



Journal of Science Education

ISSN 0124-5481



ENTREPRENEURIAL SKILLS REQUIRED BY GRADUATES OF AGRICULTURAL EDUCATION FOR SELF-EMPLOYMENT IN AFANG

Etukudo Inemesit Jonah^a, Atanda Luqman Ayanlola^b, Udoeduok Etido Sunday^c

^a University of Uyo, Uyo 520101 , Akwa Ibom State,Nigeria

^b Ousn State University Osogbo, Osogbo 210001, Osun State, Nigeria

^a kwa Ibom State Library Board, Uyo 520102, Akwa Ibom State, Nigeria

ARTICLEINFO

Keywords: entrepreneurial skill, graduates, agricultural education, self-employment, afang, ibesikpo, asutan local government area, akwa ibom state, nigeria

ABSTRACT

The study was conducted on entrepreneurial skills require for graduates of agricultural education for selfemployment in Ibesikpo Asutan Local Government. To achieve this purpose, four research questions were raised and four research hypotheses were formulated to guide the study. The survey research design was adopted for the study. The population comprised of all 2000 registered farmers in Ibesikpo Asutan Local Government Area. A sample size of 200 farmers was selected using stratified random sampling. The instrument used for data collection was a researcher made questionnaire titled entrepreneurial skills required by the graduates of agricultural education for self-employment in afang (Gnetumafricanum) production in Ibesikpo Asutan local government area. The instrument was validated by experts and its reliability coefficient of 0.79 was established using the split-half method. Data collected from the instrument was analyzed using the independent t-test statistic. Mean and standard deviation were used to answer the research question. Findings revealed that there is a difference in the land clearing, planting, harvesting, and marketing of afang products by graduates of agricultural education in Ibesikpo Asutan Local Government Area. Therefore, this work recommended that farmers should be given opportunity to innovative approaches in their farming practice by government.

1. Introduction

Most disciplines have inherent entrepreneurial skills that need to be developed and improved upon for self-employment. The activities and experiences that learners engage in are very vital as they enable them acquire manipulative skills for agricultural productivity which will consequently make for better living in the society. The concern of agricultural education is the teaching and learning of this skills which among them include the entrepreneurial competencies need for proficiency and selfemployment in agricultural occupation. This is also in line with the current national emphasis on entrepreneurship education and skill acquisition to reduce unemployment and eradicate poverty. The level of development of any nation is measured in parts by the level of her entrepreneurship development. The federal republic of Nigeria (FRN 2013) entrepreneurship is the act of developing a young people with skills, competencies, understanding and attitudes which equip them to be innovative and creative successful entrepreneur. Entrepreneurship education refers to specialized training given to individual to help them to acquire skills, ideas and managerial abilities and capabilities for self-employment (Eze and Emah 2009). Rowel (2011) stated that entrepreneurship education prepares people especially youths

to be responsible, enterprising to help them become successful, ready to take risks, manage the results and learn from the outcomes.

increasing incidence of youth unemployment The particularly among university graduates has been associated with existing weakness in the nation's educational system which place more emphasis on paper qualification than functional or pragmatic education resulting to unemployable graduates (Akpoveta and Agbomah 2009). To ensure the development of any nation, entrepreneurship education is needed as a critical component of the nation's educational system because of it is potential for generating alternative sources of employment. The federal republic of Nigeria (FRN), (2013) stipulated that there is need to give training and impart the necessary skills to individuals who shall be self-reliant economically. Agricultural education is one the ways of achieving these objectives, as it impart knowledge, skills, and attitudes in crop and animal production to the learner at any level (Osinem 2015). Agricultural education provides learners with sound academic knowledge and skills as well as ample opportunity to apply acquired competencies through classroom activities, laboratory experiments, project participate for production and distribution purpose. It emphasizes skill development in all agribusiness such as planning, management, safety, communication and interpersonal skills as well as knowledge of technical agriculture. Agricultural programmes are designed to prepare students for employment in various occupations such as horticulture, agribusiness, natural resources management, agricultural

Accepted 1 July 2024, Available online 3 December 2024

^{0124-5481/© 2024} Journal of Science Education. All rights reserved

mechanization, animal husbandry and crop production (Essien, 2015).

Skill is the ability to do or perform something well. Entrepreneurial skill in this context is the ability of agricultural graduates to acquire the required skills needed in crop production. Crop production involves growing of crops such as annual crops, perennial crops and other horticultural crops. Though there are many types of crop production, what concerns us is Afang cultivation. Afang, scientifically called Gnetum africanum is a climbing leafy vegetable that belongs to the family of Gnetaceae. This greenish climbing plant is prevalent in the tropical regions especially Nigeria, Congo, Asia, Cameron etc. Entrepreneurial skills required by graduates of agriculture in Afang cultivation include: soil preparation skill, planting skill, harvesting skill and marketing skills. Soil preparation include the soil mixture which consist of about 25% sand and some compost, supplemented with forest soil. It involves preparing a bed by gathering good soil to raise the ground level of the area where you intend to do your planting. Planting materials (Gnetum planting materials) are treated seeds, non-treated roots and vine cuttings.

Paul (2017) added that harvesting is only done to the leaves, the twine is often yanked down off the tree, leaving the choicest top part of the plant still entwined around high tree branches. Marketable skills is also indispensable as it enables an individual to acquire and keep a job. According to Osinem (2009), marketable skill implies easy to sell, attractive to customers. Inability to engage in meaningful occupation exposes graduates to robbery and other social vices. It is also noted that graduates mostly do not possess entrepreneurial skills that will enable them to establish and manage small scale enterprises. It is on this background that the study seeks to identify the entrepreneurial skills required by the graduates of agriculture for selfemployment in Afang cultivation.

2. Statement of The Problem

For many developing countries, development of entrepreneurial skills has been a powerful engines of economic growth and wealth creation. For countries to accelerate their economic growth and development, it is necessary for them to build up critical mass of first generation entrepreneurs because development is now being linked to entrepreneurs and the level of development of any nation is measured in parts with the level of entrepreneurial development. It is therefore essential to creates entrepreneurial programmes for the graduates to build upon and establish themselves to become economically stable and selfreliance.

This study therefore sought to determine the entrepreneurial skill required by Agriculture Education graduates for selfemployment in in afang production in Ibesikpo local government area.

2.1. Purpose of the Study

The purpose of the study is to determine the entrepreneurial skills required by the graduates of agricultural education for self-employment in Afang production. Specifically, the study sought to:

- 1. Determine the soil preparation skill required by the graduates of agricultural education for self-employment in Afang production in Ibesikpo Asutan Local Government Area, Akwa Ibom State.
- 2. Determine the planting skills required by the graduates of agricultural education for self-employment in Afang production in Ibesikpo Asutan Local Government Area, Akwa Ibom State.
- 3. Determine the harvesting skills required by the graduates of agricultural education for self-employment in Afang

production in Ibesikpo Asutan Local Government Area, Akwa Ibom State.

4. Determine the marketing skills required by the graduates of agricultural education for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State.

2.2. Research Questions

The following research questions were formulated to guide the study:

- 1. What are the soil preparation skills required by the graduates of agriculture for self-employment in Afang productionin Ibesikpo Asutan Local Government Area, Akwa Ibom State?
- 2. What are the planting skills required by the graduates of agriculture for self-employment in Afang productionin Ibesikpo Asutan Local Government Area, Akwa Ibom State?
- 3. What are the harvesting skills required by the graduates of agriculture for self-employment in Afang production in Ibesikpo Asutan Local Government Area, Akwa Ibom State?
- 4. What are the marketing skills required by the graduates of agriculture for self-employment in Afang production in Ibesikpo Asutan Local Government Area, Akwa Ibom State?

2.3. Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance.

- 1. There is no significant difference in the mean response of male and female Afang farmers on the soil preparation skills required by the graduates of agricultural education for self- employment in Afang production in Ibesikpo Asutan Local Government Area.
- 2. There is no significant difference in the mean response of male and female Afang farmers on the planting skills required by the graduates of agricultural education for self- employment in Afang production in Ibesikpo Asutan Local Government Area.
- 3. There is no significant difference in the mean response of male and female Afang farmers on the harvesting skills required by the graduates of agricultural education for self- employment in Afang production in Ibesikpo Asutan Local Government Area.
- 4. There is significant difference in the mean response of male and female Afang farmers on the marketing skills required by the graduates of agricultural education for self- employment in Afang production in Ibesikpo Asutan Local Government Area.

2.4. Significance of the Study

The study 'Entrepreneurial skills required by the graduate of agriculture for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State' would be of significant to the graduates of agricultural education, the students of agricultural education, the researchers, the farmers and the general public. It would expose the afang farmers and graduate of agriculture education to to skills required for afang production

Soil preparation skills such as tilling with help in mixing the soil nutrient and aiding soil aeration for the growth of afang. This skill is necessary to a graduate of agricultural education for selfemployment in afang production. Planting afang by root method, seed planting, and twine would be exposed farmers and graduates to graduates of agricultural education for self-employment in afang production.

Harvesting skills such as harvesting in six months to one year, harvesting of the ground leaves, harvesting by detaching the stock from the vine, harvesting the leaves are important skills would be exposed afang farmers and unemployed graduates of agricultural education for self-employment.t

Afang producers and graduates of agricultural education would enlightened on marketing skills such as through the middlemen networking, online marketing, marketing in the open market, and wholesale marketing are also needed by afang farmers and graduates of agricultural education for selfemployment.

2.5. Scope of the Study

The study was restricted to the identification of entrepreneurial skills on Afang production required by graduates of agricultural education for self-employment. The study variables is limited to soil preparation skills, planting skills, harvesting skills and marketing skills required by the graduate of agricultural education for self-employment in Afang production in Ibesikpo Asutan Local Government Area.

3. Review of Related Literature

This is concerned with a review of literature relevant to the study. It was organized under the following subheadings: theoretical framework, conceptual framework of the study, review of related empirical studies and summary of literature reviewed.

3.1. Theoretical Framework

Various theories are propounded by some scholars in the field of agriculture and crop production specifically. For the purpose of this study, this section will examine some related theories relevant to this study, some of which are:

Andragogy learning Theory

Andragogy learning theory by Malcom Knowles (1973). Malcom Knowles propounded the Andragogical theory in the year 1973. According to Knowles, the goal of adult education should be self-actualization, thus, the learning process should involve the whole emotional, psychological and intellectual being. Malcom Knowles distinguished between the pedagogical and Andragogical theory of learning. Malcom explained that pedagogical theories of learning are teacher-directed activities usually considered appropriate for children while Andragogical learning theory is viewed on self-directed activities that are seen as appropriate for adult. According to Knowles, the former refers to the art and science of teaching children. The Andragogical model is used on several assumptions that are considered very necessary for incorporation into instructional design and development programmes for adults. The assumptions are as follows:

The Need to Know:Adults need to know why they need to learn something before under-taking to learn it. When adults undertake to learn something on their own, they will invest considerable energy in probing into the benefits they will gain from learning it and the negative consequences of not learning it. Consequently, the first task of the adult learning facilitator is to help farmers become aware of the need, why they need to learn.

The Learners Self Concept: Adults have a self-concept of being responsible for their own decisions for their own lives. Once they have arrived at that self-concept, they develop a deep psychological need to be seen by others and treated by others as being capable of self-direction.

Readiness to Learn: Adults become ready to learn those things they need to know and be able to do in order to cope

effectively with their real-life situations. An especially rich resource of readiness to learn is the developmental tasks associated with moving from one developmental stage to the next. The critical implication of this assumption is the importance of timing learning experiences to coincide with these developmental tasks.

Orientation to Learning: Adults are life-centered or taskcentered in their orientation to learning. Adults are motivated to devote energy to learn something to the extent that they perceive that it will help them perform tasks or deal with problems that they confront in their life situations. Furthermore, they learn new knowledge, understanding, skills, values and attitudes most effectively when they are presented in the content of application to real life situations.

The theory and its components significantly relate to the study as it gives many assumptions that really help the adults to learn and achieve the needed goals.

1. The theory gives the adult farmers the need to know about agricultural extension programmes.

2. It gives the light for the adult farmers to develop their self-concept of the farming processes.

3. It makes them to be ready to learn new things, after making them to see the need to learn with what they knew already.

4. It gives them the knowledge of timing their life experiences by practicing it.

5. It gives them directions in solving their real-life problems in crop production.

Constructivist Learning Theory

Constructivist learning theory by Jean Piaget (1967). Constructivism is recognized as a unique learning theory in itself. It however, may be associated with cognitive psychology because as a theory of learning, it focuses on a learner's ability to mentally construct meaning of their own environment and to create their own learning. As a teaching practice, it is associated with different degree of non-directed learning. The term constructivism is linked to cognitive and social constructivism founded by Jean Piaget, constructivism emphasizes the importance of the active involvement of learners in constructing knowledge for themselves. Adult learners are thought to use background knowledge and concepts to assist them in their acquisition of novel information. On approaching such new information, the learner faces an equilibrium with their previous understanding, and this demands a change in cognitive structure. This change effectively combines previous and novel information to form an improved cognitive schema.

Constructivist asks why learners do not learn deeply by listening to a teacher, or reading from a textbook. To design effective teaching environments, it is pertinent to have a good understanding of what adults already know when they come into the classroom. The curriculum should be designed in a way that builds on the learners' background knowledge and is allowed to develop with them. It should begin with complex problems and teach basic skills while solving these problems. The theory is related to this study because farmers involvement in constructing knowledge promote an active learning among other farmers which links concept gained to the concept of the existing knowledge and thus;

- 1. Farmers can create connectivity to the emitting cognitive schema.
- 2. Farmers' manipulation of agricultural extension facilities enhances information to be stored for a long period of time in their memories.
- 3. Farming process is promoted when farmers are shown the task that they will be able to do as result of completing a training or a course.
- 4. Farming is also promoted when farmers solve a progressive farming problem that are explicitly compared to one another. The implication of the theory relates to

farmers' learning with issues around which the farmers are actively involved in constructing the meaning through the use of agricultural extension programme facilities in food crop production.

3.2. Meaning of Skill Acquisition

Skill acquisition, according to Akpe (2018) is education that focuses on the mastering of skills with emphasis on daily routine practice by the learners. Okafor(2019) observed that's kills acquisition are the heart of agricultural programmes, which can only be achieved through the integration of theory and field experience teaching approach as well as assessment of student practical experiences. The assessment of agricultural skills acquisition in the opinion of Kesiki, Amuche and Shimave (2014) involves the process of observing, describing, collecting, recording, scoring, and interpreting information about students learning.

There are certain entrepreneurial skills needed in Afang cultivation.

3.3. Land Clearing Skills in Afang cultivation

Land clearing is the removal of native vegetation for agricultural purposes and other developmental projects. According to Okafor (2019), when clearing land, particularly for agricultural purposes, the density of native cover and soil type must be considered to help conserve the topsoil. This is an operation usually carried out before the conventional tillage in a farm land. Generally, there are several operations that are involved in land clearing depending on the type of vegetation, soil condition, topography, the extent of clearing required and the purpose for which the clearing is done. The land clearing operations include the following listed below;

1. Skills of removal of all vegetation at the ground level and moving and stacking them in windrows for burning so that roots are left to decay or to be removed at later dates.

2. Skills of removal of all tree and stumps include roots, and moving and stacking them in windrows for subsequent burning.

3. Skills of ploughing and mixing in the vegetation to a soil depth of about 20cm and allowing it to decay.

4. Skills of knocking all vegetation down and crushing it to the surface of the ground to be either burnt or left to decay.

5. Skills of killing or retarding the growth of small trees by cutting the roots below surface of the ground and leaving them to decay or removing and stacking them for subsequent burning if necessary.

Essien (2015) said that mechanized agriculture requires a proper land clearing completion that will avert premature failure of the conventional tillage machines put in use subsequently and minimize soil nutrient depletion and structural damage due to interacting heavy land clearing equipment-bulldozer and so on. To avert these adverse effects, it is usually advisable that land clearing should be better done in the dry season when the soil has adequate mechanical stability or impendence to resist soil deformation or structural damage. This is at minimal soil moisture content; the risk of soil structural damage is minimized with the corresponding high shear strength which can withstand both the vertical and horizontal loads of the tractor - implement aggregate. Total removal of vegetation is required for land clearing done for highway, dam construction and as well as building site for poultry. In these particular requirements, the need to preserve the top soil (that houses the essential nutrient) and avert the soil structural damage is inconsequential unlike in mechanized agriculture.

The following factors among others, affect the rate of clearing; Rainfall, Topography, Equipment used, Skill of equipment operators, The end use of the land being cleared, Sizes and kinds of trees, density of vegetation, Soil condition, etc. The aforementioned factors listed above determine the various capacities of equipment used for land clearing for farm operations. Bush clearing for crop production referred to as agricultural bush clearing is different from bush clearing for other purposes. This is because, whereas the cardinal objective in clearing for other purposes is not only the removal of all bush, rubbish, debris and other objectionable materials, the top soil is also removed and may be replaced with sub soil (lateriting) and where necessary compacted or stabilized depending on the type of project. In agricultural bush clearing, the top soil must be preserved. As seen by (Paul, 2017), the top soil contains nutrients needed by crops for optimum performance Agricultural bush clearing is therefore defined as the process of scientific removal and disposal of existing material, vegetation, rubbish and other obstructions from the land by manual, mechanical and chemical means for agricultural food production. Agricultural bush clearing operation is effective only when all the unwanted vegetation including all roots and stumps are removed with minimum disturbance to the top soil. This is done to a maximum depth of 20 cm.

According to (Uche, 2016), techniques of Agricultural Land Clearing operation can be accomplished through the use of one or more of these methods:

- (1) Hand method.
- (2) Burning.
- (3) Chemical method.
- (4) Explosive blasting.
- (5) Mechanical methods.

1. Hand Method: This method involves use of hand tools such as cutlass, hoes, axes, diggers for land clearing. However, when vegetation is thick, it is very tedious and costly. This method does not encourage mass production in agricultural production because of drudgery involved. It is also very difficult to work in the field cleared by this method because of the presence of stumps and underfoot which forms impediment to agricultural machines.

2 Burning Method: Burning method of land clearing is very common in the savanna belt of Nigeria for a variety of reasons: it clears the land for cultivation and for travel; it provides grazing at the time of the year when the grass is at its scariest; it drives game from cover thus facilitating their capture; man, appears to enjoy the sight of a good blaze especially at night. However, preliminary results indicate that this method adversely affects the soil in that the earthworm and microbial populations decrease as do the organic matter and nitrogen content and general fertility.

3 Chemical Method: Stumps and regrowth can be eliminated or killed by the use of arboricides. These are artificially prepared chemicals which kill unwanted forest trees. The arboricides that contain sodium arsenite are highly poisonous and should be handled with care.

4. Explosive Blasting Method This method is employed to remove very big stumps to avoid excessive excavation of the soil. A wood auger is used to make a hold in the centre of the big stump and an appropriate quantity of dynamite is applied and remotely detonated to shatter the wood. In cases of smaller stumps, the soil auger may be used to bore hole in the soil and apply the explosive under the stump. This again shatters and removes the stump upon detonation.

5. Mechanical Method Mechanical method is employed usually when a large area of land is required because of the cost. In this method of land clearing, various mechanical equipment are used. Some of the procedures for mechanical land clearing are: surveying, knockdown of trees, windrowing, burning and removal of debris, and pioneer ploughing. Survey helps to determine the size of tractor, the type and size of matched equipment, and the clearing method to be used. Two main operations are involved in mechanical land clearing: knockdown and windrowing, and removal of debris. The knockdown is the process of pulling or pushing down of the trees. Various mechanical tools are employed for the process which are: bulldozer blade, the rolling chopper, the anchor chain, and the winching cable.

3.4. Planting Skills for Afang Cultivation

Gnetum produces seeds in good quantities but these seeds are difficult to germinate, the seed germinates in the presence of water. Water enters the seed through the micropyle and causes the seed to swell. It requires over 12 months (one year) for the seed to germinates. *Gnetum africanum* can be propagate as according to according to Uche (2016) follows:

- 1. Direct planting in the field could also be done using uprooted seedlings, root cuttings and stem cuttings. It is important that the field establishment and preparation of *Gnetum* be planned for the beginning of the rainy season as other periods of planting do not allow good success. Excessive wetness or dryness kills young seedlings. when using uprooted seedlings, allow good lengths of root (normally, horizontal root) to remain attached to them.
- 2. Mature and healthy vines may also be selected for the propagation of stem cutting (allow some leaves attached to one end and cut 40 to 60cm long).
- 3. Prepare root cutting by selecting and cutting them to carry "T" - Shape branching. Dig ditches 12 to 15cm deep and plant these materials either very early in the morning or in the evening time. Make the soil very firm and shade with leafy twigs. Check and water lightly at regular intervals.

Also, *Gnetum* can also be propagated by preparing seedling nursery, using any of the three planting materials listed above, as wells as sprouted seeds is usable by this approach .prepare bedding or nursery bag soil, sterilized soil mixed with cured organic manure and some river sand (25%) also add a supplement of forest soil microbes to make the soil fertile.

Fill polythene bags or other suitable container with about 5 to 10hg soil and place in shade with good ambient lighting but no exposure to direct sunlight or rain. Place uprooted seedlings, stem cuttings and root cuttings in the bagged soil and firm up with the hand.Water lightly and check to maintain moist but not wet soil . make hold at the bottom of the bag to allow free drainage.

As for the seeds wash off coat and plant many seeds in a large through or ground bed with well sterilized and lightly fertilized soil. When the planting materials root and begin to acclimatize by gradual or slight exposure to sunlight and rain. After 4 weeks of exposure, select good seedlings for field planting and continue nursing the rest.

In general, *Gnetumbuchholzianum* is more difficult to cultivate than *Gnetumafricanum*because *Gnetumbuchholzianum* seems to require more shades than *Gnetumafricanum*. *Gnetum africanum* also spreads more quickly by natural root sprouting from the shallow roots of existing crop stands than *Gnetumbuchholzianum* (Paul, 2017)

Nevertheless, commercial dealers prefer *Gnetumbuchholzianum* as it grows more vigorously and produces more leaf weight than *Gnetum africanum*

The Afang leaf can be cultivated in three different ways which are seeds, roots and vines, but the surest ways of propagation is through the roots which can be done by transplanting.

In growing the nursery if one wishes to grow the leafs in Economically large quantities, then the seeds planting can be done, the seeds are round and has a hard coat, usually use a small nylon fill in the loamy soil and bury the seeds then water them every morning and evening Essien (2015).

But the best ways to cultivate is to go to an existing farmland and uproot the seedlings and plant it, it takes about 5-6months to probably sprout, after the first three months we usually will spin a tall bamboo stick close to it to help the vine climb on as it grows while watering it too.

The Growth rate of the Agnum Africanum (Afang) is slow due to the fact that the roots cannot go deep enough to reach the deep part of the soil require for essential growth, the leafs survive well in a very rich soil with good plant nutrients, for a effective growth organic or inorganic manuring is required, the plant grows well in an open space with enough sunlight for photosynthesis since it a shallow rooted plants (Lawson, 2018)

As seen by (okafor 2013), after planting, some post planting operations are carried out such as:

Staking: *Gnetum* thrives well with a minimum of care once effort is made to provide either natural stakes (other growing plants that will not shade it excessively) or artificial stakes, such as dry bamboos and hard-woods. Currently galvanized pipes used are which carries many ropes and with stands storms for trellising the *Gnetum* vines.

Manuring: Soil with moderate level of N, P. K and Ca nutrients are fertile enough for *gnetum* production, although higher availability of k, in particular, will support a more rapid growth rate and higher yields. It is a good practice, therefore, to mulch *gnetum* plots with palm bunch refuse, which is high in K and contains other nutrients is very necessary.

Weed control: timely control of weed is important to prevent competition, especially for newly planted and young crops. The survival rate of Gnetum on newly established plots is almost usually determined by the extent of weed control since weed easily exercise superior competition for nutrients and moisture against Gnetum seedlings. Hand weeding with hoe and hand picking is preferable as herbicides may introduce toxic soil condition and pollutes the leaves against harvesting requirement.

Pest and disease control: Gnetum spp is quite resistance to most disease and pests, which is a great advantage in the effort to domesticate its cultivation. The major pest of Gnetum africanum is the termite.

Termite hinders *Gnetum* growth by attacking and destroying the dry bamboo and other wooden staking materials often used. Mealybugs and millipede attack the new sprout and nursery seedlings.

Fungal attack is the disease associated with *Gnetumafricanum*. Some fungi attack older leaves and give them a black painting of fungal attack. There is usually no serious damage if the affected leaves are removed and the canopy is exposed to sunlight.

3.5. Harvesting Skill Required for Afang Cultivation

The current method of harvesting, especially for export trade, is to pull the vine down from the tree or tree branches. This leads to large-scale destruction of natural stands. Controlled harvesting, in which only side shoots or part of stems are collected, is clearly better than destructive harvesting. In the farm, it is easier to lift out the stake canopy and harvest the leaves before resting the stand, except total harvesting is due. After controlled harvesting, new shoots will develop where a stem has been cut or where the side shoots had been removed.

However, (Onochu, 2018) added that more frequent harvesting will result in thin leaves which are considered inferior. The first harvest may take place 6 to 9 months after planting. In the final harvest, done usually close to the dry season, all the vine are cut at about 2m from ground level and the stump-vines wrapped around short stakes. These stump-vines will sprout new before the dry season ends.

Harvesting 3-4 times a year is possible, for substantial regrowth of leaves. Too much frequently harvesting will result in thin leaves and these are considered inferior especially when

taken for sales, compared to the first year harvesting which it leaves usually grows big and fresh under normal conditions of soil and climate, the total life span of the plant is estimated over ten years

3.6. Marketing of Afang Produce

Only the freshy leaves are harvested and marketed. Harvested leaves are sorted into bundles of approximately equal weight, tied at the 'head' end for marketing. the farmer can market it to the market women that will cut or shred it up into thin strips for final consumers. You can also market it to different eateries, restaurants and people that has occasions.

Agricultural marketing covers the services involved in moving an agricultural product from the farm to the consumer. These services involve the planning, organizing, directing and handling of agricultural produce in such a way as to satisfy farmers, intermediaries and consumers. Numerous interconnected activities are involved in doing this, such as planning production, growing and harvesting, grading, packing and packaging, transport, storage, agro- and food processing, provision of market information, distribution, advertising and sale. Effectively, the term encompasses the entire range of supply chain operations for agricultural products, whether conducted through ad hoc sales or through a more integrated chain, such as one involving contract farming.

Only the fresh leaves are harvested and marketed. Harvested leaves are sorted into bundles of approximately equal weight, tied at the 'head' end for marketing. The farmer can market it to the market women that will cut or shred it up into thin strips for final consumers. Farmers can also market it to different eateries, restaurants and people that has occasions.

3.7. Summary of Literature Review

This chapter was devoted to the related studies carried out by other experts. The theoretical framework covered Andragogy learning theory and constructivist learning theory. Andragogy learning theory is based on the principle used in the description of educational activities for the development of adult farmers. It relates directly to such theoretic principle for adult farmers to develop their full potential which is considered very necessary. Constructivist learning theory is based on the principle of farmers' ability to mentally construct meaningfully their own environment and to create their own learning. It relates directly to farmers the ability to solve progressive farming problems that are compared to one another. The conceptual framework covered skill acquisition, land clearing skills in Afang cultivation, planting skills in Afang cultivation, harvesting skills in Afang cultivation and marketing skills in Afang cultivation. The empirical studies reviewed were on land clearing, planting, harvesting and marketing of crops in some areas. Based on these reviewed studies, the current study sort to investigate the entrepreneurial skills required by graduates of agricultural education for selfemployment in Afang cultivation in Ibesikpo Asutan Local Government Area.

4. Methodology

This describes the methodologies that were used in conducting the study, it describes; the Research Design, Area of the Study, Population of the Study, Sample and Sampling Techniques, Instrumentation, Validation of the Instrument and method of Data collection, and method of data Analysis.

4.1. Research Design

The design adopted for the study was survey design. According to Ali (2016) survey research design is one which involves the assessment of public opinion using questionnaire, observation and interview. The design is appropriate for the study because it is concerned with getting data from public.

4.2. Study Area

The research was carried out in Ibesikpo Asutan Local Government Area of Akwa Ibom State. Ibesikpo shares boundary with Uyo, Nsit Ubium, Nsit Ibom, Nsit Atai and Uruan Local Government Area. The inhabitants of Ibesikpo Asutan L.G.A are farmers. The population consist of over 250,000 people. The area is noted for a large number of farmers and its also convenience for the researcher. This will enable the researcher to carry out the study easily.

4.3. Population of the Study

The population consisted of farmers in Ibesikpo Asutan Local Government of Akwa Ibom State. A total of two thousand (2000) farmers made up the population.

4.4.Sample and Sampling Technique

A simple random sampling technique was employed to sample for the study. Names of all villages in Ibesikpo Local Government Area were written on pieces of papers, folded, shoveled and were randomly picked, until the required number was gotten. A total of 200 farmers (i.e 10% of the entire population (Krejcie and Morgan) finally used as respondent selected from 20 villages in Ibesikpo Asutan Local Government Area, Akwa Ibom State.

4.5. Instrumentation

The main instrument used for the collection of data was questionnaire. A twenty items questionnaire was structured and administered to the Afang farmers. The question consisted of two sections A and B. Section 'A' consisted of personal data while section 'B' contained 20 items. The questionnaire had a fourpoint rating scale or Highly Required (HR), Required (R), Slightly Required (SR) and Not Required (NR).

4.6. Validity of the Instrument

Validity connotes the extent to which an instrument measures what is suppose to measure. The questionnaire was validated by three experts and the supervisor in the department of Agricultural Education, University of Uyo. It was checked, corrected and approved before administration.

4.7. Reliability of the Instrument

The reliability of the instrument was achieved through Spilthalf method technique. The instrument used 30 farmers who were not part of the study sample. Data collected from the respondents was subjected to reliability test and its produced the reliability co-efficient of 0.79 which indicates the suitability of the instrument for data collection.

4.8. Method of Data Collection

The researcher consciously visited the villages in Ibesikpo Asutan Local Government Area, seeks permission from the farmers (the entrepreneurs) before administration, a brief introduction was made which spelt out the mode of responses, the questionnaires were randomly administered to respondents. The questionnaire were ticked by respondent, they were checked and collected by the researcher for analysis.

4.9. Method of Data Analysis

The data collected through the questionnaire was analyzed. Research questions were analyzed using mean and standard deviation while research hypotheses was analyzed using independent t-test statistics.

5. Result and Discussion

This chapter was dedicated to the presentation of the result from analysis based on the field survey conducted. It was organized under the following sub - headings: Demographic variables of respondents, presentation of results, and discussion of results and summary of findings.

5.1. Demographic Variables of Respondents

 Table 4.1: Distribution of Respondents Based on Gender using

GENDER OF RESPONDENTS	FREQUENCY	PERCENTAGE
Male	70	35%
Female	130	65%
Total	200	100

Research Question 1

What are the soil preparation skills required by the graduates of agriculture for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State?

 Table 4.2: Mean and standard deviation on soil preparation skills required by graduates of agricultural education for self-employment in Afang cultivation(N = 100)

SN	Influence of Agricultural Extension Education on Food Crop Production	MEAN	SD	REMARKS
1	Skill in land clearing in Afang production	2.65	0.91	Required
2	Skill in soil tillage in production Afang	2.80	0.96	Required
3	Skills in seed bed preparation in afang production	2.70	1.05	Required
4	Skill in mulching in afang production	2.84	0.94	Required
5	Skills in manuring in preparing soil for Afang production	2.64	0.94	Required
	Cluster Mean	2.73	1.10	Required

Data presented in Table 2 revealed that all the 5 skill items in soil preparation had their mean values ranged from 2.65 to 2.84, indicating that their mean values were above the cut-off point of 2.50. This showed that all the 5 skills were required by the graduates of agriculture for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State. The Table also showed that the standard deviation of the items ranged from 0.91 to 1.05, indicating that the respondents were not too far from the mean and from the opinion of one another in their responses on soil preparation skills required by the graduates of agriculture for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State.

Testing of Hypotheses

All hypotheses were tested using Chi-square statistic at degree of freedom 3 and alpha of 0.05. The results were presented and discussed as follows:

Hypothesis 1

There is no significant difference in the mean response of male and female Afang farmers on the soil preparation skills required by the graduates of agricultural education for selfemployment in Afang production in Ibesikpo Asutan Local Government Area.

 Table 4.6: independent t-test Analysis of responses of male and female Afang farmers on the soil preparation skills required by the graduates of agricultural education for self- employment in Afang production

Groups	Ν	Mean	SD	t-values	df	p-values	Decision
females	130	2.68	.97				
				7.49	198	.061	S
males	70	2.70	.96				

As shown in table 6, the results of data analysis for hypothesis one indicates that the t-value is 7.49, p-values .061 with 198 degree of freedom. The p-value is greater than the 0.05 level of significance (p>0.05). Therefore the null hypothesis one which states that there is no significant difference in the mean response of male and female Afang farmers on the soil preparation skills required by the graduates of agricultural education for self- employment in Afang production in Ibesikpo Asutan Local Government Area was upheld.

Research Question 2

What are the planting skills required by the graduates of agriculture for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State?

 Table 4.3 Mean and standard deviation on planting skills required by graduates of agricultural education for self-employment in Afang cultivation

SN	planting skills required by graduates of agricultural education for self-	Mean	SD	Decision	
	employment in Afang cultivation				

	Cluster Moon	3.07	0.90	Required
5	Timely control of weed to prevent competition	3.00	0.89	R
4	Staking Afang after planting	3.10	0.85	R
3	Root cultivation in Afang production	2.87	0.97	R
2	Planting of Afang is appropriate during season	2.88	1.04	R
1	Seed bed preparation in nursery in cultivating Afang	3.20	0.73	R

Data presented in Table 3 revealed that all the 5 skill items in planting had their mean values ranged from 2.87 to 3.20, indicating that their mean values were above the cut-off point of 2.50. This showed that all the 5 skills on planting were required by the graduates of agriculture for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State. The Table also showed that the standard deviation of the items ranged from 0.73 to 1.04, indicating that the respondents were not too far from the mean and from the opinion of one another in their responses on planting skills required by the graduates of agriculture for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State.

Hypothesis 2

There is no significant difference in the mean response of male and female Afang farmers on the planting skills required by the graduates of agricultural education for self- employment in Afang production in Ibesikpo Asutan Local Government Area.

 Table 4.7: independent t-test Analysis of responses of male and female Afang farmers on the planting skills required by the graduates of agricultural education for self- employment in Afang production

Groups	N	Mean	SD	t-values	df	p-values	Decision
females	130	2.98	.89				
				12.10	198	.061	S
males	70	3.00	.90				

As shown in table 7, the results of data analysis for hypothesis two indicates that the t-value is 12.10, p-values .061 with 198 degree of freedom. The p-value is greater than the 0.05 level of significance (p>0.05). Therefore the null hypothesis two which states that there is no significant difference in the mean response of male and female Afang farmers on the planting skills required by the graduates of agricultural education for selfemployment in Afang production in Ibesikpo Asutan Local Government Area was upheld.

Hypothesis 3

There is no significant difference in the mean response of male and female Afang farmers on the harvesting skills required by the graduates of agricultural education for self- employment in Afang production in Ibesikpo Asutan Local Government Area.

Research question 3: Harvesting skills required by the graduates of agricultural education self-employment in Afang cultivation

Table 4.4: Mean and standard deviation on harvesting skills required by graduates of agricultural education for self-employment in Afang

 cultivation

SN	harvesting skills required by graduates of agricultural education for self-employment in	MEAN	SD	Decision
	Afang cultivation			
1	The skill of harvesting from six months to one year after planting	3.18	1.08	R
2	Partial harvesting of the ground leaves when twinning on the stake after planting	2.90	0.96	R
3	Harvesting by detaching the stocks/leaves from the vine after planting	2.54	1.07	R
4	Complete harvesting when Afang twin –up the stake	3.02	0.90	R
5	Harvesting only the stock/leaves after planting	2.86	1.05	R
	Cluster Mean	2.90	1.01	Required

Data presented in Table 4 revealed that all the 5 skill items in Harvesting had their mean values ranged from 2.54 to 3.18, indicating that their mean values were above the cut-off point of 2.50. This showed that all the 5 skills on Harvesting were required by the graduates of agriculture for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State. The Table also showed that the standard deviation of the items ranged from 0.90 to 1.08, indicating that the respondents were not too far from the mean and from the opinion of one another in their responses on Harvesting skills required by the graduates of agriculture for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State.

 Table 4.8: independent t-test Analysis of responses of male and female Afang farmers on the harvesting skills required by the graduates of agricultural education for self- employment in Afang production

Groups	Ν	Mean	SD	t-values	df	p-values	Decision
Females	130	2.99	.97				
				15.88	198	.061	S
males	70	2.91	1.01				

As shown in table 8, the results of data analysis for hypothesis three indicates that the t-value is 15.88, p-values .061

with 198 degree of freedom. The p-value is greater than the 0.05 level of significance (p>0.05). Therefore the null hypothesis three

which states that there is no significant difference in the mean response of male and female Afang farmers on the harvesting skills required by the graduates of agricultural education for selfemployment in Afang production in Ibesikpo Asutan Local Government Area was upheld.

 Table 4.5: Mean and standard deviation on marketing skills required by graduates of agricultural education for self-employment in Afang cultivation

SN	Marketing skills required by the graduates of agricultural education self- employment in Afang production	MEAN	SD	REMARKS
1	Supply of Afang to the eateries make more profit	2.59	1.19	R
2	Marketed through the middlemen networking	2.80	0.96	R
3	Online marketing for profit maximization	2.70	0.85	R
4	Marketing in the openmarket for good bargaining is required	3.40	0.73	R
5	Wholesales marketing for more profit	3.18	1.08	R
	Cluster Mean	2.73	1.10	Required

Data presented in Table 5 revealed that all the 5 skill items in marketing had their mean values ranged from 2.59 to 3.40, indicating that their mean values were above the cut-off point of 2.50. This showed that all the 5 skills on marketing were required by the graduates of agriculture for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State. The Table also showed that the standard deviation of the items ranged from 0.73 to 1.19, indicating that the respondents were not too far from the mean and from the opinion of one another in their responses on marketing skills required by the graduates of agriculture for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State.

Hypothesis 4: There is significant difference in the mean response of male and female Afang farmers on the marketing skills required by the graduates of agricultural education for self-employment in Afang production in Ibesikpo Asutan Local Government Area.

provides one unquenchable source of hope for success in technology. It is argued that an improvement in this position requires the further development of the nature an

 Table 4.9: independent t-test Analysis of responses of male and female Afang farmers on the marketing skills required by the graduates of agricultural education for self- employment in Afang production

Groups	N	Mean	SD	t-values	df	p-values	Decision
females	130	2.79	.88				
				17.01	198	.061	S
males	70	2.89	0.92				

As shown in table 8, the results of data analysis for hypothesis four indicates that the t-value is 17.01, p-values .061 with 198 degree of freedom. The p-value is greater than the 0.05 level of significance (p>0.05). Therefore the null hypothesis four which states that there is no significant difference in the mean response of male and female Afang farmers on the marketing skills required by the graduates of agricultural education for self-employment in Afang production in Ibesikpo Asutan Local Government Area was upheld.

5.2. Discussion of Findings

Skill in Soil Preparation for Afang Cultivation

The result of the study revealed that all the 5 skill items in soil preparation had their mean values ranged from 2.65 to 2.84, indicating that their mean values were above the cut-off point of 2.50. This showed that all the 5 skills were required by the graduates of agriculture for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State. The findings above were supported by the results of the corresponding hypothesis which revealed that there was no statistical significant difference between the mean response of male and female Afang farmers on the soil preparation skills required by the graduates of agricultural education for selfemployment in Afang production in Ibesikpo Asutan Local Government Area. This shows that gender of respondents did not influence their opinion on the above skills. This result agrees with the result by Xavi (2015) who conducted a study on the impact of land clearing methods on soil conversation. He reported that mechanical clearing is adopted for the cultivation of larger

portion of land on time with less energy to boost agricultural productivity. Eze (2021) highlighted that Through skill of soil preparation, graduates of agricultural education are equipped with Afang cultivation technique for self-employment.

Planting Skills in Afang Cultivation

The result of the study revealed that all the 5 skill items in planting had their mean values above the cut-off point of 2.50. This showed that all the 5 skills were required by the graduates of agriculture for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State. The findings above were supported by the results of the corresponding hypothesis which revealed that there was no statistical significant difference between the mean response of male and female Afang farmers on the planting skills required by the graduates of agricultural education for self- employment in Afang production in Ibesikpo Asutan Local Government Area. This shows that gender of respondents did not influence their opinion on the above skills. This result is in tandem with the findings Kulyakwave (2021) who conducted a study to determine the planting methods of crops and agricultural extension services among crop farmers in the rural areas. Crop yield was seen to be a function of the method of planting skills adopted for a particular crop. Ullah (2015) reported that the cultivation of crops via seeds is the surest means of seed crop propagation for creeping plants.

Harvesting Skills in Afang Cultivation

The result of the study revealed that all the 5 skill items in harvesting had their mean values above the cut-off point of 2.50. This showed that all the 5 skills were required by the graduates of agriculture for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State. The findings above were supported by the results of the corresponding hypothesis which revealed that there was no statistical significant difference between the mean response of male and female Afang farmers on the harvesting skills required by the graduates of agricultural education for self- employment in Afang production in Ibesikpo Asutan Local Government Area. This shows that gender of respondents did not influence their opinion on the above skills. This result agrees with the result of Eze, Ezeh and Eze (2021) who studied harvesting of Telfaria in Ebonyi State Agricultural Development Programme (EBADP). Result showed the different methods of harvesting promotes life continuity of the crop harvested as twisting of crops during can lead to death of crops. Udo (2017) noted that the possible explanation is that different skills of harvesting, their advantages and disadvantages are explained to Afang farmers.

Marketing Skills in Afang Production

The result of the study revealed that all the 5 skill items in marketing had their mean values above the cut-off point of 2.50. This showed that all the 5 skills were required by the graduates of agriculture for self-employment in Afang cultivation in Ibesikpo Asutan Local Government Area, Akwa Ibom State. The findings above were supported by the results of the corresponding hypothesis which revealed that there was no statistical significant difference between the mean response of male and female Afang farmers on the marketing skills required by the graduates of agricultural education for self- employment in Afang production in Ibesikpo Asutan Local Government Area. This shows that gender of respondents did not influence their opinion on the above skills. This result agrees with Adebayor (2013) who assessed the agricultural needs of farmers in Gnetumafricanum production and marketing in Enugu state, He reported that marketing is very critical and highly required part of crop production. Through marketing skills, graduates of agricultural education are equipped with the economics of Afang production for self-employment Xavier (2015).

Summary of Findings

The major findings of the study are based on the results presented:

- 1. There is no significant difference between the mean response of male and female Afang farmers on the soil preparation skills required by the graduates of agricultural education for self- employment in Afang production in Ibesikpo Asutan Local Government Area.
- 2. There is no significant difference between the mean response of male and female Afang farmers on the planting skills required by the graduates of agricultural education for self- employment in Afang production in Ibesikpo Asutan Local Government Area.
- 3. There is no significant difference between the mean response of male and female Afang farmers on the harvesting skills required by the graduates of agricultural education for self- employment in Afang production in Ibesikpo Asutan Local Government Area.

There is no significant difference between the mean response of male and female Afang farmers on the marketing skills required by the graduates of agricultural education for selfemployment in Afang production in Ibesikpo Asutan Local Government Area.

6. Summary

The main purpose of the study was to examine the entrepreneurial skills needed by graduates of agriculture education for self-employment in afang production in Ibesikpo Local Government area. To achieve this, four research questions were raised and four research hypotheses were formulated to guide the study. The research questions were analysed using mean and standard deviation of the data collected form questionnaire and the research hypotheses were tested using the independent t-test statistic.

Related literature relevant to the study were reviewed. The Andragogy Learning theory and the Constructivist learning theory were reviewed in the theoretical framework. The conceptual framework covered soils preparation skills in afang cultivation, planting skills in afang production, harvesting skills in afang cultivation and marketing skills in afang

The design adopted for the study was survey design. The study was conducted in Ibesikpo Local Government Area of Akwa Ibom State. This formed the Area of the study. The population of the study comprised of all the 2000 registered farmers in Ibesikpo Local Government Area. The randomized sampling was employed to select 200 registered farmers as sample size for the study. The instrument used was a researcher made questionnaire. The instrument was validated by experts and was tested for reliability using the split-half method technique. A reliability coefficient of 0.79 was obtained, indicating that the questionnaire was reliable. Data collected from the test was computed and analyzed using mean and standard deviation, and independent t-test statistic.

6.1. Conclusions

Based on the findings of this study, it is concluded that entrepreneurial skills such as soil preparation, planting, harvesting and marketing are required by the graduates of agricultural education for self-employment in Afang production.

6.2. Recommendations

Based on the findings of this study, the following recommendations were put forward.

- 1. Government through agricultural extension agents should provide viable and improved varieties of farm inputs (planting materials) to farmers.
- 2. Government and non- governmental organization should provide soft grants to farmers as assistance.
- 3. Government, extension agents and the community should provide a medium for easy processing and storage of farm produce.
- 4. Provision of adequate, good and accessibility of road network for easy transportation of goods from farm to market and rural to urban.
- 5. Extension educators should be given with fridge benefits as motivation to properly guide farmers.
- 6. Farmers should be given opportunity to innovative approaches in their farming practices by government.
- 7. Ministry of agriculture should create awareness on digital marketing benefit of agricultural produce.

References

Ali,M.Y.(2016). Research methodology (5th ed.). The Free press publishers, New York. U.S.A

Adebayor, E. D (2013). Agricultural needs of farmers in Gnetumafricanum production

and marketing in Enugu state, Nigeria. Akpe, A. J (2018). Adoption of improved cultivation practices in Gnetum africanum: A test crop for ownership of land. ARPN Journal of Agricultural and Biological Science, 6(8), 32-37

Akpoveta, M. E. and Agbomah, A. B. (2009). Small Scale, High Value: Gnetum africanum and buchholzianum Umoh et. al. 28 Value Chains in Cameroun. Smallscale Foresty, Pp 1-17. DOI 10.1007/s11842-012-9200-8

Essien, P. I.(2015). An overview of agricultural extension systems. In A. M. Kasaeba (Ed.), Technology systems for small farmers. Issues and options. Boulder, co: West

View Press with the International Fund for Agricultural Development. Eze, A. C, Ezeh, I. R and Eze, W. C. (2021). Harvesting of Telfaria in Ebonyi State Agricultural Development Programme (EBADP). Eze, J. M and Emah, k. L. (2009). Factors hindering the participation of women

farmers in agricultural programme in the South Eastern Nigeria. In: Transforming Nigeria Agriculture through Agricultural Extension. Conference proceeding of the 18th Annual National Conference (AESON), 5TH -9 TH May, 2013, Pp33-46. Federal Government of Nigeria (2013). Sustainable rural development, poverty

reduction and improved livelihood through Gnetum Africanum production in Southeast agro-ecological zone of Nigeria. International Journal of Agriculture and

Southeast agro-ecological zone of Nigeria. International Journal of Agriculture and Rural Development,19(1): 2533-2539. Kesiki, N. R, Amuche, C. C and Shimave, L. P (2014). "Bridging Food Security and Sustainable Agriculture Development through Regional Planning," International Journal on Advanced Science Engineering Information Technology (IJASEIT) vol. 6, no. 3, pp. 277-280, 2016.

Knowles, M.S (1973). *The adult learner*: A neglected specie Houston: Gulf. Kulyakwave (2021) Kulyakwave, P. D., (2021). Reliability of the Agricultural Extension

and Technological Services among Rice farmers in the Rural Areas of Tanzania. Journal of Agricultural Extension,25(2): 18-31.

Krejcie, R.V., and Morgan, D.W., (2015). Determining sample size for research Activities. Educational and psychological measurement.

Okafor, P. P. (2019). Roy, M. 2012. Agricultural marketing: New Challenges. Okafor, P. J. (2015). 105, in: 2012. Information of the state of the s Nigeria. MSc. Thesis, Department of Forest Resources Management, University of

Ibadan. Okafor, P. J (2015). The effect of infrastructure improvement on agricultural input use, farm Productivity and market Participation in Kenya. In CSAE Conference, pp.

23-25 Lawson, K. M., (2018). Modernizing national agricultural extension systems. A

Practical Guide for policy- makers of developing countries - Rome: Onochu, M. A. (2018). Improving Traditional Markets through transportation service: (The case of Asesewa and Agormanya Traditional Markets, Ghana). International Journal of Academic Research in Business and Social Sciences, Vol. 2(6). pp. 366-384.

200, pp. 500-507. Osinem, U. S. (2015). Characteristics and Classification of Soils as Influenced by Parent Materials in South-Eastern Nigeria. Nigerian Journal of Agriculture, Food and Environment, 11(3):102-108 Piaget, J. (1967). Paris- Biology and Knowledge. Chicago University Press; and

Ediburge University Press.

Paul, J. L. (2017). Adoption of improved cultivation practices in Gnetum africanum: A test crop for ownership of land. *ARPN Journal of Agricultural and Biological Science*, 6(8), 32-37

Rowel, A , C. (2011). Gnetum africanum: a wild food plant from the African Forest with many nutritional and medicinal purposes. *Journal of medicinal food*, 1(1), 14. Uche, P. N (2016). Vegetative propagation of Gnetum africanum Welw., a leafy vegetable from West Africa, *Journal Horticultural Science*, 71(1): 149-155. Xavi (2015). Rural Transport: Improving its Contribution to Growth and Poverty

Reduction in SubSaharan Africa. SSATP Africa Transport Policy Program.