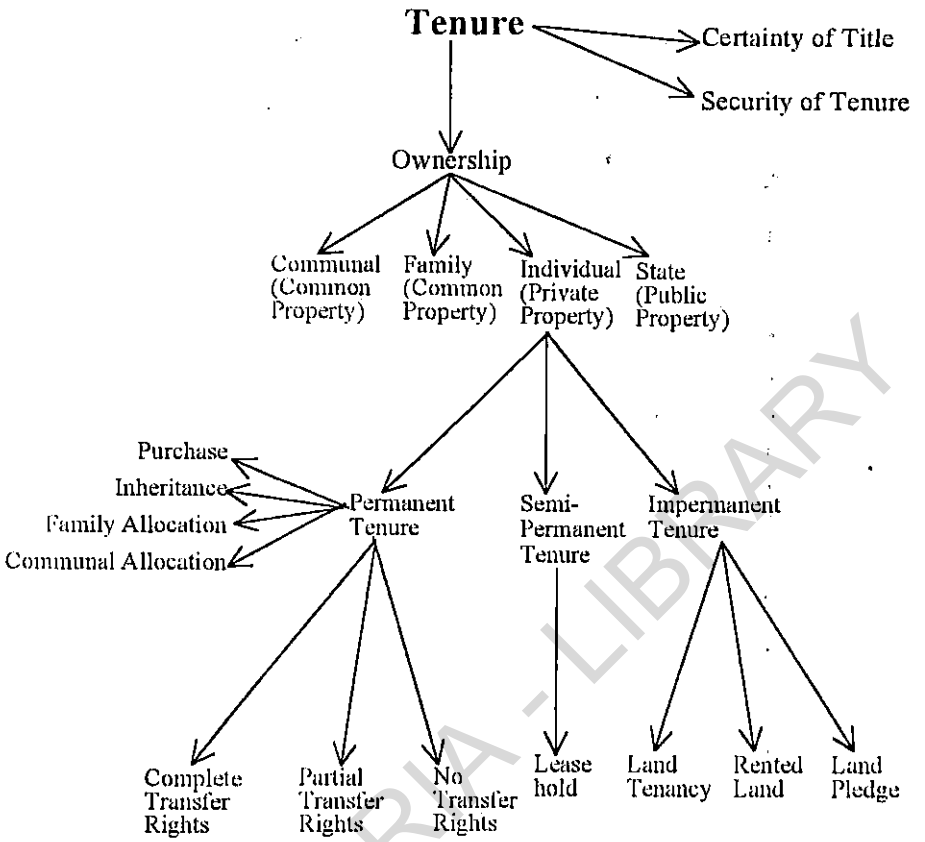

Chart 1: Conceptual analytical framework for land tenure characterization.
Source: Eboh, E.C. (1999)

3.6 Model Specifications

3.6.1 Test of Differences of Means

Test of differences-of-means method was used to determine the differences in resource allocation patterns of farmers under various land tenure regimes. The interrelation of land tenure and resource allocation patterns of farmers was achieved using multi-variate analysis involving comparing the amount of each of the various resources used by farmers which include family labour, hired labor, purchased seeds or planting

materials, inorganic fertilizer., organic manure and agrochemicals.

The statistical test of differences of means was also used to analyse the effect of land tenure on land conservation practices of farmers. The analysis involves comparing the nature and degree of land conservation investments made by farmers under different land tenure regimes. The land conservation investment of concern are soil erosion prevention and control structures such as terracing, drainage, mounding, earth bank, contour cultivation, boundary fencing, ridging, mulching, organic manuring, tractorization, tree-planting, tree maintenance and conservation cropping arrangement such as strip cropping and crop rotation.

Test of differences of means was also used to determine the effect of land tenure on agricultural productivity of farmers. This also involves comparing both the physical and monetary value of crop yield under different land tenure regimes. The arable crops studied are maize, cowpea, yam, cassava, cocoyam, sweet potato, pigeon pea, melon, tomato, okro, rice and groundnut.

The model for statistical test of differences between means is specified below:

$$Z = \frac{\bar{X}_1 - \bar{X}_2 - 0}{\sigma_{\bar{X}_1 - \bar{X}_2}} = \frac{\bar{X}_1 - \bar{X}_2}{\sigma_{\bar{X}_1 - \bar{X}_2}}$$

where

$$\sigma_{\bar{X}_1 - \bar{X}_2} = \sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}$$

Z = Standardized Variable

$\overline{X_1}$ and $\overline{X_2}$ = sample means

n_1 and n_2 = sample sizes

σ_1 and σ_2 = standard deviations

3.7 Decision Rule for the Test of Hypotheses

The result obtained was used to test the hypotheses in order to reject or accept the null hypotheses 1, 2 and 3. This was done by comparing the F* (F-calculated) with critical F-ratio. If the value of F-calculated is greater than the F-tabulated, the hypotheses 1, 2 and 3 were rejected.

T-statistic was also used for the test of hypotheses. The computed t-values (calculated t-values) were compared with the t-tabulated value. If the t-calculated value is greater than the t-tabulated value, then the hypotheses 1, 2 and 3 were rejected.

Chapter Four

4.0 Results and Discussion:

4.1 Socio-economic and Land-Use Characteristics of the Farmers and the Land Tenure Situation

Various socio-economic characteristics of farmers have been identified to affect land tenure in relation to resource allocation patterns, land conservation practices and agricultural productivity. Such socio-economic variables considered in this study include age, sex, level of education and household size.

4.1.1 Age Characteristics of Farmers

The age distribution of the farmers is presented in Table 4.1.

Table 4.1 Distribution of Farmers According to their Age

Age Range (years)	Frequency	Percentage
21 - 30	1	0.8
31 - 40	20	16.7
41 - 50	60	50.0
51 - 60	36	30.0
61 - 70	3	2.5
Total	**120**	**100**

Source Field Survey, 2000

Table 4.1 showed that the largest cohort was 41 - 50 years old (50%), followed by those aged between 51 - 60 years (30%) and 31- 40 (16.7%).

However, only 0.8% and 2.5% of the respondents fall within 21 - 30 and 61 - 70 years respectively. The average age of the respondents was 47.2.

The fact that half of the farmers are between 41 and 50 years could be because at that age, they have all married, with their own portion of family or communal land allocated to them for agricultural production. Only one respondent (0.82%) falls between 21 - 30 years and this is an indication that the younger generation are otherwise employed with white collar jobs and very few old farmers (2.5%) with the age range of 61 - 70 indicated that old people are no more capable of participating in productive activities. The result therefore indicated that majority of the respondents were within the active labour force.

4.1.2 Gender of Farmers

The gender of farmers was identified to have great impact on land tenure as well as the resource allocation patterns, land conservation practices and agricultural productivity. The data obtained showed that 96% of the respondents were male while only 4% were female. This greater number of male could be because of gender restrictions on land rights on the side of women. This agreed with Adegboye (1966) who noted that under customary land tenure, women in southwestern Nigeria are not considered eligible to claim land or share part of the land left by the deceased, and ownership of land by women is rejected or frowned upon. Udry (1995) on

his own pointed out that plots controlled by women have significantly low yields than those controlled by men for the same plot and year and that the effect of a female cultivator is to reduce yields by over 30 percent of the average yield. He finds that the differential is attributable to significantly higher labour and fertilizer inputs controlled by men.

4.1.3 Farmers' Household Size

A household unit comprises the household head, the wife or wives, children and other dependents. The household size potentially determines the amount of family labour available in traditional agriculture. According to Ogbuanya (1998), family labour is the most important source of labour in traditional agriculture that is used by most farmers in Enugu State.. The frequency distribution of farmers according to household size is presented in table 4.2.

Table 4.2 Distribution of Farmers According to Household size

Household size	Frequency	Percentage
Less than 3	5	4.2
3 - 5	17	14.17
6 - 8	38	31.67
9 - 11	52	43.33
Above 11	8	6.67
Total	**120**	**100.0**

Source: Field Survey, 2000.

The result in Table 4.2 showed that majority of the respondents (75%) had between 6 and 11 persons. The average household size was eight (8) persons with an average of one wife, five children, one dependent and the farmer. The average household size of eight persons per household would influence the resource allocation patterns, land conservation practices and agricultural productivity of farmers positively depending on their level of involvement in the productive activities.

4.1.4 Farmers' Educational Attainment

Table 4.3 showed that people's participation in farming activities decreases with the increase in the level of education. This probably might be that the educated ones have the opportunity of getting employed in other well paid sectors of the economy with their educational qualifications. As such, those with secondary and higher qualifications were found to be in other secondary occupations.

Table 4.3 Distribution of Farmers According to Level of Education Attained

Educational Attainment	Frequency	Percentage
Never attended	48	40
Primary school	65	54.17
Secondary school	4	3.33
Tertiary school	3	2.5
Total	**120**	**100**

Source: Field Survey, 2000.

The findings revealed that 54.17% of the farmers attended primary school, 3.33% attended secondary, 2.5% attended tertiary school while 40% never attended formal school at all. This low level of educational attainment by the farmers, no doubt, could influence them negatively in adopting modern and improved resources and better land conservation practices which in turn will affect productivity. Brown and Thiesenhusen (1983) also noted that education has positive relationship with agrarian reform. In Asia and Latin America, the agrarian reform beneficiaries during the past several decades were able-bodied, male heads, particularly those who have some formal education. They were offered land, inputs, cash for long term investments and realistic incentives for effort.

4.1.5 Land Fragmentation

4.1.5a Number of Total Farmlands Owned

The total number of plots of farmers has potential influence on the level of agricultural activities that will take place. The table 4.4 shows the frequency distribution of respondents according to the number of pieces of land owned.

Table 4.4 Distribution of Farmers According to the Number of Plots Owned

Number of Piece of Land	Frequency	Percentage
2 - 4	18	15
5 - 7	78	65
8 - 10	24	20
Above 10	-	-
Total	**120**	**100**

Source: Field Survey, 2000.

Table 4.4 showed that majority of farmers (65%) have a total of 5 - 7 plots of land. None of the farmers has above 10 plots of land. However, the average number of plots owned by each farmer is 6. This finding agreed with Olayide (1980) who noted that farmers in Southern Nigeria reported that they have as many as six to eight plots, scattered in many locations several distances away from each other.

4.1.5b Number of Total Farmlands Cultivated Presently

The total number of pieces of land owned by the farmers to a great extent determines the number that will be cultivated each year. Farmers may or may not cultivate all the plots they own at a time. The decision depends mainly on the method of replenishing soil fertility at a given period. Adedipe et al (1997) reported that because less land per farming household is available for production, fallow periods have been drastically shortened, with disastrous effects not only on production levels but also on the nature and

composition of fragile tropical soils.

Table 4.5 shows the frequency distribution of respondents according to the number of pieces of land farmed presently.

Table 4.5 Distribution of Farmers According to the Number of Plots Farmed Presently

Number of Piece of Land	Frequency	Percentage
Less than 2	-	-
2 - 4	84	70
5 - 7	33	27.5
8 - 10	3	2.5
Total	**120**	**100.0**

Source: Field Survey, 2000.

The findings showed that most of the respondents cultivated between 2 - 4 plots of land, that is, 70% of the farmers. The average plot cultivated by each farmers is 4. This is relatively small.

4.1.5c Ownership Status of Farmlands (Total)

To determine the type of ownership and length of permanence of land owned by the farmers, questions were asked and the information obtained is presented in Table 4.6:

Table 4.6 Distribution of Plots According to Type of Ownership and Length of Permanence of Land Owned by the Farmers

Type of Ownership	Length of Permanence	Frequency	Percentage
Communal	Impermanent	84	11.80
Family	Impermanent	170	23.88
Individual	Permanent	430	60.39
State	Impermanent	28	3.93
Total		**712**	**100**

Source: Field Survey, 2000.

From table 4.6, it was observed that four types of land ownership exist namely, Communal, Family, Individual and State. Out of the total farmland/plots owned by the farmers, 11.80% was Communal, 23.88% was family, 60.39% was individual and 3.93% was state land. This agrees with Arua and Okorji (1997) who noted that in the recent time, individual ownership of land has become common in the Eastern Nigeria, as lineages or communities no longer exercise use and management control over farmland once allocation is made to an individual family member. Very low percentage of state land also indicated that state ownership is of relatively low significance in the study area as noted by Arua and Okorji (1997).

The study also showed that only the individual plots confer permanent tenure while users of communal, family and state lands have impermanent tenure. This means that individual farmers do not have full rights over communal, family and state land since the land ultimately belongs to the

community, family and government respectively. Reallocation of rights can also occur.

4.1.5d Ownership Status of Farmlands (Cultivated Presently)

Table 4.7 showed that not all the pieces of land owned by farmers were cultivated presently.

Table 4.7 Distribution of Plots According to Types of Ownership and Length of Permanence of Land Cultivated by Farmers Presently

Type of Ownership	Length of Permanence	Frequency	Percentage
Communal	Impermanent	60	12.37
Family	Impermanent	132	27.22
Individual	Permanent	270	55.67
State	Impermanent	23	4.74
Total		**485**	**100.00**

Source: Field Survey, 2000.

The survey showed that only 68% of the total land holdings were cultivated presently. The percentage of Individual land farmed presently was 55.67 followed by family land (27.22), communal land (12.37) and state land (4.74).

4.1.5e Relative Importance of Land Ownership Categories

Table 4.8 shows the distribution of farmers according to land ownership categories.

Table 4.8 Distribution of Farmers According to Land Ownership Categories

Land Tenure	Frequency	Percentage
Communal	54	20.93
Family	74	28.68
Individual	120	46.51
State	10	3.88
Total	**258**	**100**

Note: Multiple responses were recorded

Source: Field Survey, 2000.

From table 4.8, 46.51% of the respondents indicated that they have individual land, 28.68% indicated access to family land, 20.93% have access to communal land while 3.88% indicated that they have access to state land. The most common land ownership from the above findings is individual land and the least is state land. The implication is that farmers can now allocate more and better resources and make long term investment on the land they own to boost agricultural productivity. The low number of farmers having access to state land might be due to the fact that government acquisition of land was mainly for public purposes. Famoriyo (1981) noted that land is now expropriated to build schools, hospitals, universities, airports, recreation parks and game reserves and this has meant increasing incursion into agricultural land.

4.1.6 Observed Main Features of Land under Communal Tenure

Communal land is a land that belongs to a clan or kindred. To

determine the characteristics of communal land, questions were asked through which findings were made.

4.1.6a Certainty and Security of Land Ownership

The survey result indicated that the average number of year in which communal lands under study have been used by the farmers was 3 years. How long into the future the farmers will be entitled to use or farm the land brought high level of uncertainty. This is because 52.38% of the farmers with communal land indicated that they are not certain when the land will be taken away from them. The reason they gave was that entitlement to the land depends on the time next reallocation of land will take place since land is intermittently allocated to grown-up males who are ready for family life. It was noted that 19.84% of farmers borrowed part of communal land that are entitled to the village heads. These farmers indicated that they will be entitled to the land for the average of two years in future. The remaining 27.78% of farmers are the village heads who indicated that they will use the communal lands till death. These are the people that are holding the village land in trust for the villages they are heading. Johnson (1982) noted that traditional leaders decide who has the right to use the land and this brings them social status and political control - hence they resist efforts to change the system.

Out of the 27.78% of farmers who indicated that they can use the communal land till death, none indicated that their sons will inherit the piece

of communal land they own after their death. The indication is that communal land cannot be inherited individually but communally.

It is important to note that there is restriction in the use of communal land by individuals. The findings revealed that all the farmers indicated that they are not free to use communal land the way they like. This might be due to the fact that communal land is held by "corporate bodies" according to Famoriyo (in FAO 1983).

4.1.6b Rights of Alienation and Exclusion

Transfer or selling of communal land by individual farmers is prohibited in the study area. None of the farmers indicated that he is free to sell or transfer the communal land to another person. Arua and Okorji (1997) noted that in Igbo Land, some cardinal principles of land tenure are that the land belongs to the community, and cannot be alienated from it without its consent within the community.

Land rental and pledge are relatively common practice. The finding showed that 45% of the farmers indicated that they have right to rent out their communal land but the duration is very short, normally for one cropping season. About 35% of the farmers reported that they can pledge their land. A farmer with financial need may offer a piece of communal land as a pledge in return for a cash (Nwosu, 1991). Renting and pledging of land are very common on the piece of communal lands that are controlled and managed by the village heads.

From the survey results, over 90% of farmers having communal land indicated that they have right to prevent or prohibit other persons from using the communal land under their control or usage. This might be because when a piece of land is due for cultivation, as prescribed in the practice of shifting cultivation, each adult male member of the clan or kindred has a portion allocated to him (Nwosu, 1991).

4.1.6c Ownership of Tree Resources and Permanent Investments

Land tenure has significant effect on establishment, ownership and utilization of tree resources and other permanent investments. When land rights are not well defined, farmers are reluctant to sink fixed (that is irreversible) investments in their land, even though doing so is socially efficient (Braverman and Guasch, 1990). From the survey result, 63.52% of communal land have trees growing on them while 36.48% have no trees.

Some trees were found to be planted by farmers themselves, some by their forefathers, some by other members of the community who formally used the land and others were established naturally.

Table 4.9 Distribution of Responses Regarding Who Established the Trees in Communal Land.

Persons who established the trees	Frequency	Percentage
Farmers	18	15.52
Forefathers	44	37.93
Other members of the community	15	12.93
Naturally growing	39	33.62
Total	**116**	**100**

Note: multiple responses were recorded

Source: Field Survey , 2000.

Table 4.9 showed that among the respondents who indicated that there were trees in their communal plots, 37.93% were of the opinion that their forefathers planted the trees, 33.62% showed that the trees were naturally established, 15.52% responded that they planted the trees themselves while 12.93% indicated that other members of the community who used the land before them planted the trees. The indication is that majority of the trees growing in the communal land have been established before the farmers probably obtained the right to use the communal land.

The right an individual exercises over trees in communal land may differ from one community to another. In some communities in the study area, planting of trees by individual farmers is prohibited but in others, individuals can plant trees but with certain binding conditions. The study found that 33.33% of farmers indicated that they are free to plant permanent crops or trees on their communal land while 66.67% indicated the contrary. The high number of farmers indicating that they are not free to plant trees

in their communal plots might be due to the fact that the farmers may not have the opportunity for reaping the rewards of their efforts before reallocating the land to another person. In the same line of thought Nwosu (1991) noted that the rights individuals have our communal land do not extend to harvesting of tree crops such as oil palm. This shows the reason why farmers are reluctant to plant permanent crops in communal land.

It is important to note that even in communities where trees are allowed to be planted in communal land by individual farmers, it is based on some conditions. In some communities, when farmers plant such important cash crops like oil palm, African mango, oil bean, etc, they will be allowed to harvest the crops and other products of trees like firewood for the first 3-5 years when they start bearing fruits before they are given to the community. But for crops like orange, mango, cashew, coconut, peas, etc, individual farmers who planted them have full right and freedom of harvesting the tree products even if the land has been reallocated to another person. In some other communities whatever trees that are planted in the communal land, both the trees and their products belong to the members of the community. Trees owned by the community are strictly guarded and sharing of the tree products is jointly.

Individuals also have rights of exclusion. The findings showed that 97.04% of the respondents indicated that they can exclude or prevent other members of the community from harvesting the tree products that are owned by the community. The reason might be that since the trees are owned

jointly, every eligible member of the community tend to get his own share of the tree products. Harvesting of trees individually is prohibited unless the trees are his own share of the community property.

4.1.7 Observed Main Features of Land Under Family Tenure

Famoriyo (1979) stated that the basis of land holding in Nigeria is the family. This unit comprises a man, his wife or wives and children and possibly grand children but in a wider sense, the family can be defined to include all persons with a common ancestor. Nwosu (1991) pointed out that each individual member of land holding family was entitled to a portion of land enough to feed himself and the members of his family. The observed main features of family land tenure are discussed under the following headings:

4.1.7a Certainty and Security of Land Ownership

The length of use of family land depends on the number of male children growing up which in turn determines the frequency of land reallocation. The findings showed that the farmers have used their family land for the average period of 12 years. This is relatively long to influence better production. How long they will be entitled to the land is not known. The respondents indicated that they will be using the land until the next reallocation of land takes place, that is, when the younger generation starts to marry.

The survey result showed that 38.30% of the respondents occupying family land said that they can use or farm the family land till death while 61.70% responded negatively. Findings also showed that 22.22% of farmers indicated that their sons can inherit their family land while 77.78% indicated that the family land cannot be inherited by their children but will revert to the family pool. The part of family land that is always inherited by children are residential plots.

From the findings, none of the respondents indicated that he is free to use family/ kinship land the way he likes. According to Adedipe et al (1997), the right to manage family land resided in the family as a corporate group and not in individual members.

4.1.7b Rights of Alienation and Exclusion

Findings from the survey showed that 100% of the respondents indicated that they are not free to sell or transfer the family land under their control to another person. Supporting the above statement, Nwosu (1991) noted that neither the head nor a member of the family can alienate or sell his or her own private property from family holding. However, the sale of family land can be done by the head of the family with the consent of all principal members of the family.

There is an indication that family land can be pledged and rented freely. The study showed that 94% and 82% of farmers that occupy family land were free to pledge and rent their family land respectively. This might

be because family ownership of land and use rights are closely related to individual land ownership since the family members come from one common ancestor.

4.1.7c Ownership of Tree Resources and Permanent Investments

The rate of tree growing in family land is relatively high. The results from the survey showed that 76.52% of the family lands have trees growing on them. Table 4.10 shows the distribution of farmers according to who is involved in tree establishment in family land.

Table 4.10 Distribution of Responses Regarding Who Established the Trees on Family Land

Persons who established the trees	Frequency	Percentage
Farmers themselves	40	24.39
Forefathers	59	35.98
Other members of the family	20	12.20
Naturally growing	45	27.44
Total	**164**	**100**

Note: Multiple responses were recorded.

Source: Field Survey, 2000.

The findings indicated that 24.39% of the farmers planted the trees themselves, 35.98% indicated that their forefathers planted them, 12.20% showed that other members of the family who used the land before them planted the trees while 27.44% indicated that the trees are naturally growing. Relatively large number of farmers planted trees by themselves

showing that family land has higher degree of security and assurance of reaping the returns of the trees than communal land.

Trees in the family land are mainly owned by the family especially the trees that are associated with high economic value such as oilpalm, bread fruits, African mango, etc. The findings showed that 79.73% of farmers indicated that the family owns the trees in the family land while 56% indicated that some of the trees they planted by themselves belong to them. Examples of such trees include orange, pawpaw, mango, cashew, peas, etc. This shows that there is relatively high incentives for the trees invested by the farmers.

Tree is one of the resources that is owned collectively by the family members. Tree products as well as firewood are often time shared among the family members. It is observed that 79.73% of the farmers indicated that they are not free to harvest firewood and other tree products in their family land without the approval from other members of the family while 56% indicated that they are free to harvest the products of trees as well as firewood from the trees they planted. But those trees of high economic value such as oil palm, African mango, etc are shared irrespective of the person who established the trees.

The survey results also showed that 87.27% of farmers indicated that they have right to exclude or prevent other members of the family from harvesting the tree products in their family plots. This right is applicable to

trees of high economic value which belong to the family. This might be due to the fact that most valuable trees in the family land are jointly owned and shared by the family members. However, 29.73% indicated that they do not have right to prevent or exclude other members of the family from harvesting the tree products in their family plots. This might also be due to the fact that some trees that are naturally growing seemed to have no ownership. This is termed open access. Berkes et al (1989) pointed out that under a regime of open access, claims to resources are realised at the point of capture, and owners have no specified duty to maintain the resources or constrain use.

4.1.8 Observed Main Features of Land Under Individual Tenure

Individual land can be acquired through different modes. The findings are presented in table 4.11.

Table 4.11 Distribution of Plots According to Mode of Land Acquisition Under Individual Tenure

Mode of Acquisition	Frequency	Percentage
Purchase	38	8.84
Inheritance	270	62.79
Family allocation	88	20.46
Communal allocation	22	5.12
Gift	12	2.79
Total	**430**	**100.00**

Source: Field Survey, 2000.

From table 4.11, 62.79% of the individual land were acquired through inheritance, 20.46% were acquired through family allocation, 8.84% through

purchase, 5.12% through communal allocation and 2.79% were acquired through gift. The most common mode of land acquisition from the data above is through inheritance. This lends support to Nwosu (1991) who noted that over 77% of personal land in Nigeria is acquired through inheritance while land sales and purchases as well as land transmittal by gift were minimal in the study area.

4.1.8a Certainty and Security of Land Ownership

The survey result showed that the average number of years the individual land in the study area have been used is 26 years. This shows the permanent nature of individual land.

Individuals have permanent right over their individual land. This is revealed in the findings in which all the farmers indicated that they can use their personal land till perpetuity. All the respondents also indicated that their sons can inherit the land and that they can use it in whatever manner they like. Arua and Okorji (1997) in support of this, pointed out that individuals who need land for personal uses obtained such land from the community leaders on payment of stipulated fees and/or performance of the requisite rites; land so acquired belong to the individual and would be inherited by his or her descendants as their private property with absolute rights to use it as they wish.

4.1.8b Rights of Alienation and Exclusion

Individuals have full rights over their individual plots. The findings showed that all the farmers occupying individual land indicated that they are free to sell or transfer their land to another person. All the respondents also indicated that they have full right to pledge , lend or rent out their private lands. In line with the above findings, Johnson (1982) noted that land owners have the advantage of almost complete freedom over their land and also the ability to mortgage their land for capital.

Right of exclusion is also exercised under individual land tenure. The survey result showed that all the respondents indicated that they have the right to exclude or prevent anyone else from using, farming or transferring their private lands. This implies that the farmers have full rights and responsibility towards the use, management and future prospects of individual land.

4.1.8c Ownership of Tree Resources and Permanent Investments

Individual land ownership encourages tree planting in the study area. This is because, the survey result showed that 96.67% of individual land have trees growing on them.

Table 4.12 Distribution of Responses Regarding who Established the Trees on Individually owned Land

Persons who Established the Trees	Frequency	Percentage
Farmers	110	61.45
Forefathers	24	13.41
Farmer's sons	30	16.76
Naturally growing	15	8.38
Total	**179**	**100**

Noted: Multiple responses were recorded

Source: Field Survey, 2000.

Table 4.12 showed that 61.45% of the farmers indicated that they planted the trees themselves even though all the farmers indicated that they have the freedom to plant trees and erect permanent structures. Only few farmers indicated that the trees were planted by their forefathers (13.41%), their sons (16.76%) and nature (8.38%).

On the basis of ownership of trees, all the farmers having trees in their individual plots indicated that the trees are theirs. The same number of farmers also indicated that they are free to harvest the tree products any time and any how they like; they are free to cut down or destroy the trees any time and any how they like and also free to sell or transfer the trees to anyone else. This is in line with Besley (1996) who presented evidence that land rights are positively related to investment in two samples from Ghana. This shows that farmers are likely to invest on the land that has complete security so as to benefit from their investment.

4.1.9 Observed Main Features of Land Under State/Public tenure

State land is of relatively low prevalence in the rural communities studied. The main features of state land will be discussed under the following headings.

4.1.9a Certainty and Security of Land Ownership

State lands have high degree of uncertainty and insecurity. The survey results showed that farmers occupying state land have used it for the average of 2 years. How long in to the future the land will be used is highly uncertain. All the respondents indicated that the length of future use of land is unknown since government may come in unexpectedly and expropriate the land from them.

The study showed that state lands can neither be used till perpetuity nor can the sons of farmers inherit it. All the farmers also reported that they cannot use the state land in whatever manner they like. This might be due to the fact that state land is the land that has been compulsorily acquired by the government for public purposes.

4.1.9b Rights of Alienation and Exclusion

Individuals do not have right to sell or transfer state land to another person or rent it out. This is shown by 100% response of farmers to this effect. Adedipe (1997) pointed out in line with the above findings that compensation is payable to former occupiers of now public lands particularly

rural land within the local Government Areas; transfer of agricultural (non-urban) lands by a holder or occupier is prohibited.

The survey results showed that all the farmers having access to state land in the study area indicated that they can prohibit or prevent any other persons from using the state land under their usage. This shows that they have right of exclusion over their piece of state land.

4.1.9c Ownership of Trees Resources and permanent Investments

Findings showed that 52.17% of state land have trees growing on them while 47.83% have no trees.

Table 4.13 Distribution of Responses Regarding Who Established the Trees in State Land

Persons who Established the Trees	Frequency	Percentage
Farmers	-	-
Government	-	-
Formal Owners of Land	8	66.67
Naturally growing	4	33.33
Total	**12**	**100**

Note: Multiple responses were recorded.

Source: Field Survey, 2000.

From table 4.13, it is observed that 66.67% of the respondents indicated that the trees in their state land were planted by the formal owners of the land while 33.33% showed that the trees were established naturally. Neither the government nor the farmers planted the trees in the state land. This indicates that farmers hardly plant trees in a land that is not secured like

state land which can be taken over by the government at any time. Government on its own might not have been ready to develop the land either for agriculture or other public purposes.

All the farmers having access to state land indicated that the ownership of the trees in state land belong to the government or state. Individual users of state land might have use rights for the land and tree resources temporarily. Findings showed that 60% of the farmers indicated that they are free to harvest firewood. and other products from the trees. The same 60% showed that they can exclude other members of the state from harvesting the tree products. So long as the use of the land is under their control at that time, other people have no right to come and harvest the trees under their care.

4.1.10 Physical Characteristics of the farmlands

Certain physical characteristics of land might influence the resource allocation patterns, land conservation practices and agricultural productivity. The physical characteristics assessed by farmers in the study area are size of plots, proximity of plots, topographical location and land quality.

Table 4.14 Distribution of Land based on their physical characteristics as Assessed by the Farmers

Land Tenure	Size of Plot		Proximity of plot				Topographical location				Land Quality of Plot			
	(Acre)		Near		Distant		Flat		Slope		Good		Poor	
	x	$\bar{x}$	No	%	No	%	No	%	No	%	No	%	No	%
Communal	81	1.35	22	36.67	38	63.33	41	68.33	19	31.67	45	75	15	25
Family	186.12	1.41	75	56.82	57	43.18	93	70.45	39	29.55	94	71.21	38	28.71
Individual	548.1	2.03	121	44.81	149	55.19	191	70.74	79	29.26	207	76.67	63	23.33
State	34.96	1.52	4	17.39	19	82.61	20	86.96	3	13.04	17	73.91	6	26.09

Source: Field Survey, 2000

As shown in Table 4.14, the average sizes of different land tenure categories that were cultivated by the farmers presently include 1.35 acre (0.54 ha) for communal land; 1.41 acre (0.56 ha) for family land; 2.03 acres (0.81 ha) for individual land; and 1.52 (0.61 ha) for state land. In general term the average size of each plot cultivated by the farmers was 1.75 acre which is equivalent to 0.68 ha. This size is relatively small. This agrees with Olayide (1980) who noted that it is particularly common for farmers to report that they have as many as six to eight plots scattered in as many locations several kilometres away from each other and the total size of holdings however, may not be more than 2 or 3 ha.

The findings also indicated that the individual plots are greater in size than other land tenure categories. This however, lends support to an earlier finding of Van Hekken and Van Velzen (1972) who noted that individual tenure contributed to increased farm size.

For the proximity of plots, the findings showed that 36.67% of communal land are near while 63.33% are distant farms. In family land, 56.82% are near while 43.18% are distant from home. Individual land has 44.81% of plot near home and 55.19% distant from home. In state land, only 17.39% are near while 82.61% are distant plots. These findings indicated that most of the plots cultivated by farmers are distant farmland. This however, has some implication on resource allocation patterns, land conservation practices and the productivity of the farm. Generally, plots that

are near the household homes are better managed than distant farms.

The survey results also revealed that majority of the plots cultivated are flat lands. This is shown in the table above where 68.33% of communal land, 70.45% of family land, 70.74% of individual land and 86.96% of state land are flat lands. The implication is that farmers might not encounter high rate of erosion problems.

Land quality of plots is an important factor that determines the extent of resource allocation, land conservation and the subsequent agricultural productivity. Findings showed that over 71% of the different land tenure categories have good quality. The indication is that better productivity might be obtained.

4.2.0 Results And Discussion: land tenure influences on farm resource allocation

4.2.1 Resource Allocation and Input Use Across Land Tenure Categories

The type and nature of agricultural activities that prevail in a place determines the resources that will be employed. The resources used on farm plots in the study area include family labour, hired labour, purchased seeds, chemical fertilizers, organic manure, agro-chemicals and tree seedlings

The findings showed that 78.26% of the state land, 55.93% of individual land, 36.36% of family land and 30% of communal land used fertilizers. This low application of chemical fertilizer generally might be that in the recent time, there is limited supply of fertilizers followed by its subsequent high cost. The implication is that plots that are highly impermanent like state lands will be applied with more fertilizers so as to reap the returns of the money invested in the land as soon as possible since fertilizers release plant nutrient very fast.

Table 4.15 above also showed that great number of individual plots used organic manure (95.19%) followed by family land (81.82%), communal land (73.33%) and the state land (47.83%). The indication is that soil fertility investments are likely to be used in plots that have high degree of permanence such as individual and family lands.

Agro-chemicals are sparsely used in the study area. Only 8.89% of individual land, 3.79% of family land, 3.32% of communal land and 8.70% of state land were applied with agro-chemicals. This agrees with Olayemi (1980) who reported that no where in Nigeria were up to 20% of food producing farmers found to be using agro-chemicals. The low adoption level of agro-chemicals suggests that these modern inputs were perhaps very costly for the poor farmers to purchase and therefore not available to them. This is line with CIBA GEIGY (1995) who highlighted that the increasing cost of agro chemicals was the major problem confronting small farmers to the use

of agro chemicals. He also pointed out that the complex nature in terms of use and storage precautions accompanying agro-chemicals could have also discouraged farmers from using them.

The survey results also showed that the average number of crops planted in each plots of individual land was 4.09, family land was 4.08, communal land was 4.02 and state land was 3.96. This shows that each plot of land in the study area has an average of four crops growing on it, indicating that mixed cropping is prevalent in the study area.

Different tree species are also growing on the plots under study . The findings showed that the average number of tree species growing on individual land was 3.95, that of family land was 2.67, communal land was 1.78 followed by state land, 1.34. This indicates that individual lands have greater number of tree species growing on them.

4.2.2 Cropping Patterns Across Different Land Tenure Niches

Table 4.16 showed the cropping patterns across different land tenure niches. It is only the annual crop species of high potentials in the study area that were considered.

Table 4.16: Distribution of Farm Plots According to Cropping Patterns Across Different Land Tenure Niches

Land Tenure		Maize	Cow-pea	Yam	Cassava	Coco-am	Sweet Potato	Pigeon Pea	Melon	Tomato	Okro	Rice	Groundnut
Communal	No	49	8	6	36	11	9	5	17	0	20	2	11
	%	81.67	13.33	10	60	18.33	15	8.33	28.33	0	33.33	3.33	18.33
Family	No	110	18	35	68	39	15	7	35	2	68	4	10
	%	83.33	13.64	26.52	51.52	29.55	11.36	5.30	26.52	1.52	51.52	3.03	7.58
Individual	No	217	53	92	154	71	12	15	63	15	135	15	32
	%	80.37	19.63	34.07	57.04	26.32	4.44	5.56	23.33	5.56	50	5.56	11.85
State	No	15	8	2	17	2	4	2	9	1	7	0	3
	%	65.22	34.78	8.70	73.91	8.704	17.39	8.70	39.13	4.35	30.45	0	13.04

Source: Field Survey, 2000 .

The data in table 4.16 showed that maize and cassava are the crops that were mostly planted under the different land tenure categories. Specifically, maize was planted in 83.33% of family land, 81.67% of communal land, 80.37% of Individual land and 65.22% of state land while cassava was planted in 73.91% of state land, 60% of communal land, 57.04% of individual land and 51.52% of family land. This finding agrees with Achike (1998) who noted that maize is the most popular grain crop in southeastern Nigeria, and it occupies a strategic position in the farming system and in the diet of the people. Nweke (1996) on his own contribution noted that cassava is a basic component of the farming system in many areas of Africa and as such provides a stable base to the food production system. The reasons he gave to support the above statement include: its adaptability to marginal soils, and erratic rainfall conditions, its high productivity per unit area of land and labour, the certainty of obtaining some yield even under the most adverse conditions and the possibility of maintaining continuity of supply throughout the year. The above reasons might have contributed to high percentage of state land (73.91%) and communal land (60%) being planted with cassava coupled with low resources and investment made on them.

Yam and cocoyam are also food crops that have gained recognition as major staples in the study area. Yam was planted in 35.70% of individual land, 25% of family land 10% of communal land and 8.70% of state land. Cocoyam on the other hand was planted in 30.37% of individual land,

27.27% of family land; 20% of communal land and 13.04% of state land. Yam and cocoyam are mainly planted in well managed land with high investment because they are heavy feeders and also highly valued in the study area. This might be the reason why these crops were planted more in individual and family land which tend to have high degree of maintenance.

Sweet potato which is also a root crop was not widely planted in the study area. However, sweet potato pigeon pea, melon and groundnut were mainly grown on the state land and communal land. This is shown in the table above where they occupied 17.39%, 8.70%, 39.13% and 13.04%, of state land respectively while in communal land, they occupied 15%, 8.33%, 28.33% and 18.33% respectively. Cowpea was planted in state land (34.78%) more than any other land tenure category.

Okro was widely grown in all the land tenure categories, though mainly as intercrops. The data showed that 33.33% of communal land,51.52% of family land, 50% of individual land and 30.43% of state land were planted with okro. Tomato and rice were sparsely grown. The percentage of plots where these crops were grown was very low. Tomato was not even planted in communal land and rice was also not planted in state land.

These cropping patterns above might have been influenced by other factors such as farmers financial position, type/quality of land, and labour availability.

4.2.3 Dominant Crops in the Different Land Tenure Niches

The distribution of dominant crops assesses the farmers' preference in crop distribution system. Table 4.17 showed that the most dominant crop in communal land was cassava (40%) followed by cocoyam (18.33%), maize (16.67%), groundnut (10%), sweet potato (8.33%) and yam (6.67%).

In the family plots, cocoyam was the most dominant crop planted. This is because 28.03% of family land were planted with cocoyam as the major crop followed by cassava (25.76%), yam (25%), maize (9.09%), pigeon pea and rice (3.03%) each, groundnut and sweet potato (2.27%) each and tomato (1.52%).

The survey also showed that among the individual plots planted, Yam is the most dominant crop (34.07%) followed by cocoyam (26.30%), cassava (15.19%), groundnut (7.41%), maize (6.67%), rice (5.56%), sweet potato (2.59%) and tomato (2.22%). In the state land however, cassava was the most dominant crop (52.17%). Following this were sweet potato (17.39%), Yam, Cocoyam and groundnut (8.70% each) and tomato (4.34%).

From the survey, it was observed that among the four land tenure categories, cassava, cocoyam and yam were the most dominant crops. This is in agreement with Ofori and Hahn (1994) who noted that with the failure of early emphasis on cereals to bridge the gap of food production, serious attention is currently being given to some traditional starchy staples such as

yam, cassava, cocoyam and sweet potato, which have been recognized as the greater source of dietary energy for developing countries.

It is important to note that these dominant crops are the crops the farmers have mostly in mind during planting. There are other crops that were not planted as dominant crops in the study area. Examples are cowpea, melon, okro, and partially pigeon pea. These crops were planted as intercrops.

Table 4.17 Distribution of Dominant Crops in the Different Land Tenure Categories

Land Tenure	Maize		Cowpea		Yam		Cassava		Cocoyam		Sweet Potato		Pigeon Pea		melon		Tomato		Okro		Rice		Groundnut	
	No	%	NO	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Communal	10	16.67	-	-	4	6.67	24	40	11	18.33	5	8.33	-	-	-	-	-		-	-	-	-	6	10
Family	12	9.09	-	-	33	25	34	25.76	37	28.03	3	2.27	4	3.03	-	-	2	1.52	-	-	4	3.03	3	2.27
Individual	18	6.67	-	-	92	34.07	41	15.19	71	26.30	7	2.59	-	-	-	-	6	2.22	-	-	15	5.56	20	7.41
State	-	-	-	-	2	8.70	12	52.17	2	8.70	4	17.39	-	-	-	-	1	4.34	-	-	-	-	28	.70

Source: Field Survey, 2000.

4.2.4 Analysis of Variance of Resource Allocation Patterns Across the Different Land Tenure Categories

The analysis of variance technique of hypothesis testing compares the variation about the mean within a class with the variation between classes.

The results of ANOVA tests of resource allocation patterns under different land tenure were obtained both in physical and monetary units.

4.2.4a Analysis of Variance of Resource Allocation Patterns Across the Different Land Tenure (Physical Units)

Table 4.18 shows the results of analysis of variance of resource allocation patterns across the different land tenure categories in physical units.

Table 4.18: Results of ANOVA Test of Resource Allocation Patterns under Different Land Tenure in Physical Units

Variable	F-Cal	Level of Significance	Statistical Judgement
Amount of family labour (manday)	5.012	0.002	significant
Amount of hired labour (manday)	4.685	0.003	Significant
Amount of Inorganic fertilizer (kg)	3.326	0.020	Significant
Amount of Organic manure (kg)	17.761	0.000	Significant
Amount of agro-chemicals (Litre)	2.108	0.121	Not Significant

Source: Field Survey, 2000.

From table 4.18, it is shown that at 5 percent level of significance, the observed F* (empirical) variance ratios for the amount of family labour, hired labour, inorganic fertilizer and organic manure are 5.012, 4.685, 3.326 and 17.761 respectively. These values are greater than f-tabulated (2.37) indicating that there are significant differences in the amount of these resources allocated under different land tenure regimes. These differences are most significant in the amount of organic manure applied considering its high F-ratio (17.761) and its level of significance (0.000).

For agro-chemicals, there is no significant difference in the amount applied under different land tenure categories. This is because the F-calculated (2.108) is less than the F-tabulated (2.37). This insignificant difference might be due to the fact that the application of agro-chemicals at times depends on the degree of pest and disease infestation on a particular piece of farm land.

Based on the following significant variables-family labour, hired labour, inorganic fertilizer and organic manure, the hypothesis that land tenure has no significant impact on the resource allocation patterns of farmers was rejected. But for agro chemicals which did not differ significantly among the different land tenure groups, the null hypothesis was accepted.

4.2.4b Analysis of Variance of Resource Allocation Patterns Across the Different Land Tenure (monetary units)

Table 4.19 shows the results of analysis of variance of resource allocation patterns under different land tenure categories in monetary units.

Table 4.19: Results of ANOVA Tests of Resource Allocation Patterns under Different Land Tenure in Monetized Term.

Variable	F-Cal	Level of significant	Statistical Judgement
Amount of family labour (₦)	4.277	0.005	Significant
Amount of Hired labour (₦)	3.823	0.010	Significant
Among of purchased seeds (₦)	16.853	0.000	Significant
amount of in-organic fertilizer (₦)	2.999	0.031	significant
Amount of organic manure (₦)	16.709	0.000	Significant
Amount of agro-chemicals (₦)	1.556	0.221	Not Significant

Source: Field Survey, 2000.

The data presented in table 4.19 showed that there is significant differences in the monetary value of most of the resources allocated by farmers under different land tenure regimes at 5 percent probability level. This is because the values of F- calculated of family labour (4.277), hired labour (3.823), purchased seeds (16.853), inorganic fertilizer (2.999) and organic manure (16.709) are greater than the F-tabulated which is 2.21. It is only the amount of agro-chemicals that does not show any significant difference in its monetary vaiue. Its F-calculated value (1.556) is less than the F-tabulated value (2.21).

Since the monetary value of these resources (family labour, hired labour, purchased seeds, inorganic fertilizer and organic manure) showed significant differences among the different land tenure regimes, the hypothesis that land tenure has no significant impact on the resource allocation patterns of farmers was rejected. Thus, the alternative hypothesis was accepted. But for the amount of agro chemicals, which did not show any significant difference, the null hypothesis was accepted.

4.2.5. Comparative Resource Allocation Across Land Tenure Niches: Test of Differences Between Means

In comparing the resource allocation patterns across the different land tenure regimes using test of differences between means, the results were obtained both in physical and monetary units.

4.2.5a Test of Differences Between Means of Resource Allocation Patterns: Communal Vis-a-vis Family Tenure (Physical Units)

Table 4.20 shows the t-test of the resource allocation patterns in physical units between communal and family land tenure categories.

Table 4.20 Results of Test of Difference Between means of Resource Allocation Patterns in Physical Unit Between Communal and Family Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Amount of Family labour	Communal Family	54.4286 57.0853	-0.627	0.532	Not significant
Amount of Hired labour	Communal Family	44.0652 43.4337	0.105	0.917	Not significant
Amount of Inorganic fertilizer	Communal Family	115.3333 103.3333	0.940	0.351	Not significant
Amount of Organic manure	Communal Family	676.2045 819.5741	-2.358	0.020	Significant
Amount of Agro-chemicals	Communal Family	1.4000 1.9300	1.783	0.158	Not significant

Source: Field Survey, 2000.

The data in Table 4.20 showed that at 5 percent probability level, there is no significant difference in most of the resources allocated under communal and family land. The values of t-calculated of the amount of family labour (0.627), hired labour (0.105), inorganic fertilizer (0.940) and agro-chemicals (1.783) are less than the critical t-value (1.96). This indicates that the differences in the amount of these resources allocated are not statistically significant between the two land tenure categories . It is only the amount of organic manure with absolute t-value, -2.358 that differed significantly between the two land tenure groups. This is because the absolute t-value (2.358) is greater than t-tabulated value (1.96).

4.2.5b Test of Differences Between Means of Resource Allocation Patterns: Communal Vis-a-vis Family Tenure (Money Units)

The data in Table 4.21 shows the results of test of differences between means of resource allocation patterns under communal and family land tenure categories in monetary value.

Table 4.21: Results of Test of Differences Between Means of Resource Allocation Patterns in Monetary Terms Between Communal and Family Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Amount of Family labour	Communal Family	8260.7143 8567.0543	-0.486	0.628	Not significant
Amount of Hired labour	Communal Family	6570.6522 6513.8614	0.099	0.921	Not significant
Amount of Purchased Seeds	Communal Family	6341.6500 8684.9167	2.739	0.007	Significant
Amount of Inorganic fertilizer	Communal Family	3460.0000 3135.0000	0.778	0.440	Not Significant
Amount of Organic manure	Communal Family	1014.4545 1220.2222	-2.252	0.026	Significant
Amount of Agro-chemicals	Communal Family	1.375.0000 2040.0000	-1902	0.117	Not Significant

Source: Field Survey, 20000.

Table 4.21 showed that the values of the absolute t-statistics of most of the resource allocation variables are not statistically significant at 5 percent probability level. This is because the absolute t-values of the amount of family labour (-0.486), hired labour (0.099), inorganic fertilizer (0.778), and agro chemicals (-1.906) are less than the t-tabulated (1.96). This indicates that the differences in the allocation of these resources in monetary

terms under communal and family land tenure are not statistically significant. The variables that differed significantly between the two land tenure were the amount of purchased seeds and organic manure. The values of their t-calculated (-2.739 and -2.250) and their level of significance (0.007 and 0.026) respectively indicated that the amount of money used for these resources differ significantly between communal and family land tenure. Specifically, the amount of purchased seeds and organic manure in monetary terms used under family land was greater than the amount used under communal land.

Based on the above significant variables (amount of purchased seeds and organic manure), the hypothesis that land tenure has no significant impact on the resource allocation patterns of farmers was rejected. But for the other resource allocation variables such as the amount of family labour, hired labour, inorganic fertilizer, and agro-chemicals, the null hypothesis was accepted.

4.2.5c Test of Differences Between Means of Resource Allocation Patterns: Communal vis-a-vis Individual Tenure (Physical Units)

The data presented in table 4.22 shows the results of test of differences between means of resource allocation patterns in physical units between communal and individual land tenure categories.

Table 4.22: Results of Test of Differences Between Means of Resource Allocation Patterns in Physical Units Between Communal and Individual Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Amount of Family labour	Communal Individual	54.4286 65.6742	-2.743	0.007	Significant
Amount of Hired labour	Communal Individual	44.0652 51.0452	-1.841	0.067	Not significant
Amount of Inorganic Fertilizers	Communal Individual	115.3333 128.5232	-0.930	0.363	Not Significant
Amount of Organic manure	Communal Individual	676.2054 1123.3424	-7.459	0.000	Significant
Amount of Agro-chemicals	Communal Individual	1.4000 2.9917	-4.247	0.002	Significant

Source: Field Survey, 2000.

The results in Table 4.22 showed that there are significant differences in the physical value of the following resources, namely, family labour, organic manure and agro chemicals, which are allocated under communal and individual land tenure. This is shown in the values of their t-calculated (-2.743, -7.459 and -4.247 respectively) which are greater than the t-tabulated value (1.96). However, based on their mean values, the allocation of these resources was greater in individual land than communal land.

On the other hand, the amount of hired labour and chemical fertilizer do not differ significantly between the two land tenure categories. This is because their t-calculated value (1.841 and 0.930 respectively) are less than the t-tabulated value.

4.2.5d Test of Differences Between Means of Resource Allocation Patterns: Communal Vis-a-vis Individual Tenure (Money units)

Table 4.23 shows the results of test of differences between means of resource allocation patterns in monetary value between communal and individual land tenure categories.

Table 4:23: Results of Test of Differences Between Means of Resource Allocation Patterns in Monetary Value Between Communal and Individual Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Amount of Family labour	Communal Individual	8260.7143 9760.8614	-2.492	0.015	Significant
Amount of Hired labour	Communal Individual	6570.6522 7523.7557	-1.638	0.103	Not significant
Amount of Purchased Seeds	Communal Individual	6341.6500 12060.77	-6.747	0.000	Significant
Amount of Inorganic Fertilizer	Communal Individual	3460.0000 3855.6954	-0.930	0.363	Not Significant
Amount of Organic manure	Communal Individual	1014.4545 1674.4397	-7.319	0.000	Significant
Amount of Agro-chemicals	Communal Individual	1375.0000 2602.7917	-4.503	0.000	Significant

Source: Field Survey, 2000.

The test of differences between means of resource allocation in table 4.23 showed that the amount of hired labour and inorganic fertilizer in their monetary value did not differ significantly between the communal and individual land tenure categories . This is shown in their absolute t-values (-1.638 and -0.930 respectively) which are less than 1.96 which is the t-tabulated value.

However, other resources such as family labour, purchased seeds, organic manure and agro chemicals showed significant differences in their allocation in terms of monetary value. Their absolute t-values which include -2.492, -6.747, -7.319 and -4.503 respectively are greater than the t-tabulated value (1.96) indicating that the differences in the amount of money used for their allocation are statistically significant. Specifically, the amount of money used for family labour, purchased seeds, organic manure and agro-chemicals was greater in individual land than communal land tenure.

Based on these resources (amount of family labour, purchased seeds, organic manure and agro-chemicals) in which their differences are statistically significant, the hypothesis that land tenure has no significant impact on the resource allocation patterns of farmers was rejected, thus, the alternative hypothesis was accepted. But for the other resources such as the amount of hired labour and inorganic fertilizer in which their differences are not statistically significant, the null hypothesis was accepted.

4.2.5e Test of Differences Between Means of Resource Allocation Patterns: Communal Vis-a-vis State Tenure (Physical Units)

Table 4.24 shows the results of test of differences between means of resource allocation patterns in physical units between communal and state land tenure categories.

Table 4:24 Results of Test of Differences Between Means of Resource Allocation Patterns in Physical Units Between Communal and State Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Amount of Family labour	Communal State	54.4286 51.4000	0.419	0.676	Not Significant
Amount of Hired labour	Communal State	44.0652 36.6842	1.208	0.234	Not significant
Amount of Inorganic Fertilizer	Communal State	115.3333 103.7223	0.667	0.509	Not Significant
Amount of Organic manure	Communal State	676.2045 456.2727	3.080	0.005	Significant
Amount of Agro-chemicals	Communal State	1.4000 1.2650	0.437	0.704	Not Significant

Source: Field Survey, 2000.

The statistical data in table 4.24 showed that the differences in almost all the resources allocated under communal and state land are not statistically significant. This is because the absolute t-values (t-calculated) of family labour (0.419), hired labour (1.208), inorganic fertilizer (0.667) and agro-chemicals (0.437) are less than the critical t-value (1.96). It is only the amount of organic manure that has a significant difference between their means under communal and state land tenure. The value of its t-calculated is 3.080 which is greater than the value of t-critical value(1.96). The physical value of organic manure is significantly greater in communal land than in state land.

4.2.5f Test of Differences Between Means of Resource Allocation Patterns: Communal Vis-a-vis State Tenure (Money Units)

Table 4.25 shows the results of test of differences between means of resource allocation patterns in monetary value between communal and state land tenure categories.

Table 4.25 Results of Test of Differences Between Means of Resource Allocation Patterns in Monetary Value Between Communal and State Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Amount of Family labour	Communal State	8260.7143 7657.5000	0.567	0.573	Not Significant
Amount of Hired labour	Communal State	6570.6522 5502.6316	1.161	0.253	Not significant
Amount of Purchased Seeds	Communal State	6341.6500 5215.0435	1.113	0.271	Not Significant
Amount of Inorganic Fertilizer	Communal State	3460.0000 3111.6667	0.667	0.509	Not Significant
Amount of Organic manure	Communal State	1014.4545 738.0000	2.447	0.022	Significant
Amount of Agro-chemicals	Communal State	1375.0000 1425.0000	-0.126	0.911	Not Significant

Source: Field Survey, 2000.

From the data presented in table 4.25, it was observed that the differences in the amount of money used for almost all the resources allocated were not statistically significant under communal and state land tenure. This is because at 5 percent probability level, the values of t-calculated of family labour (0.567), hired labour (1.161), purchased seeds

(1.113), inorganic fertilizer (0.667) and agro-chemicals (-0.126) are less than the critical t-value (1.96) which indicates that there is no significant difference in the amount used for allocation of these resources under the two land tenure categories. It is only the monetary value of organic manure that differed significantly between communal and state land tenure. The value of the t-calculated of the amount of organic manure used in monetized term is 2.447 which is greater than the t-tabulated value (1.96). Specifically, the monetary value of organic manure used under communal land is greater than that of state land tenure.

Since the amount of organic manure differed significantly in its physical and monetary value under the two land tenure groups, the hypothesis that land tenure has no significant impact on the resource allocation patterns of farmers was rejected. But for the other resources such as the amount of family labour, hired labour, purchased seeds, inorganic fertilizer and agro-chemicals in which the differences were not statistically significant, the null hypothesis was accepted, thus, the alternative hypothesis was rejected.

4.2.5g Test of Differences Between Means of Resource Allocation Patterns : Family Vis-a-vis Individual Tenure (Physical Units)

Table 4.26 shows the results of test of differences between means of resource allocation patterns in physical units between family and individual land tenure categories.

Table 4.26 Results of Test of Differences Between means of Resource Allocation Patterns in Physical Units Between Family and Individual Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Amount of Family labour	Family Individual	57.0853 65.6742	-2.949	0.003	Significant
Amount of Hired labour	Family Individual	43.6337 51.0452	-2.960	0.003	Significant
Amount of Inorganic Fertilizer	Family Individual	103.3333 128.5232	-3.291	0.001	Significant
Amount of Organic manure	Family Individual	819.5741 1123.3424	-5.532	0.000	Significant
Amount of Agro-chemicals	Family Individual	1.9300 2.9917	-2.752	0.012	Significant

Source: Field Survey , 2000.

The data presented in table 4.26 showed that all the resources allocated in family and individual land have significant differences in their physical value. The resource allocation variables which include family labour, hired labour inorganic fertilizer, organic manure and agro-chemicals have absolute t-values of -2.949, -2.960, -3.291, -5.532 and -2.752 and level of significance, 0.003, 0.003, 0.001, 0.000, and 0.012 respectively. These absolute t-values are greater than the critical t-value (1.96) indicating that the differences are statistically significant between the two land tenure categories. Specifically, the amount of these resources mentioned above were significantly greater in individual land than family land.

Since all the resources allocated differed significantly in their physical values between the two land tenure categories, the hypothesis that land

tenure has no significant impact on the resource allocation patterns of farmers was rejected. Thus, the alternative hypothesis was accepted.

4.2.5h Test of Differences Between Means of Resource Allocation Patterns: Family Vis-a-vis Individual Tenure (Money Units)

Table 4.27 shows the results of test of differences between means of resource allocation patterns in monetary value between family and individual land tenure categories.

Table 4.27 Results of Test of Differences Between means of Resource Allocation Patterns in Monetary Value Between Family and Individual Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Amount of Family labour	Family Individual	8567.0543 9760.8614	-2.720	0.007	Significant
Amount of Hired labour	Family Individual	6513.8614 7523.7557	-2.644	0.009	Significant
Amount of Purchased Seeds	Family Individual	8684.9167 12060.77	-4.608	0.000	Significant
Amount of Inorganic Fertilizer	Family Individual	3135.0000 3855.6954	-2.867	0.005	Significant
Amount of Organic manure	Family Individual	1220.2222 1674.4397	-5.481	0.000	Significant
Amount of Agro-chemicals	Family Individual	2040.0000 2604.7917	-1.384	0.199	Not significant

Source: Field Survey, 2000.

The data presented in table 4.27 showed that there are significant differences in the amount of money used in all the resources allocated under

family and individual land except the amount of agro-chemicals in which its absolute t-value (-1.384) is less than the critical t-value, 1.96 at 5 percent confident level. However, the values of t-calculated of family labour (-2.720), hired labour (-2.644), purchased seeds (-4.608), organic fertilizer (-2.867) and organic manure (-5.481) are greater than the t-tabulated value (1.96) indicating that the differences in the monetary value of these resources allocated under family and individual land are statistically significant. Specifically, the amount of money used in the allocation of these resources mentioned above was greater individual land than family land.

Since the monetary value of family labour, hired labour, purchased seeds, inorganic fertilizer and organic manure differed significantly between the two land tenure groups, the hypothesis that land tenure has no significant impact on the resource allocation patterns of farmers was rejected, thus, the alternative hypothesis was accepted. But for the amount of agro chemicals in its monetary value, the null hypothesis was accepted.

4.2.5i Test of Differences Between Means of Resource Allocation Patterns: Family Vis-a-vis State Tenure (Physical Units)

The data presented in table 4.28 shows the results of test of differences between means of resource allocation patterns in physical units between family and state land tenure categories.

Table 4.28 Results of Test of Differences Between Means of Resource Allocation Patterns in Physical Units Between Family and State Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Amount of Family labour	Family State	57.0853 51.4000	0.899	0.370	Not Significant
Amount of Hired labour	Family State	43.6337 36.6842	1.391	0.167	Not significant
Amount of Inorganic Fertilizer	Family State	103.3333 103.7222	-0.033	0.974	Not Significant
Amount of Organic manure	Family State	819.5741 456.2727	5.405	0.000	Significant
Amount of Agro-chemicals	Family State	1.9300 1.2650	2.066	0.132	Significant

Source: Field Survey, 2000.

The table 4.28 showed that there is no significant difference in the amount of family labour, hired labour and inorganic fertilizer used under family and state land tenure. The values of their t-calculated are 0.899, 1.391 and 0.033 respectively. These values are less than the critical t-value (1.96) indicating that the differences are not statistically significant.

However, the amount of organic manure and agro-chemicals differ significantly between the family and state land tenure. This is because the values of their t-calculated (5.405 and 2.066 respectively) are greater than the t-tabulated (1.96). Based on their mean values, the amount of organic manure and agro-chemicals are significantly greater in family land than in state land.

Since the differences in the physical values of the amount of organic manure and agro-chemicals are statistically significant between the two land

tenure categories, the hypothesis that land tenure has no significant impact on the resource allocation patterns of farmers was rejected. But for the other resources such as family labour, hired labour and inorganic fertilizer in which their differences were not statistically significant, the null hypothesis was accepted.

4.2.5j Test of Differences Between Means of Resource Allocation Patterns: Family Vis-a-vis State Tenure (Money Units)

Table 4.29 shows the results of test of differences between means of resource allocation patterns in monetary value between family and state land tenure categories.

Table 4.29 Results of Test of Differences Between Means of Resource Allocation Patterns in Monetary Value Between Family and State Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Amount of Family labour	Family State	8567.0543 7657.5000	0.957	0.340	Not significant
Amount of Hired labour	Family State	6513.8614 5502.6316	1.337	0.184	Not significant
Amount of Purchased Seeds	Family State	8684.9167 5215.0435	3.778	0.000	Significant
Amount of Inorganic Fertilizer	Family State	3135.0000 3111.6667	0.059	0.953	Not significant
Amount of Organic manure	Family State	1220.2222 738.0000	4.496	0.000	Significant
Amount of Agro-chemicals	Family State	2040.0000 1425.0000	1.237	0.313	Not significant

Source: Field Survey, 2000.

The data in table 4.29 showed that the amount of money used for resource allocation under family and state land tenure did not differ significantly in family labour, hired labour, inorganic fertilizers and agro-chemicals. This is because their absolute t-values (0.957,1.337, 0.059, and 1.237 respectively) are less than the t-critical value (1.96) at 5 percent level of significance. However, the monetary value of purchased seeds and organic manure used under these two land tenure categories differed significantly. Their absolute t-values (3.778 and 4.496 respectively) are greater than the value of t-criticals (1.96) indicating that their differences are statistically significant. Specifically, the amount of money used for purchased seeds and organic manure was greater in family land than in state land tenure considering their mean values.

Since the differences in the monetary values of the amount of purchased seeds and organic manure are statistically significant, the hypothesis that land tenure has no significant impact on the resource allocation patterns of farmers was rejected. But for other resources such as family labour, hired labour and agro-chemicals, the null hypothesis was accepted, thus, the alternative hypothesis was rejected.

4.2.5k Test of Differences Between Means of Resource Allocation Patterns: Individual Vis-a-vis State Tenure (Physical Units)

The data presented in table 4.30 shows the results of test of differences between means of resource allocation pattern in physical units

between individual and state land tenure categories.

Table 4.30 Results of Test of Differences Between Means of Resource Allocation Patterns in Physical Units Between Individual and State Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Amount of Family labour	Individual State	65.6742 51.4000	2.100	0.037	Significant
Amount of Hired labour	Individual State	51.0452 36.6842	2.609	0.010	Significant
Amount of Inorganic Fertilizer	Individual State	128.5234 103.7222	2.047	0.052	Significant
Amount of Organic manure	Individual State	1123.3424 456.2727	10.038	0.000	Significant
Amount of Agro-chemicals	Individual State	2.9917 1.2650	4.376	0.003	Significant

Source: Field Survey, 2000.

Table 4.30 showed that there are significant differences in the amount of all the resources allocated under individual and state land tenure. At 5 percent probability level, the absolute t-values of family labour (2.100), hired labour (2.609), inorganic fertilizer (2.047) organic manure (10.038) and agro chemicals (4.376) are greater than the t-critical value (1.96) indicating that the differences in the resource allocation under individual and state land tenure are statistically significant.

Specifically, the amount of these resources allocated was greater in individual land than state land. This might be due to the permanent nature of individual land which guarantees individual farmers the assurance of reaping the reward of their investment.

4.2.51 Test of Differences Between Means of Resource Allocation Patterns: Individual vis-a-vis State Tenure (money Units)

Table 4.31 represents the t-statistics of the monetary value of resource allocation under individual and state land.

Table 4.31 Results of Test of Differences Between Means of Resource Allocation Patterns in Monetary Value Between Individual and State Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Amount of Family labour	Individual State	9760.8614 7657.5000	2.042	0.042	Significant
Amount of Hired labour	Individual State	7523.7557 5502.6316	2.604	0.016	Significant
Amount of Purchased Seeds	Individual State	12060.77 5215.0435	7.512	0.000	Significant
Amount of Inorganic Fertilizer	Individual State	3855.6954 3111.6667	2.042	0.052	Significant
Amount of Organic manure	Individual State	1674.4374 738.0000	8.816	0.000	Significant
Amount of Agro-chemicals	Individual State	2602.7917 1425.0000	2.638	0.119	Significant

Source: Field Survey, 2000.

Findings showed that there are significant differences in the amount of money used to allocate resources under these two land tenure categories. This is due to the fact that the absolute t-values of family labour (2.042), hired labour (2.604), purchased seeds (7.512), inorganic fertilizer (2.042),organic manure (8.816) and agro-chemicals (2.638) are greater than the critical t-value (1.96) at 5 percent confident level. Considering the mean

values of these resources allocated, the amount of money used under individual land is greater than that of state land for all the resources.

Since all the resources differed significantly both in their physical and monetary values between the two land tenure groups, the hypothesis that land tenure has no significant impact on the resource allocation patterns of farmers was rejected. Thus, the alternative hypothesis was accepted.

4.3.0 Results and Discussion: Land Tenure Influences on Land Conservation Practices

4.3.1 Land Conservation Practices Under Different Land Tenure

Table 4.32 Distribution of Land According to the Land Conservation Practices Carried out under Different Land tenure Regimes.

Land Tenure	Terracing	Drainage	Mounding	Earth Bank	Contour cultivation	Boundary Fencing	Ridging	Mulching	Organic manuring	Crop rotation	Tree Planting	Tree maintenance	Strip Cropping	Tractorization
	No %	No %	No %	No %	No %	No %	No %	No %	No %	No %	No %	No %	No%	No %
Communal	0 0	5 8.33	58 96.67	0 0	2 3.33	22 36.67	2 3.33	6 10	49 81.67	57 95	13 21.67	28 46.67	0 0	0 0
Family	1 0.76	16 12.12	129 97.73	8 6.06	7 5.30	68 51.52	3 2.27	17 12.88	114 86.36	132 100	53 40.15	96 72.73	0 0	0 0
Individual	15 5.56	123 45.56	225 94.44	62 22.96	46 17.04	261 96.67	15 5.56	104 38.52	264 97.78	268 99.25	255 94.44	255 94.44	0 0	3 1.11
State	0 0	0 0	20 86.96	1 4.35	1 4.35	0 0	3 13.04	2 8.70	9 39.13	22 95.65	0 0	11 47.83	0 0	2 8.70

Source: Field Survey, 2000.

The land conservation variables of concern under the study were presented in table 4.31 and they include: terracing, drainage, mounding, earth bank, contour cultivation, boundary fencing, ridging, mulching, organic manuring, crop rotation, tree planting, tree maintenance, strip cropping and tractorization. Some of these land conservation practices were widely adopted, some were sparsely adopted while some were not adopted at all in one, two or all the land tenure categories.

The data in Table 4.31 above showed that mounding, organic manuring and crop rotation were widely and greatly adopted in all the land tenure categories except in state land in which only 39.13% adopted organic manuring. This high percentage of plots (over 80%) carrying out organic manuring might be due to its dual functions in conserving the soil and improving soil fertility. It might also be due to its cheap nature in terms of supply. This finding is in contrast with Achoja (1999) who pointed out that there is limited application of organic manure due to its inadequacy, bulkiness and transportation problems.

The great number of plots practising using mounding might be due to the fact that it is the most common land preparation method in which farmers used for planting most of their crops. The reason for adopting crop rotation which is the highest in practice might be due to scarcity of land. According to Falusi and Adeleye (1986), crop rotation allows for an economical use of available farm land as well as maintaining soil fertility.

Tree planting, tree maintenance and boundary fencing were highly adopted in individual land under study. Over 90% of individual land adopted each of these practices, relatively great number of family land adopted them while low percentage of communal land adopted them. In state land, boundary fencing and tree planting were not practiced although tree maintenance was adopted in a relatively low level (47.83%). The indication is that individual farmers can maintain trees in their state plots even though the trees were not planted or owned by them. Also, in tree planting and maintenance, 94.44% adoption in the individual plots is in agreement with Beets (1989) who pointed out that for tree growing, the most favourable position is where land is privately owned and where individuals hold clear and unambiguous title to the land they farm; trees then can be grown with full assurance that the benefits can be reaped by the people who planted them or by their children. He further stated that people who own land are in a better position to protect their trees from browsing by stray animals and from other potential hazards. However, 97.67% of individual land adopting boundary fencing might be due to the fact that it provides a kind of security to the land and as well solidifies ownership.

Land conservation practices such as terracing, drainage, earth bank, contour cultivation, ridging, mulching and tractorization were lowly adopted in the study area. In communal land, terracing, earth bank and tractorization were not even adopted. The same thing applied to state land in which

terracing and drainage were not carried out. Low adoption of mulching in the four land tenure categories might have been influenced by the cropping patterns. Farmers indicated that they normally practise mulching where yam is planted. The low practice of tractorization might have also been influenced by the size of land holdings by the individual farmers. Small scattered holdings do not give room for tractorization. Strip cropping was not practised in the study area.

4.3.2 Analysis of Variance of Land Conservation Practices Under Different Land Tenure

Table 4.33 shows the analysis of variance of land conservation practices under different land tenure categories in their monetary value.

Table 4.33 Results of ANOVA Test of Land Conservation Practices Under Different Land Tenure Categories

Variable	F-Cal	Level of Significance	Statistical Judgement
Terracing	0.701	0.417	Not Significant
Drainage	3.801	0.025	Significant
Mounding	13.617	0.000	Significant
Earth bank	0.148	0.863	Not Significant
Contour Cultivation	2.647	0.059	Significant
Boundary Fencing	5.169	0.006	Significant
Ridging	6.971	0.002	Significant
Mulching	0.515	0.673	Not Significant
Organic Manuring	20.481	0.000	Significant
Crop Rotation	8.114	0.000	Significant
Tree Planting	8.989	0.000	Significant
Tree Maintenance	9.501	0.000	Significant
Strip Cropping	-	-	-
Tractorization	1.030	0.385	Not Significant

Source: Field Survey, 2000.

The results showed that the values of F-calculated of the amount of money used for drainage, mounding, contour cultivation, boundary fencing, ridging, organic manuring, crop rotation, tree planting and tree maintenance are 3.801, 13.617, 2.647, 5.169, 6.971, 20.481, 8.114, 8.989 and 9.501 respectively. These values are greater than the critical F-(F-tabulated) value which is 1.67 at 5 percent probability level. This therefore indicates that there are significant differences in the amount of money used for these conservation practices under different land tenure regimes.

The results also showed that the values of F-ratio of terracing (0.701), earth bank (0.148), mulching(0.515) and tractorization (1.030) are less than the F-tabulated value (1.67). This indicates that the differences in the amount of money used for these land conservation practices are not statistically significant.

Based on the following significant variables - drainage, mounding, contour cultivation, boundary fencing, ridging, organic manuring, crop rotation, tree planting, and tree maintenance, the hypothesis that land tenure has no significant impact on the land conservation practices of farmers was rejected. However, for other land conservation practices such as terracing, earth bank, mulching, and tractorization which showed no significant difference, the null hypothesis was accepted.

4.3.3 Comparative Land Conservation Practices: Tests of Differences Between Means

In comparing the nature and degree of land conservation practices under the different land tenure regimes, test of differences between-means-method was employed and the results were obtained.

4.3.3a Land Conservation Practices in Communal Vis-a-vis Family Tenure

Table 4.34 shows the T-tests of the land conservation practices of farmers under communal and family land tenure.

Table 4.34 Results of Test of Differences Between Means of Land Conservation Practices Between Communal and Family Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of Significance	Statistical Judgement
Terracing	Communal	-			
	Family	875.0000	-	-	-
Drainage	Communal	520.0000			
	Family	833.3125	-2.302	0.039	Significant
Mounding	Communal	1580.0345			
	Family	1803.1628	-2.710	0.008	Significant
Earth bank	Communal	-			
	Family	739.6250	-		
Contour Cultivation	Communal	562.5000			
	Family	732.1429	-1.571	0.173	Not Significant
Boundary Fencing	Communal	591.6818			
	Family	743.8676	-3.048	0.003	Significant
Ridging	Communal	1250.0000	-0.768	0.498	Not Significant
	Family	1708.2500			
Mulching	Communal	604.1667	-0.140	0.890	Not Significant
	Family	615.1765			
Organic Manuring	Communal	796.4286			
	Family	962.6053	-2.193	0.031	Significant
Crop Rotation	Communal	595.1930			
	Family	612.6364	-0.404	0.687	Not Significant
Tree Planting	Communal	336.5385			
	Family	624.6226	-4.969	0.000	Significant
Tree Maintenance	Communal	366.0714	-2.035	0.004	Significant
	Family	466.5833			
Strip Cropping	Communal	-	-	-	-
	Family	-			
Tractorization	Communal	-	-	-	-
	Family	-			

Source: Field Survey, 2000.

The data obtained showed that there are significant differences in the amount of money used for drainage, mounding, boundary fencing, organic manuring, tree planting and tree maintenance under communal and family land tenure. At 5 percent probability level, the absolute t-values of these land conservation variables are -2.302, 2.710, -3.048, -2.193, -4.969 and -2.035 respectively. These values are greater than the critical t-value (1.96) indicating that the differences in the amount of money used for these conservation practices are statistically significant under the two land tenure categories. Specifically, the amount of money used for the above land conservation practices are greater in family land than communal land tenure. This is observed from their mean values presented in the table above.

The same table showed that the amount of money used for contour cultivation, ridging, mulching and crop rotation did not differ significantly between the two land tenure categories. This is shown in their absolute t-values (-1.571, -0.768, -0.140 and -0.404 respectively) which are less than the t-tabulated value. The t- value of terracing and earth bank were not computed because they were not practised in communal land. Also, no computation was done on strip cropping and tractorization since they were not carried out in both land tenure regimes.

Based on the above mention significant variables (drainage, mounding, boundary fencing, organic manuring, tree planting and tree maintenance), the hypothesis that land tenure has no significant impact on the land conservation

practices of farmers was rejected but for other land conservation variables such as contour cultivation, ridging, mulching and crop rotation in which the amount used did not differ significantly between the two land tenure groups, the null hypothesis was accepted.

4.3.3b Land Conservation Practices in Communal Vis-a-vis Individual Tenure

The data presented in Table 4.35 shows the results of test of differences between means of land conservation practices under communal and individual land tenure categories.

Table 4.35 Results of Test of Differences Between Means of Land Conservation Practices under Communal and Individual Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of Significance	Statistical Judgement
Terracing	Communal Individual	- 1505.5333	- -	- -	- -
Drainage	Communal Individual	520.0000 1047.4228	-4.962	0.002	Significant
Mounding	Communal Individual	1580.0345 2094.9569	-6.456	0.000	Significant
Earth bank	Communal Individual	- 766.6935	- -	-	-
Contour Cultivation	Communal Individual	562.5000 1082.5870	-5.458	0.002	Significant
Boundary fencing	Communal Individual	591.6818 1049.2107	-6.593	0.000	Significant
Ridging	Communal Individual	1250.0000 2387.0714	-1.874 -	0.084	Not significant
Mulching	Communal Individual	604.1667 714.1827	-1.028	0.339	Not Significant
Organic Manuring	Communal Individual	796.4286 1341.9773	-8.088	0.000	Significant
Crop rotation	Communal Individual	595.1930 785.1567	-4.007	0.000	Significant
Tree planting	Communal Individual	336.5385 944.4549	-9.968	0.000	Significant
Tree maintenance	Communal Individual	366.0714 694.5412	-5.316	0.000	Significant
Strip cropping	Communal Individual	- -	- -	- -	- -
Tractorization	Communal Individual	- 1944.3333	-	-	-

Source: Field Survey. 2000.

Table 4.35 showed that there are significant differences in the amount of money used for most of the land conservation practices under communal and individual land tenure. At 5% confident level, the absolute t-values of drainage (-4.962), mounding (-6.456), contour cultivation (-5.458), boundary fencing (-6.593), organic manuring (-8.088), crop rotation (-4.007), tree

planting (-9.968) and tree maintenance (-5.316) are greater than the critical t-value (1.96). This indicates that the differences in the amount of money used under the two land tenure categories are statistically significant. Considering their mean values, the amount of money used for these land conservation practices are greater in individual land than communal land tenure. This finding agrees with Migot-Adholla (1991) who noted that increased individualization of rights improves farmers ability to reap returns from investments on land and this leads to a greater demand for land improvements as well as for complementary inputs.

The data in the table also showed that the amount of money used for ridging and mulching did not differ significantly between communal and individual land tenure. This is because their absolute t-values (-1.874 and -1.028 respectively) are less than1.96.

The values of t-calculated for terracing, earth bank and tractorization were not computed since they were not practised in communal land. Strip cropping was not carried out in any of these two land tenure categories, therefore, no computation was done.

Since the amount of money used for drainage, mounding, contour cultivation, boundary fencing, organic manuring, crop rotation, tree planting and tree maintenance under the two land tenure regimes differ significantly, the hypothesis that land tenure has no significant impact on the land conservation practices of farmers was rejected. Thus, the alternative hypothesis was accepted. But for other land conservation practices such as ridging and mulching which did not differ significantly, the null hypothesis was accepted.

4.3.3c Land Conservation Practices in Communal Vis-a-vis state Tenure

The data presented in Table 4.36 shows the t-tests of land conservation practices between communal and state land tenure categories.

Table 4.36 Results of Test of Differences Between Means of Land Conservation Practices under Communal and State Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of Significance	Statistical Judgement
Terracing	Communal State	- -	-	-	-
Drainage	Communal State	520.0000 -	-	-	-
Mounding	Communal State	1580.0345 1846.9000	-1.939	0.056	Not significant
Earth bank	Communal State	- 567.0000	-	-	-
Contour Cultivation	Communal State	562.5000 300.0000	2.425	0.025	Significant
Boundary fencing	Communal State	591.6818 -	-	-	-
Ridging	Communal State	1250.0000 1125.0000	0.447	0.685	Not significant
Mulching	Communal State	604.1667 575.0000	0.143	0.891	Not significant
Organic Manuring	Communal State	796.4286 480.5556	4.287	0.000	Significant
Crop rotation	Communal State	595.1930 481.6364	2.192	0.033	Significant
Tree planting	Communal State	336.5385 -	-	-	-
Tree maintenance	Communal State	366.0714 334.0909	0.521	0.605	Not significant
Strip cropping	Communal State	- -	-	-	-
Tractorization	Communal State	- 1250.0000	-	-	-

Source: Field survey, 2000.

The findings showed that at 5 percent confident level, there are significant differences in the amount of money used for contour cultivation, organic manuring and crop rotation under communal and state land tenure. This is because their absolute t-values (2.425, 4.287 and 2.192 respectively) are greater than the t-tabulated value (1.96). This indicates that the differences are statistically significant. Specifically, the amount of money used for these land conservation practices are greater in communal land than state land. This is shown in their mean values.

The same table showed that the differences in the amount of money used for mounding, ridging, mulching and tree maintenance are not statistically significant. This is because the t-calculated values (-1.939, 0.447, 0.143, and 0.521 respectively) are less than 1.96. The absolute t-values of drainage, earth bank, boundary fencing, tree planting and tractorization were not computed since one of the land tenure groups was not having any data for comparison.

Based on these land conservation practices (contour cultivation, organic manuring, and crop rotation) in which their differences are statistically significant, the hypothesis that land tenure has no significant impact on the land conservation practices of framers was rejected. But for other land conservation practices which include mounding, ridging, mulching and tree maintenance, the null hypothesis was accepted, thus, the alternative hypothesis was rejected.

4.3.3d Land Conservation practices in family vis-a-vis Individual Tenure

The data presented in Table 4.37 shows the results of t-tests of land conservation practices under family and individual land tenure categories.

Table 4.37 Results of Test of Differences Between Means of Land Conservation Practices Between Family and Individual Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of Significance	Statistical Judgement
Terracing	Family Individual	875.0000 1505.5333	-0.837	0.417	Not significant
Drainage	Family Individual	833.3125 1047.4228	-1.994	0.058	Significant
Mounding	Family Individual	1803.1628 2094.9569	-4.503	0.000	Significant
Earth bank	Family Individual	739.6250 766.6935	-0.188	0.851	Not Significant
Contour Cultivation	Family Individual	732.1429 1082.5870	-3.082	0.007	Significant
Boundary Fencing	Family Individual	743.8676 1049.2107	-4.074	0.000	Significant
Ridging	Family Individual	1708.2500 2387.0714	-2.076	0.054	Significant
Mulching	Family Individual	615.1765 714.1827	-1.911	0.060	Not significant
Organic Manuring	Family Individual	926.6053 1341.9773	-6.992	0.000	Significant
Crop rotation	Family Individual	612.6364 785.1567	-4.192	0.000	Significant
Tree planting	Family Individual	624.6226 944.4549	-5.049	0.000	Significant
Tree maintenance	Family Individual	466.5833 694.5412	-5.520	0.000	Significant
Strip Cropping	Family Individual	- -	-	-	-
Tractorization	Family Individual	- 1944.333	-	-	-

Source: Field survey, 2000.

Table 4.37 showed that there are significant differences in the amount of money used for the following land conservation practices namely, drainage, mounding, contour cultivation, boundary fencing, ridging, organic manuring, crop rotation, tree planting and tree maintenance under family and individual land tenure. This is because their absolute t-values at 5 percent level of significance are -1.994, -4.503, -3.082, -4.074, -2.076, -6.992, -4.192, -5.049 and -5.520 respectively, which are greater than 1.96 (the critical t-value). This however, indicates that the differences are statistically significant between the two land tenure categories. Their mean values showed that the amount of money invested in these land conservation practices was greater in individual land than family land.

On the other hand, land conservation practices including terracing, earth bank, and mulching showed no significant differences in the amount of money used under family and communal land tenure. Their t-calculated values (-0.837, -0.188 and -1.911 respectively) are less than the t-critical value. The t-values of strip cropping and tractorization were not computed since the former was not practiced in any of the land tenure groups and the latter was practiced only in individual land.

Based on these land conservation practices (drainage, mounding, contour cultivation, boundary fencing, ridging, organic manuring, crop rotation, tree planting and tree maintenance) in which their amount differed significantly between the two land tenure groups, the hypothesis that land

tenure has no significant impact on the land conservation practices of farmers was rejected. But for others such as terracing, earth bank and mulching which did not show any significant difference, the null hypothesis was accepted.

4.3.3e Land Conservation Practices in Family Vis-a-Vis State Tenure

The result of the test of differences between means of land conservation practices of farmers under family and state land tenure categories is presented in Table 4.38.

Table 4.38: Results of Test of Differences Between Means of Land Conservation Practices Between Family and State Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of Significance	Statistical Judgement
Terracing	Family State	875.0000 -	-	-	-
Drainage	Family State	833.3125 -	-	-	-
Mounding	Family State	1803.1628 1846.9000	-0.330	0.742	Not Significant
Earth bank	Family State	739.6250 567.0000	0.411	0.694	Not Significant
Contour cultivation	Family State	732.1429 300.0000	1.734	0.134	Not significant
Bounding fencing	Family State	743.8676 -	-	-	-
Ridging	Family State	1708.2500 1125.0000	1.979	0.095	Significant
Mulching	Family State	615.1765 575.0000	0.367	0.718	Not Significant
Organic manuring	Family State	926.6053 480.5556	6.718	0.000	Significant
Crop rotation	Family State	612.6364 481.6364	2.838	0.007	Significant
Tree planting	Family State	624.6226 -	-	-	-
Tree maintenance	Family State	466.5833 334.0909	3.258	0.004	Significant
Strip cropping	Family State	- -	-	-	-
Tractorization	Family State	- 1250.0000	-	-	-

Source: Field Survey, 2000.

From Table 4.38, it is observed that among the land conservation practices that were carried out in both land tenure categories, 50 percent of them differed significantly between family and state land tenure. The

variables that differed significantly include ridging, organic manuring, crop rotation and tree maintenance. Their t-calculated values are 1.979, 6.718, 2.833 and 3.258 respectively. These values are greater than the critical t-value (1.96) showing that the differences in the amount of money used for their investment are statistically significant. However, their mean values showed that the amount of money invested in these land conservation practices mentioned above was greater in family land.

On the other hand, the data in the table also showed that there are no significant differences in the amount of money used for mounding, earth bank, contour cultivation, and mulching under these two land tenure categories. This is because their absolute t-values are -0.330, 0.411, 1.734 and 0.367 respectively which are less than 1.96. For drainage, boundary fencing, tree planting and tractorization, their t-values were not computed since one of the land tenure categories has no data for comparison. Strip cropping was not carried out in both land tenure groups, therefore, no computation was done. Since the differences in the amount of money used for ridging, organic manuring, crop rotation and tree maintenance under the two land tenure categories were statistically significant, the hypothesis that land tenure has no significant impact on the land conservation practices of farmers was rejected. For other land conservation practices such as mounding, earth bank, contour cultivation and mulching, which did not differ significantly, the null hypothesis was accepted, thus, the alternative hypothesis was rejected.

4.3.3f Land Conservation Practices in Individual Vis-a-Vis State Tenure

The data presented in Table 4.39 shows the results of test differences between means of land conservation practices of farmers under individual and state land tenure categories.

Table 4.39 Results of Test of Differences Between Means of Land Conservation Practices Between Individual and State Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of Significance	Statistical Judgement
Terracing	Individual State	1505.5333 -	-	-	-
Drainage	Individual State	1047.4228 -	-	-	-
Mounding	Individual State	2094.9569 1846.9000	1.784	0.087	Not Significant
Earth bank	Individual State	766.6935 567.0000	0.519	0.605	Not Significant
Contour cultivation	Individual State	1082.5870 300.0000	1.587	0.120	Not significant
Boundary fencing	Individual State	1049.2107 -	-	-	-
Ridging	Individual State	2387.0714 1125.0000	6.297	0.000	Significant
Mulching	Individual State	714.1827 575.0000	0.682	0.612	Not significant
Organic manuring	Individual State	1341.9773 480.5556	11.687	0.000	Significant
Crop rotation	Individual State	785.1567 481.6364	6.050	0.000	Significant
Tree planting	Individual State	944.4549 -	-	-	-
Tree maintenance	Individual State	694.5412 334.0909	7.395	0.000	Significant
Strip cropping	Individual State	- -	-	-	-
Tractorization	Individual State	1944.3333 1250.0000	1.310	0.320	Not significant.

Source: Field Survey, 2000.

Table 4.39 showed that at 5 percent probability level, the absolute t-values of ridging, organic manuring, crop rotation and tree maintenance are 6.297, 11.687, 6.050 and 7.395 respectively. These values are greater than the critical t-value(1.96) indicating that the differences in the amount of money used for these conservation practices are statistically significant. The data in the table also showed that the amount of money used for these land conservation practices mentioned above was greater in individual land then state land.

On the other hand, the amount of money used for mounding, earth bank, contour cultivation, mulching and tractorization are not statistically significant since their absolute t-values are less than 1.96. This large number of insignificant variables might be due to the fact that only very few (one or two) state land practiced most of these land conservation practices and this might not give room for proper comparison. The t-calculated values of terracing, drainage, boundary fencing and strip cropping were not computed since one or the two land tenure categories did not practice them.

Since the differences in the amount of money used for ridging, organic manuring, crop rotation and tree maintenance under the two land tenure categories were statistically significant, the hypothesis that land tenure has no significant impact on the land conservation practices of farmers was rejected. For others which include mounding, earth bank, contour cultivation, mulching and tractorization, which did not differ significantly, the null hypothesis was accepted, thus, the alternative hypothesis was rejected.

4.4.0 Results and Discussion: Land Tenure and Agricultural Productivity

4.4.1 Analysis of variance of Agricultural Productivity Across Land Tenure Niches

The results of ANOVA test of Agricultural productivity under different land tenure were obtained both in physical and monetary units.

4.4.1a Analysis of Variance of Agricultural Productivity under different land Tenure (Physical Units)

The data presented in Table 4.40 shows the results of analysis of variance test of agricultural productivity under the different land tenure regimes in physical terms.

Table 4.40 Results of ANOVA Tests of Agricultural Productivity under Different Land Tenure Categories in Physical Units

Variable	F-Cal	Level of Significance	Statistical Judgement
Maize	5.601	0.001	Significant
Cowpea	4.378	0.007	Significant
Yam	5.237	0.002	Significant
Cassava	1.275	0.283	Not significant
Cocoyam	6.852	0.000	Significant
Sweet potato	6.136	0.002	Significant
Pigeon pea	0.980	0.418	Not significant
Melon	5.272	0.002	Significant
Tomato	0.090	0.914	Not Significant
Okro	4.509	0.004	Significant
Rice	4.533	0.025	Significant
Groundnut	2.726	0.053	Significant

Source: Field Survey, 2000.

From Table 4.40, It is observed that at 5 percent probability level, there are significant differences in the physical value of agricultural productivity of majority of the crops under study. This is because the F-calculated values of output per hectare of maize (5.601), cowpea (4.378), yam (5.237), cocoyam (6.852) sweet potato (6.136), melon (5.272), okro (4.509), rice (4.533) and groundnut (2.726) are greater than the critical F-value (1.75). This therefore indicates that the differences in yield per hectare of the above mentioned crops under different land tenure categories are statistically significant.

However, the values of F-ratio of cassava (1.275), pigeon pea (0.980) and tomato (0.090) are less than the F-tabulated value (1.75). This indicates that the differences in yield of these crops per hectare are not statistically significant.

Based on the following significant variables: maize, cowpea, yam, cocoyam. sweet potato, melon, okro, rice and groundnut, the hypothesis that land tenure has no significant impact on the agricultural productivity of farmers was rejected. But for other variables such as cassava, pigeon pea, and tomato which did not differ significantly, the null hypothesis was accepted.

4.4.1b Analysis of Variance of Agricultural Productivity under Different Land Tenure (Monetary Units)

Table 4.41 shows the F-statistics of the monetary value of the productivity of different crops under different land tenure categories.

Table 4.41 Results of ANOVA Test of Agricultural Productivity under Different Land Tenure Categories in Monetary Value

Variable	F-Cal	Level of Significance	Statistical Judgement
Maize	4.667	0.003	Significant
Cowpea	4.685	0.005	Significant
Yam	2.589	0.056	Significant
Cassava	1.043	0.374	Not significant
Cocoyam	6.789	0.000	Significant
Sweet potato	3.792	0.018	Significant
Pigeon pea	1.245	0.315	Not significant
Melon	6.419	0.000	Significant
Tomato	0.123	0.885	Not Significant
Okro	4.866	0.003	Significant
Rice	1.301	0.297	Not Significant
Groundnut	2.612	0.061	Significant

Source: Field Survey, 2000.

The values of F-calculated of maize (4.667), cowpea (4.685), yam (2.589), cocoyam (6.789), sweet potato (3.792), melon (6.419), okro (4.866) and groundnut (2.612) are greater than the critical F-value (1.75). This indicates that the differences in the monetary values of the yield per hectare of these crops are statistically significant under the different land tenure categories.

On the other hand, the monetary value of cassava, pigeon pea, tomato and rice did not differ significantly under the different land tenure. This is because the values of their F-statistics (1.043, 1.245, 0.123 and 1.301 respectively) are less than the critical F-value.

Based on the following significant variables - maize, cowpea, yam, cocoyam, sweet potato, melon, Okro and groundnut, the hypothesis that land tenure has no significant impact on the agricultural productivity of farmers was rejected. For other crops such as cassava, pigeon pea, tomato and rice which did not show any significant difference in their monetary value, the null hypothesis was accepted.

4.4.2 Test of Differences Between Means of Agricultural Productivity Under Different land Tenure

In comparing the agricultural productivity across the land tenure regimes using test of differences between- means-method, the results were obtained both in physical and monetary terms.

4.4.2a Agricultural productivity in communal Vis-a-vis family land tenure (physical units)

The data presented in Table 4.42 shows the results of test of differences between means of agricultural productivity in the physical terms (kg) between communal and family land tenure.

Table 4.42 Results of Test of Differences Between Means of Agricultural Productivity in Physical Units Between Communal and Family Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significant	Statistical Judgement
Maize	Communal Family	429.8367 447.6545	-0.341	0.733	Not significant
Cowpea	Communal Family	88.8750 148.3889	-2.337	0.028	Significant
Yam	Communal Family	2980.0000 3126.7143	-0.246	0.813	Not significant
Cassava	Communal Family	2220.7922 1809.9118	-1.990	0.048	Significant
Cocoyam	Communal Family	929.8182 1354.1538	-2.937	0.008	Significant
Sweet potato	Communal Family	624.5556 413.2667	1.507	0.146	Not significant
Pigeon pea	Communal Family	141.2000 205.0000	-1.690	0.134	Not significant
Melon	Communal Family	118.4118 130.7143	0.616	0.541	Not significant
Tomato	Communal family	- 369.0000	-	-	-
Okro	Communal Family	129.0000 122.2647	0.333	0.741	Not significant
Rice	Communal Family	496.0000 782.5000	-1.227	0.308	Not significant
Groundnut	Communal Family	297.0909 40.9000	-0.978	0.340	Not significant

Source: Field Survey, 2000.

Most of the crops planted in these two land tenure categories did not show significant differences in their physical output. This is shown in the absolute t-values of maize (-0.341), yam (-0.246), sweet potato (1.507), pigeon pea (-1.690), melon (-0.616), okro (0.333), rice (-1.227) and groundnut (-0.978), which are less than the t-critical value (1.96) at 5 percent

probability level. The only significant variables are cowpea, cassava and cocoyam in which their t-calculated values are -2.337, 1.990 and 2.937 respectively. These values are greater than the t-tabulated value signifying that the differences in their output under communal and family land are statistically significant.

Specifically, the productivity of cowpea and cocoyam in physical terms were greater in family land while that of cassava was greater in communal land. The greater mean value of cassava out put in communal land might be because cassava was the most dominant crop in the communal land, that is, it was mainly planted as the major crop. Tomato was not planted in communal land, and so, there is no computation for its t-value.

Considering the fact that the productivity of cowpea, cassava and cocoyam in physical units differed significantly between the two land tenure categories, the hypothesis that land tenure has no significant impact on the agricultural productivity of farmers was rejected. But for crops like maize, yam. sweet potato, pigeon pea, melon, okro, rice, and groundnut in which their yield did not differ significantly, the null hypothesis was accepted. Thus, the alternative hypothesis was rejected.

4.4.2b Agricultural Productivity in Communal Vis-a-vis Family Land Tenure (Monetary Units)

Table 4.43 shows the results of test of differences between means of agricultural productivity in a monetized terms under communal and family land tenure categories.

Table 4.43 Results of Test of Differences Between Means of Agricultural Productivity in Monetary Value Between Communal and Family Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Maize	Communal Family	5873.7347 6338.8727	-0.620	0.537	Not significant
Cowpea	Communal Family	2567.2500 4664.8333	-2.923	0.007	Significant
Yam	Communal Family	33416.67 37645.74	-0.682	0.514	Not significant
Cassava	Communal Family	9527.1364 7997.5588	-1.755	0.081	Not significant
Cocoyam	Communal Family	19318.18 27634.62	-2.478	0.022	Significant
Sweet potato	Communal Family	8828.6667 4238.8667	2.410	0.025	Significant
Pigeon pea	Communal Family	4277.6000 6559.5714	-1.966	0.050	Significant
Melon	Communal Family	5058.3529 5636.9143	-1.660	0.512	Not significant
Tomato	Communal Family	- 12812.50	-	-	-
Okro	Communal Family	2720.8000 2496.2206	0.521	0.606	Not significant
Rice	Communal Family	14166.75 24166.75	-1.388	0.262	Not significant
Groundnut	Communal Family	8659.0909 10712.50	-0.667	0.513	Not significant

Source: Field Survey, 2000.

Based on the t- calculated values presented in the table 4.43, it was observed that there is no significant differences in the monetary value of maize, yam, cassava, melon, okro, rice, and groundnut between communal and family land tenure. This is because their t-calculated values (-0.620, -0.682, -1.755, -1.660, 0.521, -1.388 and -0.667 respectively) are less than the

critical t-value. (1.96). It is only cowpea, cocoyam, sweet potato and pigeon pea that showed significant differences in their monetary value. This is because at 5 percent level of significance, their absolute t-values (-2.923, -2.478, 2.410 and -1.966 respectively) are greater than the t-tabulated value (1.96). From their mean values however, it was observed that the monetary value of cowpea, cocoyam, and pigeon pea produced was greater in family land while that of sweet potato was greater in communal land.

Since the monetary value of cowpea, cocoyam, sweet potato and pigeon pea showed significant differences between the two land tenure, the hypothesis that land tenure has no significant impact on agricultural productivity of farmers was rejected. For crops such as maize, yam, cassava, melon, okro, rice, and groundnut, which did not show any significant difference, the null hypothesis was accepted, thus, the alternative hypothesis was rejected.

4.4.2c: Agricultural Productivity in Communal Vis-a-vis Individual Land Tenure (Physical Units)

Table 4.44 shows the results of test of differences of means of agricultural productivity between communal and individual land tenure in their physical terms that is, kg/hectare.

Table 4.44: Results of test of Differences Between Means of Agricultural Productivity in Physical Units Between Communal and Individual Land Tenure Categories

Variable	Land Tenure	Mean	T-Cal	Level of significance	Statistical Judgement
Maize	Communal Individual	429.8367 534.0230	-2.352	0.019	Significant
Cowpea	Communal Individual	88.8750 187.1698	-4.726	0.000	Significant
Yam	Communal Individual	2980.0000 4351.5452	-2.358	0.054	Significant
Cassava	Communal Individual	2220.7922 1933.9444	-1.195	0.236	Not significant
Cocoyam	Communal Individual	929.8182 1923.0986	-5.887	0.000	Significant
Sweet potato	Communal Individual	624.5556 1545.2500	-2.429	0.029	Significant
Pigeon pea	Communal Individual	141.2000 172.7333	-1.307	0.208	Not significant
Melon	Communal Individual	118.4118 153.8254	-1.497	0.138	Not significant
Tomato	Communal Individual	- 425.8667	-	-	-
Okro	Communal Individual	129.0000 160.4889	-1.651	0.111	Not significant
Rice	Communal Individual	496.0000 1564.0667	-4.436	0.011	Significant
Groundnut	Communal Individual	297.0909 574.7188	-2.976	0.006	Significant

Source: Field Survey, 2000.

The data in Table 4.44 showed that greater number of crops differed significantly in their yield between the two land tenure categories. These crops with their absolute t-values include maize (-2.352), cowpea (-4.726), yam (-2.358), cocoyam (-5.887), sweet potato (-2.429), rice (-4.436) and groundnut (-2.976). These values are greater than the t-tabulated value

(1.96), showing that the differences in the productivity of these crops are statistically significant. However, their mean values indicated that the yield of these crops are greater in individual land than communal land.

The finding also showed that there is no significant difference in the physical output of cassava, pigeon pea, melon and okro in the two land tenure regimes. This is shown in their absolute t-values (-1.195, -1.307, -1.4 97 and -1.651 respectively) which are less than 1.96. The insignificant difference in the yield of these crops might be due to the fact that these crops were planted mainly as inter crops in individual land.

Since the productivity of maize, cowpea, yam, cocoyam, sweet potato, rice, and groundnut in physical terms differed significantly between the two land tenure groups, the hypothesis that land tenure has no significant impact on the agricultural productivity of farmer was rejected. For crops like cassava, pigeon pea, melon and Okro, the null hypothesis was accepted.

4.4.2d Agricultural Productivity in Communal Vis-a-vis Individual Land Tenure (Monetary Units)

The data presented in Table 4.45 shows the results of test of differences between means of agricultural productivity in monetary value under communal and individual land tenure categories.

Table 4.45 Results of Test of Differences Between Means of Agricultural Productivity in Monetary Value Between Communal and Individual Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of Significance	Statistical Judgement
Maize	Communal Individual	5873.7347 7283.2535	-2.215	0.028	Significant
Cowpea	Communal Individual	2567.2500 5405.9057	-4.768	0.000	Significant
Yam	Communal Individual	33416.67 53624.77	-2.976	0.012	Significant
Cassava	Communal Individual	9529.1364 8373.3611	-1.119	0.267	Not significant
Cocoyam	Communal Individual	19318.18 38147.90	-5.284	0.000	Significant
Sweet potato	Communal Individual	8828.6667 15743.08	-1.458	0.165	Not significant
Pigeon pea	Communal Individual	4277.6000 5567.2000	-1.612	0.125	Not significant
Melon	Communal Individual	5058.3529 6904.7619	-1.786	0.078	Not significant
Tomato	Communal Individual	- 15652.80	-		-
Okro	Communal Individual	2720.8000 3373.7526	1.638	0.113	Not significant
Rice	Communal Individual	14694.00 46333.33	-4.569	0.012	Significant
Groundnut	Communal Individual	8659.0909 16729.16	-3.030	0.004	Significant

Source: Field Survey, 2000.

Table 4.45 showed that there are significant differences in the monetary value of such crops like maize, cowpea, yam, cocoyam, rice and groundnut under communal and individual land tenure. Their t-calculated values (-2.215, -4.768,-2.976, -5.284, -4.569 and -3.030 respectively) indicated that their differences are statistically significant since their t-values are greater than

1.96. Based on their mean values, the monetary values of these crops are greater individual land than communal land.

However, the monetary values of cassava, sweet potato, pigeon pea, melon and okro did not differ significantly between the two land tenure categories. This is because their t-calculated values are less than 1.96 at 5 percent confident level.

Based on the following significant variables - maize, cowpea, yam, cocoyam, rice and groundnut, the hypothesis that land tenure has no significant impact on the agricultural productivity of farmers was rejected. But for other crops such as cassava, sweet potato, pigeon pea, melon and okro, the null hypothesis was accepted, thus, the alternative hypothesis was rejected.

4.4.2.e. Agricultural Productivity in Communal Vis-a-Vis State land Tenure (Physical Units)

Table 4.46 shows the test of differences between means of Agricultural Productivity in Physical terms between communal and state land tenure.

Table 4.46 Results of Test of Differences Between Means of Agricultural Productivity in Physical Units Between Communal and State Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of Significance	Statistical Judgement
Maize	Communal State	429.8367 287.5333	2.555	0.014	Significant
Cowpea	Communal State	88.8750 78.3750	0.661	0.520	Not significant
Yam	Communal State	2980.0000 2278.0000	0.546	0.605	Not significant
Cassava	Communal State	2220.7922 2125.0588	0.286	0.778	Not significant
Cocoyam	Communal State	929.8182 1130.0000	-0.679	0.511	Not significant
Sweet potato	Communal State	624.5556 483.7500	0.955	0.364	Not significant
Pigeon pea	Communal State	141.2000 120.0000	1.837	0.140	Not significant
Melon	Communal State	118.4118 51.0000	3.110	0.006	Significant
Tomato	Communal State	300.000			
Okro	Communal State	129.0000 89.1429	1.411	0.180	Not significant
Rice	Communal State	496.0000 -	-	-	-
Groundnut	Communal State	297.0909 224.6667	0.955	0.359	Not significant

Source; Field Survey, 2000.

The data in table 4.46 showed that majority of crops did not show significant differences in terms of the physical value of their output (kg/ha) under communal and state land tenure. At 5 percent level of significance, the absolute t-values of cowpea (0.661), yam (0.546), cassava (0.286) , cocoyam (-0.679), sweet potato (0.955), pigeon pea (1.837), okro (1.411), and

groundnut (0.955) are less than the critical t-value (1.96) indicating that their differences are not statistically significant. It was only the physical values of maize and melon that showed significant differences between their means. This is shown in their t-calculated values (2.555 and 3.110 respectively) which are greater than 1.96.

Specifically, the physical units of the productivity of maize and melon were greater in communal land. The t-values of tomato and rice were not computed since each was not planted in one of the land tenure categories.

4.4.2.f Agricultural productivity in Communal Vis-a-vis State land Tenure (monetary units)

The data presented in Table 4.47 shows the results of test of differences between means of Agricultural Productivity in the monetary value between communal and state land tenure

Table 4.47 Results of Test of Differences Between Means of Agricultural Productivity in Monetary Units Between Communal and State Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Maize	Communal State	5873.7347 3804.2000	2.656	0.011	Significant
Cowpea	Communal State	2567.2500 2243.7500	0.684	0.505	Not significant
Yam	Communal State	33416.67 26666.50	0.512	0.627	Not significant
Cassava	Communal State	9527.1364 9216.6471	0.225	0.824	Not significant
Cocoyam	Communal State	19318.18 18000.00	0.481	0.641	Not significant
Sweet potato	Communal State	8828.6667 6500.0000	1.026	0.327	Not significant
Pigeon pea	Communal State	4277.6000 3733.0000	1.217	0.290	Not significant
Melon	Communal State	5058.3529 2032.3333	3.128	0.006	Significant
Tomato	Communal State	- 10500.00	-	-	-
Okro	Communal State	2720.8000 1726.1429	1.736	0.103	Not significant
Rice	Communal State	14694.00 -	-	-	-
Groundnut	Communal State	8659.0909 7125.0000	0.690	0.510	Not significant

Source; Field Survey, 2000.

The data presented in Table 4.47 showed that there is no significant difference in the monetary values of the following crops: cowpea, yam, cassava, cocoyam, sweet potato, pigeon pea, okro, and groundnut. This is shown in their t-calculated values (0.684, 0.512. 0.225, 0.481, 1.026, 1.217, 1.736 and 0.690 respectively) which are less than the critical t-value (1.96).

On the other hand, it was only maize and melon that differed significantly in their monetary value under communal and state land tenure. Their absolute t-values (2.656 and 3.128 respectively) are greater than 1.96 indicating that the differences are statistically significant between the two land tenure categories. Based on the mean values of these crops (maize and melon), their value in money units was greater in communal land than state land tenure.

Since the differences in both physical and monetary value of maize and melon are statistically significant, the hypothesis that land tenure has no significant impact on the agricultural productivity of the farmers was rejected. For other crops such as cowpea, yam, cassava, cocoyam, sweet potato, pigeon pea, okro and groundnut which did not differ significantly between the two land tenure groups, the null hypothesis was accepted, thus, the alternative hypothesis was rejected.

4.4.2.g Agricultural Productivity in family Vis-a-Vis Individual Land Tenure (Physical units)

Table 4.48 shows the results of test of differences between means of Agricultural Productivity in Physical Units between family and individual land tenure.

Table 4.48 Results of Test of Differences Between Means of Agricultural Productivity in Physical Units Between Family and Individual Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Maize	Family Individual	447.6545 534.0230	-2.516	0.012	Significant
Cowpea	Family Individual	148.3889 187.1698	-1.443	0.157	Not significant
Yam	Family Individual	3126.7143 4351.5652	-3.932	0.000	Significant
Cassava	Family Individual	1809.9118 1933.9444	0.495	0.622	Not significant
Cocoyam	Family Individual	1354.1538 1923.0986	-3.817	0.000	Significant
Sweet potato	Family Individual	413.2667 1545.2500	-3.517	0.002	Significant
Pigeon pea	Family Individual	205.0000 172.7333	0.818	0.423	Not Significant
Melon	Family Individual	130.7143 153.8254	-1.606	0.112	Not significant
Tomato	Family Individual	369.0000 425.8667	-0.416	0.709	Not significant
Okro	Family Individual	122.2647 160.4889	-3.077	0.003	Significant
Rice	Family Individual	782.5000 1564.0667	-3.263	0.008	Significant
Groundnut	Family Individual	410.9000 574.7188	-1.382	0.184	Not significant

Source: Field data, 2000.

The data presented in the Table 4.48 showed that 50 percent of the crops planted under family and individual land tenure differed significantly in their physical output (kg/ha). Such crops like maize, yam, cocoyam, sweet potato, okro, and rice with their calculated t-values (-2.516, -3.932, -3.817, -3.517, -3.077 and -3.263, respectively) which are greater than 1.96 showed that the

differences in their output per hectare are statistically significant. Considering their mean values, the physical output of these crops was greater in individual land than family land.

On the other hand, the physical output of cowpea, cassava, pigeon pea, melon, tomato, and groundnut did not differ significantly between the two land tenure categories since their t-calculated values (-1.443, 0.495, 0.818, -1.606, -0.416, and -1.382 respectively) are less than the critical t-value (1.96) at 5 percent level of significance.

Based on the following significant variables: maize, yam, cocoyam, sweet potato, okro, and rice, the hypothesis that land tenure has no significant impact on the agricultural productivity of farmers was rejected. For other crops such as cowpea, cassava, pigeon pea, melon, tomato and groundnut which did not differ significantly between the two land tenure groups, the null hypothesis was accepted, thus, the alternative hypothesis was rejected.

4.4.2.h Agricultural Productivity in Family Vis-a-vis Individual Land Tenure (Monetary Units)

Table 4.49 shows results of test of differences between means of Agricultural Productivity in monetary units between Family and Individual Land Tenure Categories

Table 4.49 Results of Test of Differences Between Means of Agricultural Productivity in Monetary Value Between Family and Individual Land Tenure Categories

Variable	Land Tenure Categories	Mean	T-Cal	Level of significance	Statistical Judgement
Maize	Family Individual	6338.8727 7283.2525	-1.885	0.060	Not significant
Cowpea	Family Individual	4664.8333 5405.9057	-1.000	0.324	Not significant
Yam	Family Individual	37645.74 53624.77	-3.188	0.002	Significant
Cassava	Family Individual	7997.5588 8373.8611	0.346	0.730	Not significant
Cocoyam	Family Individual	27634.62 38147.90	-3.515	0.001	Significant
Sweet potato	Family Individual	4238.8667 15743.08	-2.928	0.007	Significant
Pigeon pea	Family Individual	6559.5714 5567.2000	0.818	0.423	Not significant
Melon	Family Individual	5636.9143 6904.7619	-2.015	0.049	Significant
Tomato	Family Individual	12812.50 15652.80	-0.728	0.489	Not significant
Okro	Family Individual	2496.2206 3373.7926	-3.162	0.002	Significant
Rice	Family Individual	24166.75 4633.33	-3.250	0.008	Significant
Groundnut	Family Individual	10712.50 16729.16	-1.780	0.089	Not significant

Source; Field Survey, 2000.

It was observed that 50 percent of the crops planted differed significantly in terms of their monetary value. The crops involved here are yam, cocoyam, sweet potato, melon, okro, and rice and their t-calculated

values include -3.188,-3.515, -2.928, -2.015, -3.162 and -3.250 respectively. These values are greater than the critical t-value, 1.96, indicating that the differences in their monetary value are statistically significant. Specifically, the monetary values of these crops mentioned above were greater in individual land than in family land. This was shown in their mean values.

On the other hand, crops like maize, cowpea, cassava, pigeon pea, tomato and groundnut with low absolute t-values (-1.885, -1.000,0.346, 0.818, -0.728, and -1.780 respectively) indicated that there is no significant difference in their monetary value under family and individual land tenure. This is because their absolute t-values are less than 1.96.

Based on the following significant variables - yam, cocoyam, sweet potato, melon, okro and rice, the hypothesis that land tenure has no significant impact on the agricultural productivity of farmers was rejected. For other crops such as maize, cowpea, cassava, pigeon pea, tomato, and groundnut, the null hypothesis was accepted, thus, the alternative hypothesis was rejected.

4.4.2.i: Agricultural Productivity in Family Vis-a-vis State Land Tenure (Physical Units)

Table 4.50 shows the results of test of differences between means of Agricultural Productivity in Physical Units under family and state land tenure categories.

Table 4.50: Results of Test of Differences Between Means of Agricultural Productivity in Physical Units Between Family and State Land Tenure Categories

Variable	Land Tenure Categories	Mean	T - Cal	Level of Significance	Statistical Judgement
Maize	Family State	447.6545 287.5333	3.351	0.002	Significant
Cowpea	Family State	148.3889 78.3750	3.007	0.007	Significant
Yam	Family State	3126.7143 2278.0000	0.802	0.428	Not Significant
Cassava	Family State	1809.9118 2125.0588	- 0.913	0.364	Not Significant
Cocoyam	Family State	1354.1538 1130.0000	0.848	0.528	Not Significant
Sweet potato	Family State	413.2667 483.7500	- 0.901	0.381	Not Significant
Pigeon Pea	Family State	205.0000 120.0000	2.365	0.056	Significant
Melon	Family State	130.7143 51.0000	7.665	0.000	Significant
Tomato	Family State	369.0000 300.0000	0.376	0.771	Not Significant
Okro	Family State	122.2647 89.1429	1.365	0.207	Not Significant
Rice	Family State	782.5000 -	-	-	-
Groundnut	Family State	410.9000 224.6667	1.768	0.105	Not Significant

Source: Field Survey, 2000.

The data presented in table 4.50 showed that there are significant differences in the physical output of maize, cowpea, pigeon pea, and melon under family and state land tenure. This was because the absolute t - values of these crops (3.351, 3.007, 2.365 and 7.665 respectively) were greater than the t - tabulated value (1.96). Based on their mean values, it is observed that

the physical output of these crops are greater in family land than state land tenure.

The data in the same table showed that there is no significant difference in the physical productivity of yam, cassava, cocoyam, sweet potato, tomato, okro, and groundnut since their absolute t - values are less than 1.96. Their absolute t-value of rice was not computed since it was not cultivated in state land.

Since the physical out put in kg of maize, cowpea, pigeon pea and melon differed significantly between the two land tenure groups, the hypothesis that land tenure has no significant impact on the agricultural productivity of farmers was rejected. For crops such as yam, cassava, cocoyam, sweet potato, tomato, okro and groundnut, which did not show any significant difference in their yield, the null hypothesis was accepted.

4.4.2.j: Agricultural Productivity in Family Vis-a-vis State Land Tenure (Monetary Terms)

Table 4.51 shows the results of test of differences between means of Agricultural Productivity in Monetary Value between family and state land tenure.

Table 4.51: Results of Test of Differences Between Means of Agricultural Productivity in Monetary Value Between Family and State Land Tenure Categories

Variable	Land Tenure	Mean	T - Cal	Level of Significance	Statistical Judgement
Maize	Family State	6338.8727 3804.2000	3.726	0.001	Significant
Cowpea	Family State	4664.8333 2243.7500	3.745	0.001	Significant
Yam	Family State	37645.74 26666.50	0.849	0.402	Not Significant
Cassava	Family State	7997.5588 9216.6471	- 0.856	0.400	Not Significant
Cocoyam	Family State	27634.62 18000.00	4.970	0.000	Significant
Sweet Potato	Family State	4238.8667 6500.0000	- 1.726	0.123	Not Significant
Pigeon Pea	Family State	6559.5714 3733.0000	- 2.639	0.039	Significant
Melon	Family State	5636.9143 2032.3333	7.388	0.000	Significant
Tomato	Family State	12812.50 10500.00	0.610	0.651	Not Significant
Okro	Family State	2496.2206 1726.2206	1.548	0.154	Not Significant
Rice	Family State	24166.75 -	-	-	-
Groundnut	Family State	10712.50 7125.0000	1.179	0.264	Not Significant

Source: Field Survey, 2000.

The data presented in Table 4.51 showed that there are significant differences in the monetary value of maize, cowpea, cocoyam, pigeon pea and melon produced under family and state land. This is because the t - calculated values of these crops (3.726, 3.745, 4.970, 2.639 and 7.388 respectively) are greater than 1.96 (the t - tabulated value) at 5 percent confident level. From

their mean values, it was observed that the monetary values of these crops were greater in family land than state land.

For other crops like yam, cassava, sweet potato, tomato, okro and groundnut, they did not show any significant difference in their monetary value since there absolute t - values are less than 1.96. Their absolute t - values were shown in the table above.

Since the monetary values of maize, cowpea, cocoyam, pigeon pea, and melon showed significant differences between the two land tenure categories, the hypothesis that land tenure has no significant impact on the agricultural productivity of farmers was rejected. For other crops such as yam, cassava, sweet potato, tomato, okro and groundnut, which did not show any significant difference, the null hypothesis was accepted, thus, the alternative hypothesis was rejected.

4.4.2.k Agricultural Productivity in Individual Vis-a-vis State Land Tenure (Physical Units)

The data presented in Table 4.52 shows the results of test of differences between means of Agricultural Productivity in Physical Terms under individual and state land tenure.

Table 4.52: Results of Test of Differences Between Means of Agricultural Productivity in Physical Units Between Individual and State Land Tenure Categories

Variable	Land Tenure Categories	Mean	T - Cal	Level of Significance	Statistical Judgement
Maize	Individual State	5534.0230 287.5333	6.006	0.000	Significant
Cowpea	Individual State	187.1698 78.3750	6.024	0.000	Significant
Yam	Individual State	4351.5652 2278.0000	1.514	0.134	Not Significant
Cassava	Individual State	1933.94444 2125.0588	- 0.537	0.593	Not Significant
Cocoyam	Individual State	1923.0986 1130.0000	2.851	0.140	Significant
Sweet Potato	Individual State	1545.2500 483.7500	3.004	0.012	Significant
Pigeon Pea	Individual State	172.7333 120.0000	2.489	0.026	Significant
Melon	Individual State	153.8254 51.0000	8.772	0.000	Significant
Tomato	Individual State	425.8667 300.0000	0.364	0.721	Not Significant
Okro	Individual State	160.4889 89.1429	3.061	0.017	Significant
Rice	Individual State	1564.0667 -	-	-	-
Groundnut	Individual State	574.7188 224.6667	4.601	0.000	Significant

Source: Field Survey, 2000.

Table 4.52 showed that most of the crops planted differed significantly under individual and state land tenure in terms of their physical output. These crops with their t - calculated values include maize (6.006), cowpea (6.024) cocoyam (2.851), sweet potato (3.004), pigeon pea (2.489), melon (8.772), okro (3.061) and groundnut (4.601). These values are greater than the

critical t - value (1.96) indicating that the differences are statistically significant. Their mean values also indicated that the physical values of these crops were greater in individual land than the in state land.

The data in the same table showed that physical output in kg of yam, cassava and tomato did not show any significant difference between their means under individual and state land. This is because their absolute t - values (1.514, - 0.537 and 0.364 respectively) are less than the t- tabulated value at 5 percent probability level. The absolute t - value of rice was not computed since rice was planted in state land.

4.4.2.1: Agricultural Productivity in Individual Vis-a-vis State Land (Monetary Units)

Table 4.53 shows the results of test of differences between means of Agricultural Productivity in Monetary Value under individual and state land tenure.

Table 4.53: Results of Test of Differences Between Means of Agricultural Productivity in Monetary Value Between Individual and State Land Tenure Categories

Variable	Land Tenure Categories	Mean	T - Cal	Level of Significance	Statistical Judgement
Maize	Individual State	7283.2535 3804.2000	6.085	0.000	Significant
Cowpea	Individual State	5405.9057 2243.7500	6.232	0.000	Significant
Yam	Individual State	53624.77 26666.50	1.436	0.371	Not Significant
Cassava	Individual State	8373.8611 9216.6471	- 0.553	0.583	Not Significant
Cocoyam	Individual State	38147.90 18000.00	8.845	0.000	Significant
Sweet Potato	Individual State	15743.08 6500.0000	2.101	0.057	Significant
Pigeon Pea	Individual State	5567.2000 3733.0000	2.766	0.015	Significant
Melon	Individual State	6904.7619 2032.3333	9.005	0.000	Significant
Tomato	Individual State	15652.80 10500.00	0.399	0.696	Not Significant
Okro	Individual State	3373.7926 1726.1429	3.511	0.009	Significant
Rice	Individual State	46333.33 -	-	-	-
Groundnut	Individual State	16729.16 7125.0000	3.767	0.002	Significant

Source: Field Survey, 2000.

The data in table 4.53 showed that there are significant differences in the monetary value of most of the crop output under individual and state land. This is because the absolute t - values of maize (6.085), cowpea (6.232), cocoyam (8.845), sweet potato (2.101), pigeon pea (2.766), melon (9.005), okro (3.511) and groundnut (3.767) are greater than the critical t - value

(1.96), indicating that the differences are statistically significant. Their mean values also showed that the monetary values of these crops are significantly greater in individual land than state land.

On the other hand, the monetary value of yam, cassava and tomato produced did not differ significantly between the two land tenure categories. This is because their absolute t - values (1.436, - 0.553 and 0.399 respectively) are less than 1.96.

Since both the physical out put and monetary values of maize, cowpea, cocoyam, sweet potato, pigeon pea, melon, okro and groundnut showed significant differences between the two land tenure groups, the hypothesis that land tenure has no significant impact on the agricultural productivity of farmers was rejected. For other crops such as yam, cassava and tomato which did not show any significant difference, the null hypothesis was accepted, thus, the alternative hypothesis was rejected.

Chapter Five

5.0 Summary, Recommendations and Conclusion

5.1 Summary

5.1.1 Purpose of the Study, Objectives and Methodology

The study was conducted to critically examine the impact of land tenure on resource allocation, land conservation and agricultural productivity in rural areas of Enugu State. This study was carried out as a result of persistent problem of poor and inadequate land tenure arrangement in relation to agricultural production in Nigeria, despite the introduction of various agricultural policies and programmes.

The specific objectives covered in order to achieve the main objective of the study include: identification and characterization of various forms of land tenure and land rights among the farmers; determination and examination of resource allocation patterns of farmers under the various land tenure regimes and the extent to which any observed differences in resource allocation can be attributed to the differences in land tenure conditions; determination and assessment of the effects of land tenure on land conservation behaviour and practices of farmers, and assessment and analysis of the impact of land tenure on agricultural productivity or yield of farmers.

The orientation of the study was guided by the following null hypotheses:

(a) Land tenure has no significant impact on the resource allocation patterns of farmers.

(b) Land tenure has no significant impact on the land conservation practices of farmers.

(c) Land tenure has no significant impact on agricultural productivity of farmers.

The study covered six communities from three local government of Enugu State. Random selection of 120 farmers was made. Primary and secondary data were used to generate data for the study. Primary data were generated by the means of questionnaire administered to the farmers selected. Data generated were analysed using descriptive statistics, analysis of variance, test of differences between means and multiple regression.

5.1.2 Highlights of Findings - Socio-Economic and Land use Characteristics of Farmers and the Land Tenure Situation

The study revealed that relatively high proportion (66.7%) of farmers fall within the middle-aged group (30 - 50 years). Majority of the farmers were male (96%). Women farmers were very few (4%) since they were restricted in terms of land ownership. The average household composition were 8 persons. While majority of the farmers (54.17%) had low level of education (primary education), relatively high proportion of them were completely illiterate (40%).

Findings from the study showed that the average number of plots each farmer has was six (6) while an average of four (4) plots were cultivated in the

5.1.3 Highlights of Findings - Resource Allocation under the Different Land Tenure

With respect to resource allocation patterns, family labour, hired labour, purchased seeds, and organic manure were highly employed in almost all the land tenure categories. Inorganic fertilizer application was relatively low in the study area except in state land where over 70% used inorganic fertilizers. High application of organic manure as a substitute to fertilizer might have been as a result of inadequate supply and high cost of inorganic fertilizers. Agro chemicals were the least in application.

The study revealed that the average number of crops grown in each plot under different land tenure categories is four (4) indicating the prevalence of mixed cropping in the study area. However, over 65% and 50% of each land tenure category was planted with maize and cassava respectively. Following these were okro, melon, yam and cocoyam. Cassava was highly planted in state land (73.11%) and communal land (60%). The crops that were mainly planted as the dominant crops are yam, cassava, cocoyam, maize, sweet potato, groundnut and rice. Other crops such as okro, tomato, melon, pigeon pea, were planted as inter crops.

Different tree species were also growing in each of the land tenure categories. However, individual land with the average of four (4) tree species has the greatest number of trees growing in them.

In determining whether there were significant differences in the resource allocation patterns of farmers under different land tenure categories,

analysis of variance was employed. The findings revealed that at 5 percent probability level, the values of F - ratio showed that there were significant differences in the amount of family labour, hired labour, inorganic fertilizer and organic manure but for agro chemicals, the difference was not statistically significant.

In assessing the extent to which resource allocation differ among the land tenure categories, statistical test of differences of means was employed. The findings revealed that it was only the amount of organic manure that differ significantly in both their physical and monetary value under the four different land tenure regimes. For some other resource allocation variables like family labour, hired labour, inorganic fertilizer and agro - chemicals, their results were mixed considering their absolute t - values. However, based on their mean values and number of significant variables, individual land tenure has the highest amount of resource allocation.

5.1.4 Highlights of Findings - Land Conservation under the Different Land Tenure

The data obtained concerning land conservation practices in the study area showed that mounding and crop rotation were highly practised in all the land tenure categories. Specifically, over 94% of individual land practised boundary fencing, organic manuring, tree planting and tree maintenance; over 85% and 70% of family land carried out organic manuring and tree maintenance respectively while over 80% of communal land practised organic

manuring as land conservation measures. The land conservation practices that were lowly adopted in all the land tenure categories are terracing, drainage, earth bank, contour cultivation, ridging, mulching and tractorization. Strip cropping was not practised in the study area.

The result obtained from the ANOVA test of land conservation practices showed that the differences in the amount of money used for drainage, mounding, contour cultivation, boundary fencing, ridging, organic manuring, crop rotation, tree planting and tree maintenance under different land tenure categories were statistically significant. However, the amount used for terracing, earth bank, mulching, and tractorization were not statistically significant.

The findings from the test of differences between means of land conservation practices showed that among all the land conservation practices adopted, it was only organic manuring and crop rotation that were statistically significant in terms of their differences across the four land tenure categories. For some others like, drainage, mounding, contour cultivation, boundary fencing, ridging, tree planting and tree maintenance, their results were mixed considering the specific land tenure under comparison. Few others like terracing, earth bank, mulching and tractiorization did not show any significant difference in the amount of money used. However, individual land had the highest degree of land conservation considering their mean values.

5.1.5 Highlights of Findings - Agricultural Productivity under the Different Land Tenure

The results of analysis of variance of agricultural productivity showed that there were significant differences in both the physical and monetary value of crops such as maize, cowpea, yam, cocoyam, sweet potato, melon, okro and groundnut under the four land tenure categories. Other crops such as cassava, pigeon pea and tomato showed no significant differences in both their physical and monetary values.

In the test of differences between means of agricultural productivity under different land tenure regimes, the results obtained were mixed. Based on the number of significant variables, the differences in both physical and monetary value of crops under impermanent land tenure (family, communal and state) were very small especially between communal and state land tenure. But when individual land was compared with other forms of impermanent land tenure in relation to crop yield (physical and monetized terms), there were greater differences.

5.2 Recommendations

The results that emerged from this study have vital policy implications for enhancing and promoting better land tenure arrangement for accelerated and sustainable agricultural development in Nigeria. These policy recommendations are as follows:

A pragmatic approach that promotes the adaptability of existing land tenure institution appears preferable to radical reform, either of an individualist or collectivist type. In fact, there is need for preserving equity aspects of customary tenure while simultaneously deciding on how much individualization to encourage and evolving a form of social organisation that would transform the agrarian sector for the purpose of improved productivity and welfare. In this context, it needs to be remembered that a haphazard introduction of capital and technology could lead to a disintegration of the land tenure system and seriously undermine the social and economic security of the farmer.

Qualitative and quantitative insights obtained by the cross-sectional study substantiate the historical evidence that the indigenous land tenure systems in Enugu state have improved along a continuum in the direction of greater individualization of land rights. In order to take advantage of this dynamic state of indigenous land tenure for the promotion of agricultural and rural development, a programme of simple and grass roots - oriented land registration and land titling is proposed.

Some governments (for example, those of Botswana, Nigeria and Swaziland) are unnecessarily restricting land transactions through policies that seek to retribalize land in the pursuit of rather nostalgic idealizations of African rural society (Cohen, 1980; Bruce, 1988). Rather than restricting land markets, government should create an "enabling" legal and institutional

environment for more efficient transactions. This might entail establishing a voluntary system to simply record the details of land transactions and the interests of the different parties, and providing or reinforcing channels for the enforcement of all duly recorded contractual arrangements. These kinds of intervention could go a long way towards resolving many of the dispute that arise over land, particularly in areas where significant migrant or stranger farmers have settled.

The presence of ambiguous and restricted ownership of land by women is particularly troubling. Women should be entitled to plots of land for agricultural production. Government policies should incorporate women liberation as it concerns land ownership and land rights.

There is no doubt that there is a need for structural reform policies on the rural sector to broadly extend economic opportunity to the rural population. The Land Use Act needs to be modified to take the whole sectors of agrarain structure into consideration and to rid it of measures that are inconsistent with equity goals. There is also the need for integrating a land reform policy with the overall strategy of agricultural development and for constantly examining the implications of the emerging production relationships for land tenure and agricultural development.

Clearly, there is logic in the government's desire to control ownership of the land as provided for by the Land Use Act. Since land is the primary means of production for the vast majority of Nigerians, government needs to be more conscious and selective in acquiring rural lands. The cost to the rural people

who own the land should be carefully considered. It is not enough to make cash payments to compensate for the loss of houses and tree crops, the government should provide alternative lands and build houses for those affected.

5.3 Conclusion

The evidence from this study supports the hypothesis suggested by historical studies that African indigenous land right systems have spontaneously evolved from systems of communal control towards individualized rights in response to increase in commercialization, population pressure and technological change. Cross sectional data on the various forms of land tenure categories indicated that over 60% of the land owned by the farmers in the study area was individual land. However, the distinguishing feature of different tenure regimes may thus be said to revolve around restrictions on the individual holder's ability to transfer land (only among family members, within the lineage or community, or to outsiders; and with or without approval from other lineage or community members) which also tends to coincide with the mode of transmittal (inheritance, gifts or bequests and sales).

Obviously, land tenure has a remarkable impact on the patterns of allocation of resources, the nature and degree of land conservation practices and the consequent agricultural productivity. However, the results from the study have mixed evidence. Where as land tenure had significant impact on

some resources allocated, land conservation practices and yield of some crops, its impact on others was not significantly felt. Generally, individual land which has greater security and certainty of title showed greater potentials for promoting high resource allocation, quality and lasting investment on land conservation and sustainable agricultural productivity. In conclusion therefore, effort should be made by the government to improve land tenure arrangements which aims at moving towards privatization of land rights.

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Appendix

UNIVERSITY OF NIGERIA, NSUKKA
DEPARTMENT OF AGRICULTURAL ECONOMICS

QUESTIONNAIRE ON THE IMPACT OF LAND TENURE ON RESOURCE ALLOCATION, LAND CONSERVATION AND AGRICULTURAL PRODUCTIVITY IN RURAL AREAS OF ENUGU STATE

Section A: Socio-economic Characteristics of the Farmer

Fill in the black spaces provided

1. Name of Agricultural Zone .....
2. Name of Local Government Area .....
3. Name of Village/Community .....
4. Sex .....
5. Number of Years spent in formal schooling .....
6. Household size .....

Section B: Land Tenure and Rights

1. How many pieces of land do you have in total? .....
2. How many pieces of land are you farming this year? .....
3. For each of the pieces of land you own, say the ownership status and length of permanence.

Name of Plot	Type of Ownership	Length of Permanence
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

For the plots of land you are farming this year, say the ownership status and length of permanence

Name of Plot	Type of Ownership	Length of Permanence
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

Section C: Characteristics of Communal/Village Lands

For your pieces of farm land that have communal or village ownership, answer the following questions:

1. How long have you farmed or used the land? ..... Years
2. How long into the future shall you be entitled to use or farm the land? . Years
3. Can you use or farm the communal or village land till death? Yes.....No
   .....
4. If yes, can your sons inherit the piece of land after your death? Yes.....No
   If yes, what are the conditions/restrictions? .....
   .....
   If no, why? .....
   .....
5. Are you free to use the communal or village land the way you like? Yes.....No
   .....
   If yes, what are the conditions/restrictions? .....
   .....
   If no, why? .....
   .....
6. Are you free to plant permanent crops or trees on the village or communal land?
   Yes.....No .....
   If yes, what are the conditions/restrictions? .....

If no, why? .....
.....

7. Can you prohibit or prevent any other person from using the communal or village land under your usage?. Yes.....No .....
If yes, what are the conditions/restrictions? .....
.....
If no, why? .....
.....

8. Can you rent out the communal or village land? Yes.....No .....
If yes, what are the conditions/restrictions attached to it? .....
.....
If no, why? .....
.....

Section D: Characteristics of Family/kinship Land

For your pieces of farm land that have family or kinship ownership, answer the following questions?

1. How long have you farmed or used the land? ..... Years
2. How long into the future shall you be entitled to use or farm the land? . Years
3. Can you use or farm the family/kinship land till death? Yes.....No ....
4. If yes, can your sons inherit the piece of land after your death? Yes.....No
.....
If yes, what are the conditions/restrictions attached to it? .....
.....
If no, why? .....
.....
5. Are you free to use family/kinship land the way you like? Yes.....No
If yes, what are the conditions/restrictions attached to it? .....
.....
If no, why? .....
.....
6. Are you free to plant permanent crops or trees on the family/kinship land? Yes.....No .....
If yes, what are the conditions/restrictions attached to it? .....

.....

If no, why? .....

.....

7. Are you free to sell or transfer the family/kinship land to another person? Yes.....No .....

If yes, what are the conditions/restrictions? .....

.....

If no, why? .....

8. Can you prohibit or prevent any other person from using the family/kinship land under your usage? Yes.....No .....

If yes, what are the conditions/restrictions? .....

.....

If no, why? .....

.....

9. Can you rent out the family/kinship land? Yes.....No .....

If yes, what are the conditions/restrictions? .....

.....

If no, why? .....

.....

Section E: Characteristics of Individual Land

For lands owned individually by you, answer the following questions.

1. How did you acquire the land? .....

Purchase .....Inheritance .....

Communal allocation.....family allocation.....Gift .....

2. How long have you farmed or used the land? ..... Years

3. Can you use the land till perpetuity? Yes.....No .....

4. Can your sons inherit the land? Yes.....No .....

If yes, what are the conditions/restrictions? .....

.....

If no, why? .....

.....

5. Are you free to use or farm the land in whatever manner you like? Yes.....No

.....

If yes, what are the conditions or restrictions? .....

.....

If no, why? .....

.....

6. Are you free to erect permanent structures or plant trees or the land? Yes.....No .....
If yes, what are the conditions/restrictions? .....

.....

If no, why? .....

.....

7. Are you free to pledge the land in exchange for borrowing money? Yes.....No
If yes, what are the conditions or restrictions? .....

.....

If no, why? .....

.....

8. Are you free to lend or rent out the land to someone else? Yes.....No ..
If yes, what are the conditions/restrictions? .....

.....

If no, why? .....

.....

9. Are you free to sell or transfer the land to someone else? Yes.....No ..
If yes, what are the conditions/restrictions? .....

.....

If no, why? .....

.....

10. Are you free to exclude or prevent any one else from using, farming or transferring the land? Yes.....No .....
If yes, what are the conditions/restrictions?
If no, why? .....

.....

Section F: Characteristics of State/Public Land

For your pieces of farm land that have state or public ownership, anser the following questions.

1. How long have you farmed or used the land? ..... Years
2. How long into the future shall you be entitled to use or farm the land?. . Years
3. Can you use or farm the state/public land till death? Yes.....No .....
4. If yes, can your sons inherit the piece of land after your death? Yes.....No

If yes, what are the conditions/restrictions attached to it? .....

.....

If no why? .....

.....

5. Are you free to use state/public land the way you like? Yes.....No .....
If yes, what are the conditions/restrictions attached to it? .....
If no, why? .....

6. Are you free to plant permanent crops or trees on the state/public land? Yes....No .....
If yes, what are the conditions/restrictions attached to it? .....
If no, why? .....

7. Are you free to sell or transfer the state/public land to another person? Yes.....No .....
If yes, what are the conditions/restrictions attached to it? .....
If no, why? .....

8. Can you prohibit or prevent any other person from using the state or public land under your usage? Yes.....No .....
If yes, what are the conditions/restrictions attached to it? .....
If no, why? .....

.....

9. Can you rent out the state/public land? Yes.....No .....
If yes, what are the conditions/restrictions attached to it? .....
If no, why? .....

Section G: Tenure as it Affects Land and Resources on the Lands under Communal Ownership

1. For your pieces of land that are owned by the community, are trees growing on them? Yes.....No .....
2. If yes, who planted or established the trees? .....

.....

3. Who owns the trees?.....community ..... Yourself
4. If the trees are owned by the community, are you free to harvest firewood and other products from the trees? Yes.....No .....
If no, why? .....
If yes, are there any conditions attached? Yes.....No .....
If yes, what are those conditions ? .....

.....

5. Can you exclude or prevent other members of the community from harvesting the tree products? Yes.....No .....
   If no, why? .....
   If yes, what are the conditions/restrictions attached? .....
   .....

Section H: Tenure as it Affects Land and Resources on the Lands under Family or Kinship Ownership

1. For your pieces of land that are owned by the family or kinship, are trees growing on them? Yes.....No .....
2. If yes, who planted or established the trees? .....
   .....
3. Who owns the trees?.....Family ..... yourself
4. If the trees are owned by the family, are you free to harvest firewood and other products from the trees? Yes.....No .....
   If no, why? .....
   If yes, are there any conditions attached?.....Yes .... No
   If yes, what are those conditions? .....
   .....
5. Can you exclude or prevent other members of the family form harvesting the tree products? Yes.....No .....
   If no, why .....
   If yes, what are the conditions? .....
   .....

Section I: Tenure as it Affects Land and Resources on the Lands under Individual Ownership

1. For the pieces of land owned individually, are trees growing on them? Yes.....No .....
2. If yes, who planted the trees? .....
   Your forefather.....your son.....yourself. .....
3. Who has the ownership of the trees? .....
4. Are you free to harvest the tree products any time and any how you like? Yes.....No .....
   If no, why? .....

.....

If yes, what are the conditions/restrictions? .....

5. Are you free to cut down/destroy the trees any time and any how you like?
Yes.....No .....
If no, why? .....
If yes, what are the conditions? .....
.....

6. Are you free to sell or transfer the trees to anyone else? Yes.....No
If no, why? .....
.....
If yes, what are the conditions? .....
.....

Section J: Tenure as it Affects Land and Resources on the Lands Under State or Public Ownership

1. For your pieces of land that are owned by the state/public, are trees growing on them? Yes.....No .....
2. If yes, who planted or established the trees? .....
.....
3. Who owns the trees?
Public/state .....
Yourself .....
4. If the trees are owned by the state, are you free to harvest firewood and other products from the trees? Yes.....No .....
If no, why? .....
.....
If yes, are there any conditions attached? Yes.....No .....
If yes, what are those conditions? .....
.....
5. Can you exclude or prevent other members of the state from harvesting the tree products? Yes.....No .....
If no, why? .....
If yes, what are the conditions/restrictions? .....
.....

Section K: Physical Characteristics of the Land as Assessed by the Farmers

Plot (Name)	Size of Plot	Near or Distant	Topographical Location	Land Quality
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

Section L: Resource Allocation Patterns under Different Land Tenure

Name of Plot	Amount of family Labour (Man days) (₦)	Amount of hired labour (man days) (₦)	Amount of purchased seeds used (₦)	Amount of fertilizer used (Kg/₦)	Amount of organic manure used (Kg/₦)	Amount of agro-chemicals used (litre/₦)	No. of crops grown (numbers)	NO. of trees growing (Numbers)
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								

Section M: Land Conservation Practices Under Different Land Tenure

Tick any of the following practices you carry out on the land

	Name of plot	Terracing	Drainage	Mounding	Earth bank	Contour cultiva-tion	Boundary Fencing	Ridging	Mulch-ing	Organic Manuring	Crop rota-tion	Tree planting	Tree maintenance	Strip Cropping	Tractori-zation
1.															
2.															
3.															
4.															
5.															
6.															
7.															
8.															

Section N: Land Conservation Investments Under Different Land Tenure

Name of Plot	Total Cost of Terracing	Total Cost of Drainage	Total Cost of Mounding	Total cost of earth banks	Total cost of contour cultivation	Total cost of boundary fencing	Total cost of ridging	Total cost of mulching	total cost organic manuring	Total cost of crop rotation	Total cost of tree planting	Total cost tree mainte-nance	Total cost of strip Cropping	Total cost of tractor-ization
1.														
2.														
3.														
4.														
5.														
6.														
7.														
8.														

Section O: Cropping Patterns Under the Different Land Tenure

Tick crops that are growing on the land

	Name of plot	Maize	Cowpea	Yam	Cassava	Cocoyam	Sweet potato	Pigeon pea	Melon	Tomato	Okro	Rice	Groundnut	Which of these crops is the dominant one?
1														
2														
3														
4														
5														
6														
7														
8														

Section P: Land Production and Crop Output Under Different Land Tenure

Output of the Various Crops in Kg. and ₦ (Physical and Monetary Value)

	Name of plot	Maize	Cowpea	Yam	Cassava	Cocoyam	Sweet potato	Pigeon pea	Melon	Tomato	Okro	Rice	Groundnut	Others (specify
1														
2														
3														
4														
5														
6														
7														
8														