

**CROP PRODUCTION IN THE COMPOUND FARMING SYSTEM OF SOUTHEASTERN NIGERIA**

**DANIEL S. UGWU**

**ABSTRACT**

*A study of crop production in the compound farming system of Southeastern Nigeria was carried out. The objectives of the study include the identification of the various crops and the inter-relationships among the components as well as the assessment of the potentials of the crops in the compound farming system. Data were collected by the use of interview schedules, which were pre-tested and validated. Descriptive statistics such as averages, percentages, and means were employed in the analysis of data. The results of the study showed that arable crops, tree crops, livestock and rural household people formed the components of the compound farming system. Some of the arable crops include yam (*Dioscorea spp*), cassava (*Manihot esculentum*), cocoyam (*Colocasia esculentum*) and maize (*Zea mays*). For the tree crops, the major ones were oil palm (*Elaeis guinensis*), Oranges (*Citrus spp*), mango (*Mangifera indica*) and paw-paw (*Carica papaya*). Livestock species reared in the compound farming system were mainly sheep, goats and poultry. A reasonable degree of interactions among these components was also established. These compound crops were found to have a wide range of uses and their potentials appear to be limitless. Some are used as food, medicine, browse/fodder, and source of income. Others find their uses in house construction, flavouring, mulching and as fire wood. Possible ways of increasing the production and efficient utilization of these compound crops were proffered to include effective extension network for transfer of technology and the provision of adequate infrastructural facilities for the rural household people, among others.*

**Key words: Crop production, compound farming, Southeastern Nigeria.**

**INTRODUCTION**

Farming systems represent an appropriate combination of farm enterprises, cropping systems, livestock, fisheries, forestry, poultry and the resources available to the farmer to raise them for food and/or profitability (Anikwe *et al*, 2005). The farm family as a system consists of the material and human environments. The material environment consists of physical elements (such as precipitation, temperature, topography, solar radiation and soil) and biological elements (such as natural vegetation, plant and animal pests and diseases). The human environment consists of economic, institutional and social elements. These elements are linked, and directly connected with the human environment (Amalu, 1990).

In Anambra and Enugu States and other densely populated areas of Southeastern Nigeria, a type of farming known as compound or homestead farming is in existence. Okafor (1979) described it as farms close to the homestead which are intensively cultivated with annual staples and many perennial crops in a mixed culture. Compound farms (ani-ulo in Igbo) could also be described as those farms in the immediate vicinity of the house which are distinguishable from ordinary fields or distant farms (ani-agu in Igbo) (Francis, 1985). The extent and inter-relationship among the various components of the system are not accurately understood nor recorded. Over 70% of the population of many sub-Saharan African countries are food insecure and live below poverty line. The socio-economic and socio-political status of most African countries is characterized by the vicious cycle of low productivity, high unemployment, low income, low demand, pent-up anger/frustration and socio-political instability (Ogunfowora, 2005). In Nigeria, some of the dimensions of rural poverty are lack

of access to productive resources, subsistent production/low productivity, low level of farm income, static production technology, inadequate infrastructural facilities and inefficient production system (Rahji, 1999). The demand for food in Nigeria is estimated to be increasing by about 3% per annum due to population growth and decreased purchasing power but domestic food supply appears to be growing at about 1% per annum. As a result of this supply – demand gap, food prices have been rising persistently over the last two decades (Ogunfowora, 1986). Also the problem of malnutrition has been persistently evident especially among the rural population of Nigeria. Since the majority of the rural population of Nigeria live and work within the compound farming system, its study will form the basis for designing poverty reduction interventions/programmes for the reversal of the present deficit situation in the output of crop and livestock products in the system.

## **METHODOLOGY**

**The Study Area:** The study was carried out in Southeastern agroecological zone of Nigeria. Southeastern Nigeria consists of nine states, namely Abia, Anambra, Akwa Ibom, Bayelsa, Cross River, Ebonyi, Enugu, Imo and Rivers. It is located between latitude 4° 15' and 7° N and longitudes 5° 50' and 9° 30' E. The zone largely lies within the rain forest belt of Nigeria which is characterized by high temperatures and humidity, with substantial amount of rainfall during the rainy periods of the year. The design of the study was based on the classification of the Igbo cultural area into six (6) ecological zones (Onwuejiogwu, 1981) within Anambra, Ebonyi and Enugu States of Nigeria, namely, the Scarpland, the Niger Delta and the Cross River Basin. Twelve Local Government Areas (LGAs) were purposively sampled. Based on the population density per square kilometre, the Local Government Areas were categorized into low density areas (100 person per sq. km), medium density areas (100-500 persons per square kilometer) and high population density areas (> 500 persons per sq. km).

On the average three LGAs were purposively sampled from each of the three different population density areas, namely, Anambra, Awgu, Ezcagu, Izzi, and Oji River from the low-population density areas; Nsukka, Aguata, Idemili North and Igbo-Etiti from medium density areas; and Njikoka, Ogbaru and Enugu South from high population density areas.

Twelve (12) communities were also sampled from the twelve LGAs, namely, Umuleri, Aguobu-owa, Ndubia, Ogugu and Achi in the low density areas; Opi, Nkpologu, Abatete and Aku in the medium population density areas; Abagana, Atani and Emene in the high density areas. Six (6) households were sampled from each community for the study (Table 1). Thus a total of thirty-six (36) households were used for the study.

Data were collected by in-depth interviews using questionnaires and by direct observations. The questionnaires were directed on key informants such as community leaders, opinion leaders, and sampled household heads in the selected communities. The questionnaires provided background information on general socio-economic index, arable and tree crops as well as livestock. Relevant data/information were also collected through non-participant observations of the study environment. Data generated from this study were analysed using such descriptive statistics as percentages, mean scores.

## **RESULTS AND DISCUSSION**

### **Farmers Background**

**General Characteristics:** Ninety five percent (95%) of the respondents were male heads of the households. Only 5% were widow heads. About 85% of the farmers were illiterate while 15% had basic education. Literacy *per se* may not be a necessary and sufficient requirement for engaging in livestock production. The type of education that could be relevant to livestock farming is competency based on technical education.

**Age and Occupation:** It was observed that the bulk of the household farmers were old and a small percentage fell within the middle age range. Sixty-five (65%) of the respondents were old (> 50 years), and 35% were middle aged (30 – 50 years). The result of the survey also showed that young people (< 30 years) hardly engaged in compound farming. They could, however, constitute part of the family labour. Ninety percent (90%) of the respondents had farming as their primary occupation. Only 10% had wage jobs. Again, out of the total number of farmers interviewed, 35% had secondary occupations such as trading, bricklaying, professional driving and baking, 65% had none.

**Household Features:** A typical household was characterized by the presence of the male head, the wife/wives, the children, and some members of the extended family. The average family size was five (5) members per household. Most of the communities in the study area where these compound farmers live had no pipe-borne water, and where available, it was non-functional. Also there were only limited access roads leading to these communities. Where they exist, they were not tarred and were badly maintained. The average distance of the compound to the central or local market is 1.6km.

### **Arable and Tree Crops in the Compound Farms**

**Arable Crops:** The various types of arable crop widely distributed in the compound farms in the study area include maize (*Zea mays*), yam (*Dioscorea spp*), cassava (*Manihot - esculentum*), cocoyam (*Colocasia esculentum*), pumpkin (*Cucurbita pepo*), limabean (*Phaseolus spp*), melon (*Cucumeropsis edulis*), pumpkin (*Telfairia occidentalis*) and garden egg (*Solanum macrocarpum*). Others are okro (*Hibiscus esculentus*), African spinach (*Amaranthus hybridus*), pepper (*Capsicum annum*), sweet potato (*Ipomea batatas*), bitter leaf (*Vernonia amygdaline*), and tomato (*Lycopersicon esculentum*).

It was observed from the survey that these crops were owned in varied percentage proportions by the farmers. Most of these crops were used for home consumption, as source of cash income, livestock feeding and as medicine, among others (Table 2). The edible parts of the crops range from the roots/tubers, fruits/seeds, to the leaves depending on the particular crop. The root/tubers of such crops as yam, cassava, cocoyam and sweet potatoes were eaten in almost all the parts of the region. The fruits/seeds of maize, lima bean, pigeon pea, yam bean, bambara groundnut, melon, pumpkin, okro, pepper, tomato and castor were also eaten. Furthermore, the leaves of such plants as the pumpkin, *Telfairia* (fluted pumpkin) *Solanum spp* (*añara*) were eaten, apart from their fruits/seeds. With such plants like African spinach, *corchorus* (*ahuhara*), and bitter vine, only the leaves were eaten in all the areas. Their fruits were not eaten. The homestead farmers relied very much on these crops for their source of income. Thus most of these crops were sold either as primary products or as processed food materials. Forty-six percent (46%) of the interviewed farmers processed cassava and maize 36% processed melon, 11% processed castor and 7% processed cocoyam. The survey also showed that out of the total respondents, 33% sold yam, maize, okro, and bitter leaf within one year, 28% sold cassava and melon, 22% cocoyam, tomato and garden egg. Only 17% sold sweet potato, lima bean, pepper, chochorus, and pigeon pea. None, however, sold castor and bitter vine. Some parts of most of these arable crops in the compound farms were very significant in the feeding of livestock, for example, the fruits/seeds, leaves as well as their residues. Twenty-nine (29%) of the farmer-respondents indicated the use of cassava residues in the feeding of livestock, 21% made use of yam residues, and maize grains (especially for poultry), 19% made use of maize leaves, 16% used cocoyam residues, 10% used lima bean (Akidi), pigeon pea, bambara groundnut, *telfairia*, and pumpkin as well as *Amaranthus* leaves which were favoured by only 2% of the respondents. All these provide carbohydrates, vitamins and minerals to the livestock. Some of these arable crops were used as medicines.

They were used in one way or the other to cure human diseases or ailments. It was observed from the survey that bitter leaf could be used against stomach disorder, pumpkin against malaria and bitter vine against catarrh and stomach disorder. Castor could be used effectively in the control of convulsion and when fermented as an antidote against drug poisoning.

**Tree Crops:** In the compound farms of Southeastern Nigeria, a wide range of tree crops are found, namely, *Irvingia gabonensis* (Ugiri), *Irvingia excelsa* (Agbono), oil palm (*Elaeis guineensis*), African bread fruit (*Treculia africana*), African pea (*Dacryodes edulis*), kola (*Cola acuminata*) and Coconut (*Cocos nucifera*). Others include oranges (*Citrus spp*), mango (*Mangifera indica*), avocado pear (*Persea americana*), Pawpaw (*Carica papaya*), guava (*Pasidium guajava*), Pineapple (*Ananas comosus*), bananas (*Musa sapientum*), Cashew (*Anacardium occidentale*), Fig (*Ficus spp*), *Ricinodendron heudelotii* (Okwe), *Newbouldia leavis* (Ogilishi) and *Dracaena arborea* (Ibodo).

Some of these tree crops were more widely distributed than others. Ownership varied in numbers among the farmers in their compound farms. They offer themselves to a variety of important uses (Table 3). Many of these tree crops contributed to the compound farm in the form of food, cash income, soil improvement, boundary demarcation. Medicine and symbolic uses. Depending of the type, several of these tree crops could be eaten in the form of vegetables, fruits and nuts, condiments, local beverages, edible fats and oil. Parts of these tree crops eaten were either the fruits/seeds saps or leaves. The fruits/Seeds, of almost all the different edible tree crops were eaten in almost all the parts of Southeastern Nigeria. From the survey, the leaves of *Ficus spp* (Ogbu) were only eaten by human beings in such areas as Izzi, Oji River, Aguata and Anambra Local Government Areas (LGAs). Many of these woody plants have appreciable amount of protein, fats and oil, carbohydrate, minerals and vitamins as indicated by many workers (Okafor and Okolo, 1974, Okigbo, 1975 and 1976, Oyenuga, 1968).

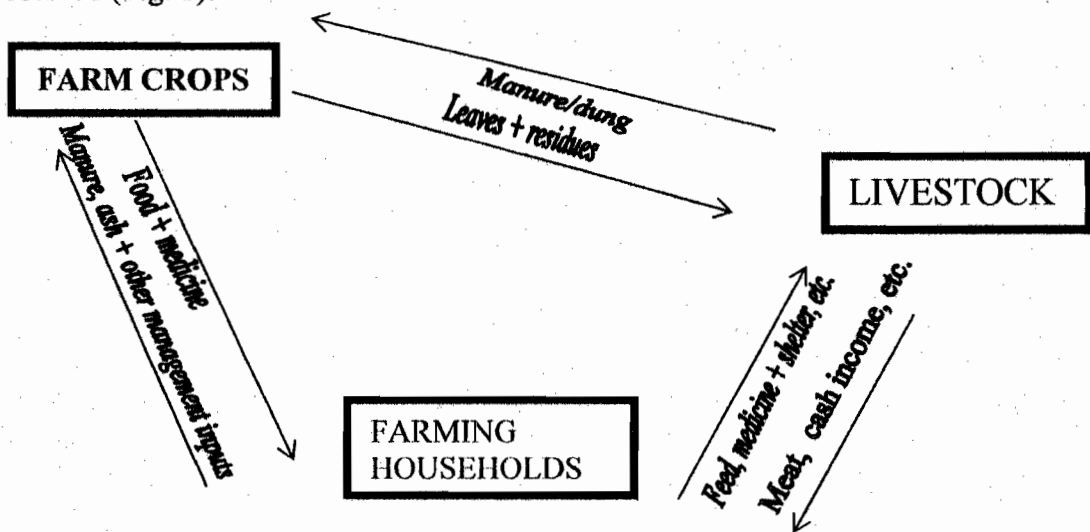
One of the most significant contributions of the tree crops to the compound farms is the cash income they generate, directly or indirectly. Cash income were earned by virtue of sales of food items. The survey revealed that within one year, about 29% of the farmers sold oranges, 24% mango, 19% African pear and bread fruit. Again about 14% of the respondents sold star-apple (udala), coconut, pawpaw and bananas, and 9% sold cashew and avocado pear. Some of these tree crops were either sold or consumed in the processed form. Of all the farmers interviewed during the survey, 18% processed *Irvingia spp* (agbono/ugiri), 57% processed oil palm and 25% bread fruit (ukwa). Some of these tree crops were observed to promote soil condition or fertility e.g. *Acio beteri* (Ahaba), *Anthonotha macrophylla* (ubaba ntioko), *Berlinia grandiflora* (Ubaba), *Napoleona imperialis* (Ukpodu), and *Pentaclethra macrophylla* (Ukpaka, Ugba). "nutrient pumps" which bring back to the top soil the nutrients which have been displaced, through leaching, to the deeper soil layer (Poulsen, 1978). They also protect the soil against erosion in many ways by serving as wind breaks, intercepting rainfall, reducing splash, restoring a favourable soil structure, increasing percolation and reducing run-off (Okafor, 1979). It was observed that some of the tree crops were used for boundary establishment in the compound and outlying farms, for example, *Ficus spp* (Ogbu), *Newbouldia leaves* (Ogilishi), *Dracaena arborea* (Ibodo) and *Erythrina senegalensis* (Echichi). They form a basis for land tenure, land use and the farming system.

In the survey areas it was discovered that most of the tree crops offered themselves for medical use. Parts of the tree crops used for this purpose were the bark, leaves, fruits/seeds or sap. Most of the respondents remarked that the leaves of mango, pawpaw, guava and lime could be used against malaria. Again coconut sap could be used to neutralize the effect of drug over-dose. Palm kernel oil could be used to cure convulsion, cold and fever in children. Palm oil could also be applied to wounds or cuts for quick healing. Some of these

tree crops were culturally esteemed and of immense significance in the traditional Igbo society of Southeastern Nigeria. Kola nuts were used as a symbol of peace and unity as well as in traditional worship. Palm oil and Fig (*Ficus spp*) were also noted to be of great significance in traditional religion. Palm oil together with yam were used essentially for sacrifice. *Ficus spp* (*Ogbu*) were used for erecting shrines.

### Inter-Relationships in the System

Survey results showed that there were interactions/inter-relationships between the crops, the livestock and the household people. With respect to compound crops and livestock, livestock obtain feed and medicine from the compound farm crops. Leaves of such tree crops as oil palm, *Ficus spp*, *Dialium guineense* (*Icheku*) as well as the residues from orange, banana, mango and pawpaw could also be fed to livestock. Also *Treculia africana* (pulp), *Dacryodes edulis* (seed) and *Irvingia gabonensis* (pulp) were also fed to livestock in many parts of Southeastern Nigeria. All these found their sources in the compound farms. The compound farms provided such herbal medicines as the *Azadirachta indica* (*ichikara*) to aid parturition in farm animals. Also oil from oil palm fruit could also be used against scabbies and other ectoparasitic infections of farm animals like sheep and goats. Livestock, on the other hand, provide manure to the compound farms. This could be in the form of faeces or dungs or droppings and urine of farm animals. They increase soil fertility. Compound crops benefit from the soil fertility through intake of soil nutrients and people benefit indirectly through feeding on the crops. The relationship between livestock and household people was also observed (Fig. 1).



**Fig. 1: Inter-relationships between crops livestock and farming households in the compound farming system.**

The farmers benefit from livestock encompass all the reasons why they keep livestock, namely, cash income, religion/worship, ceremonies/festivals, and home consumption. From the survey, about 32% of the local farmers interviewed kept livestock mainly for cash income, 23% ceremonies, 12% home consumption, 7% tradition, manure and entertainment respectively, 6% religion and special interest respectively. Cash income ranked highest. On the other hand, household farmers contributed to the welfare of the livestock through such management practices as the provision of animal feed, water, shelter/housing, and medicine for the farm animals. With these interactions between crops, livestock and household people,

the cycle of inter-dependence and inter-relationship is sustained in the compound farming system.

## CONCLUSIONS AND POLICY RECOMMENDATIONS

**Conclusions:** *The following conclusions could be made about crop production in the compound farming systems of Southeastern Nigeria based on the results of the study:*

1. The rural environments where the majority of the compound farmers are found lacked adequate infrastructural facilities such as accessible roads, piped water and electricity, among others.
2. Majority of the household farmers were illiterates, aged and have farming as their primary occupation. The middle-aged energetic rural men and women seemed to have abandoned farming in the rural environment for the urban cities.
3. Arable and tree crops constitute important components of the compound farming system. They were used as food, medicine as well as for boundary establishment, soil improvement and symbolic purposes, among others. Arable and tree crops therefore play significant roles in the sustenance of the system.
4. Poultry, sheep and goats were the dominant species of livestock in most compound farms and their increased production holds great potential.

## RECOMMENDATIONS

The following recommendations are noteworthy:

1. **Effective Extension Network:** The results of agricultural research involving fertilizer recommendation and application, maintenance of soil fertility under continuous cropping and effective crop combination that will result in optimum crop yields per unit area of land will easily be transferred to the farmers. Improved technologies such as seeds, chemicals and improved livestock could be made available to them.
2. **Adoption of alley cropping system:** This is described as a system in which crops are grown in alleys between rows of frequently pruned trees (e.g. *Leucaena leucocephala* and *Gliricidia sepium*). Food crops may be planted as hedgerows around the farmers compound farms. It will link crop and livestock production by providing forage, mulch and staking material. It will also alleviate some primary problems of crop production such as soil fertility maintenance, soil erosion as well as supplying perennial source of high quality fodder (Kang *et al* 1981, Anikwe *et al* 2005).
3. **Adequate provision of infrastructural facilities:** Major factors that limit sustainable agricultural growth, wealth creation, and improved food security and livelihood are lack of awareness of market opportunities and product utilization possibilities due to poor infrastructure and ineffective market information system (Ogunfowora, 2005). This could be addressed through various rural development programmes of relevant agencies for the provision of good roads, good drinking water, electricity and health facilities in the rural communities of Southeastern Nigeria where the bulk of our compound household farmers live. This will stem the mass exodus of able-bodied youths to the cities.
4. The use of these arable and tree crops for food notwithstanding, their potential uses for industrial, pharmaceutical or medical purposes, among others, should be further explored or investigated.

Table 1: The Ecological Zones and Population Densities of the Selected Local Government Areas and Communities in selected States of Southeastern Nigeria.

Population Densities

Ecological Zones	100 per km <sup>2</sup> (Low)		100-500 per km <sup>2</sup> (Medium)		>500 per km <sup>2</sup> (High)	
	LGA	Community	LGA	Community	LGA	Community
Scarpland	None	None	Nsukka Aguata	Opi Nkpologu	Njikoka	Abagana
	LGA	Community	LGA	Community	LGA	Community
Lower Niger Basin	Anambra	Umuleri	Idemili North	Abatete	Ogbaru	Atani
	LGA	Community	LGA	Community	LGA	Community
Cross River Basin	Awgu Izzi Ezeagu Oji River	Ogugu Ndubia Aguobu-owa Achi	Igbo-Etiti	Aku	Enugu South	Emene
	LGA	Community	LGA	Community	LGA	Community

Source: Onwuejiogwu, M. A. (1981).

Table 2: Common Arable Crops and their Uses

Arable Crop	Uses
<i>Manihot esculenta</i>	Home consumption, income, leaves and residues for livestock.
<i>Colocasia esculentum</i>	Thickening of soup, home consumption, leaves medicinal.
<i>Hibiscus esculentum</i>	Soup-making, commercial value.
<i>Dioscorea spp. (yam)</i>	Home consumption, income-earning, peels for livestock.
<i>Zea mays (maize)</i>	Home consumption, commercial value, leaves and grains for livestock-feeding.
<i>Telfairia occidentalis</i>	Leaves eaten as vegetable.
<i>Capsicum annum</i>	Condiment.
<i>Phaseolus spp</i>	Home consumption, income.
<i>Cucurbita pepo</i>	Home consumption (vegetable).
<i>Amaranthus hybridus</i>	Green leave vegetable
<i>Vernonia amygdalina</i>	Leafy vegetable, commercial value, Medicine for stomach trouble.
<i>Cucumeropsis edulis</i>	Home consumption, income-earning.
<i>Solanum macrocarpus</i>	Home consumption, commercial value.
<i>Lycopersicon esculentum</i>	Fruit, vegetable, income-earning.
<i>Vigna subterranean</i>	Home consumption.
<i>Corchorus olitorus</i>	Leafy vegetable
<i>Ricinus communis</i>	Flavour condiment in soup-making, Laxative medicine.
<i>Cajanus cajan</i>	Home consumption, market sale.
<i>Bitter vine</i>	Home consumption, market sale.
<i>Yam bean</i>	Home consumption, vegetable.

Source: Field survey.



Table 3: Common Tree Crops and their Uses

Tree Crop	Uses
<i>Citrus spp</i>	Fruit, cash
<i>Elaeis guineensis</i>	Source of palm oil, wine, cash, Structural use/roofing, fire-wood
<i>Cocos nucifera</i>	Fruit eaten or sold
<i>Treculia africana</i>	Food, cash value, browse leaves
<i>Carica papaya</i>	Medicinal treatment against malaria, constipation, diarrhoea, fruit.
<i>Cola acuminata</i>	Livestock feed (leaves), cash (nut)
<i>Ficus spp</i>	Symbolic use.
<i>Dacryodes edulis</i>	Fodder, boundary demarcation
<i>Mangifera indica</i>	Fruit, food supplement, source of cash, Livestock feeding (leaves).
<i>Psidium guajava</i>	Fruit eaten, income earner, medicine (leaves)
<i>Musa sapientum</i>	
<i>Newbouldia leavis</i>	Fruit, firewood
<i>Dracaena arborea</i>	Fruit
<i>Irvingia excelsa</i>	Stakes, browse
<i>Ananas comosus</i>	Fences, boundary demarcation
<i>Anacardium occidentale</i>	Fruit, livestock feeding (pulp)
<i>Ricinodendron heudoletii</i>	Fruit
<i>Persea americana</i>	Fruit
<i>Chrysophyllum schweinfurthii</i>	Browse, yam stakes
<i>Irvingia gabonensis</i>	Market value, fruit
<i>Garcinia cola</i>	Fruit, cash crop, firewood
<i>Pentaclerthra macrophylla</i>	Fruit eaten, source of income Medicinal use, construction Condiment for soup, flavouring, Firewood, mulching (leaves).

Source: Field Survey

**REFERENCES**

Amalu, U. C. (1998), *Agricultural Research and Extension Delivery Systems in Sub-Saharan Africa*, The University of Calabar Press, Calabar, Nigeria P. 38.

Anikwe, M.A.N, Onyia V. N, Ngwu O. E. & Mba, C. N. (2005), *Ecophysiology and cultivation practices in Arable crops*. New Generation Books, Enugu, Nigeria.

Francis, P. (1985). Land Tenure Systems and the Adoption of Alley Farming in Southern Nigeria. *Proc. International Consultative Workshop on Tenure Issues in Agro-Forestry*, Nairobi.

Kang B.T., Wilson G.F. and Siplenus L. (1981). "Alley Cropping Maize (*Zea mays* L.) and *Leucaena leucocaphala* lan) in Southern Nigeria" In: Sheep and goats in Humid West Africa. *Proceedings of the Workshop on Small Ruminant Production systems in the Humid Zone of West Africa*, Ibadan, Nigeria, 23-26 January, 1984.

Ogunfowora O. (1986), Farm Management in Nigeria, *Proceedings of Farm Management Association of Nigeria*. Ed. A. R. Adeleke and A. F. Mabanwonku. N. 1. Pp. 33-46.

Ogunfowora, B. (2005), Food Security and Livelihood Improvement in Africa through Agribusiness Development. *Proceedings of the African Farm Management Association (AFMA), 7<sup>th</sup> Biennial Congress*, (cd) Prof. Peter Bola Okuncyc & Mrs Grace O. Evbuomwan, PP 9 – 28.

Okafor, J. C. (1979). Edible indigenous woody plants in the rural economy of the Nigerian Forest Zone. In: *The Nigerian Rainforest Ecosystem*, ed. D.U.U. Okoli, Pp.262-292.

Okafor, J.C. and Okolo, H.C. (1974), Potentialities of some indigenous Fruit Trees of Nigeria. *Proc. 5<sup>th</sup> Annual Conference Forestry Association of Nigeria*, Jos. 1-6 December.

Okigbo, B. N. (1975). Neglected plants of horticultural and nutritional importance in traditional farming systems of Tropical Africa 4<sup>th</sup> Int. Symp. Hort. Soc. Kumasi, Ghana, 12-17<sup>th</sup> August. *Act. Horticulture*, 53 April, 1977, P. 131.

Okigbo, B.N. (1976). Role of legumes in small holdings of the humid tropics of Africa; *Proc. Symp. Exploiting the legume – Rhiorbuim Symbiosis in Tropical Agric.* NIFTAL, University Hawaii August. Pp. 97 –117.

Onwuejiogwu, M.A. (1981). *An Igbo Civilization. Nri Kingdom and Hegemony*. Ethnographica, London, Ethiope Publication Corporation.

Oycnuga, V. A. (1978). *Agriculture in Nigeria, An Introduction*. Rome. F. A. O.

Poulsen, G. (1978). *Man and Tree in Tropical Africa: three essays on the role of trees in the African environment*. Int. Dev. Res. Centre. Ottawa, Canada.

Rahji, M.A.Y (1999), Dimension of rural poverty and the food self-sufficiency gap in Nigeria. *Poverty Alleviation and Food Security in Nigeria* (cd).

Y. L. Fabiyi and E. O. Idowu, *Nigerian Association of Agricultural Economists* P. 34.