WORK SKILLS REQUIRED BY SECONDARY SCHOOL GRADUATES FOR SUCCESS IN YAM PRODUCTION AND PROCESSING ENTERPRISE IN ANAMBRA STATE

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FEBRUARY, 2010

TITLE PAGE

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A RESEARCH THESIS'S SUBMITTED TO THE DEPARTMENT OF VOCATIONAL TEACHER EDUCATION UNIVERSITY OF NIGERIA, NSUKKA
(AGRICULTURAL EDUCATION)

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FEBRUARY, 2010.

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The work embodied on this project is original and has not been submitted in part or in full for any other degree in this or any other university.

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DEDICATION

This work is dedicated to my beloved father, Mr. Emmanuel Mojekwu.

ACKNOWLEDGMENTS

The researcher is grateful to her supervisor Prof. N.J Ogbazi for his untiring guidance and constructive criticism through every stage of this work. His insistence on hard work and willingness to reform researchers academically is highly appreciated.

The researcher is very grateful to her husband for his endurance patience and mutual assistance during the course of the study. The researcher is very grateful to the members of her family Emeka, Onyeka, Chinaedu, and especially her kid sister Chidimma for her prayers and encouragement through the period of this study.

The researcher finally expresses her sincere gratitude to God Almighty for seeing her through this in good health and for being with her husband while away for this study.

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ABSTRACTS

This study is focused on the identification of skills required by secondary school graduates for success in yam production and processing enterprise in Anambra State. Six research questions were posed in conformity with the purpose of the study. Six null hypotheses were formulated and tested 0.05 level of significance at relevant degree of freedom. The study made use of survey research design. The structured questionnaire were generated from the literature reviewed for the study. The questionnaires was face validated by three experts, one from Department of Crop Science, and two from Department of Vocational Teacher Education, university of Nigeria Nsukka. The reliability coefficient of the instrument were determined using product moment correlation co-efficient. The reliability for the instrument was 0.81. The data was collected from 200 Agricultural Science Teachers and 82 Extension workers in Anambra State. The data collected were analyzed using mean and standard deviation to answer the research questions, while the t-test statistic was used in testing the hypotheses. The findings revealed that nine (9) skills were required in planning for yam production eighteen (18) skills were required in planting of yam, fourteen (14) skills were required in management of yam field. Ten (10) skills were required in harvesting and storage fifty four (54) skills were required in processing of yam into various forms and nine (9) skills were required in marketing of yam and yam products.

The result of the null hypotheses tested revealed that there was no significant differences in the mean rating of of the groups of respondents on skills required by Agricultural Science teachers and Extension Agents for Success in yam production and processing enterprises.

It was recommended that the identified skills in this study should be packaged by the government and integrated into the programmes of skills acquisition centers where it could be used for training interested unemployed youths in yam production and processing.

CHAPTER ONE

INTRODCUTION

Background of the Study

The major objective of the Nigeriaôs food production policy is to achieve self-sufficiency in food production and processing. The development of agricultural sector is very important not+ only because the sector produces bulk of the nations food and agricultural products but because majority of the nations population live and work in the sector. (Abalu, 1987). Some of the Nigeriaôs agricultural produce include rice, maize, cassava coco yam and yam.

Yam is an important staple food crop in many communities in Anambra state of Nigeria. Yam according to Uguru (1996) belongs to the family of *Dioscorecea*, which is one of the monocot plants which is planted and harvested every farming season. Its propagation as food and staple crop is carried out with six species, which are popularly cultivated in Nigeria namely, *Dioscorecea rotundata* (white yam), *Dioscorecea alata* (water yam) *Dioscorecea Cayenesis* (yellow yam), *Dioscorecea bulifera* (aerial yam), *Dioscorecea esculenta* (Chinese yam) and *Dioscorecea dumentorum* (trifoliate yam). Osuji (1985) stated that all yams are classified as monocotyledonous crop under the genus Dioscorecea, family Dioscorceaceae and order Dioscoreales. The author stressed further that many people lay emphasis on Dioscorecea *rotundata,* which is consumed mostly

on the tropical zone. Others species like. *Dioscorecea* alata, *Dioscorecea* cayenesis, *Dioscorecea* dumentorum, *Dioscorecea* esculenta, and *Dioscorecea* bulferia, are also cultivated but in a minute quantity. In the opinion of Iwena (2008) yam is a stem tuber crop which is rich in carbohydrate. Uguru (1996) emphasized that among all the six species of yam that is cultivated in Nigeria. *Dioscorecea* rotundata is the most important species that is cultivated in most of the Eastern states of Nigeria. These states include Anambra, Ebonyi, Enugu, Abia, and Imo state. This species of yam is also cultivated in Edo, Benue Adamawa, Taraba and the Southern section of Kaduna State. Emedo (2004) agreed with Uguru(1996) stating that D. rotundata is much the most important species in cultivation in Southern Eastern State of Nigeria. This is as result of adaptability of yam to the environment and high yield derived from it.

According to Nwauzor (1990) D. rotundata has characteristics in which it is known for and they include:

- D. rotundata has cylindrical vines
- It possesses prickles
- The tubers are thin fleshed varying from cream to white colour.
- The vines twine anti-clock wise.
- Maturity starts six months after planting
- It grows best in loamy and alluvial soil with high organic matter content.

In the opinion of Ijeomah (1983), D. rotundata tubers are normally cylindrical, with rounded or pointed ends, smooth ground skin and white flesh but they may assume distorted shapes. Normal tubers weight 2-5kg when grown in good fertile soil. Stems are cylindrical and about 10-12 m long. twining to the right, usually spiny. Emedo (2004) added that after the death of the annual vines, the tubers enters a definite period of dormancy, when the rate of metabolism is greatly reduced for this reason, the tubers store better with less loss due to respiratory processes, than those of related species. The author added that the stems of the vine are cylindrical and also forms a very heavy armed spine which are rooted near the ground level. The leaves are usually opposite and normally dark glossy and green. in nature

Farmers in Anambra State mainly cultivate Dioscorecea rotundata (white yam) as feed and use its bye ï products as food for animals. Onwuegbune (2004) emphasized that some traditional ceremonies are celebrated with yam as the major food item such as the New Yam festival in Anambra state and other Eastern Part of Nigeria. He stressed that yams are the most nourishing crop in the diet of many families in Anambra State, to such an extent that their very existence is centered on the crop.

Opara (2001), added that they are also marketed as fresh produce for economic gains and the income derived from its sale is used to solve other pressing

family problems or for purchasing of farm inputs such as yam seed/sett for the next farming seasons. Yam are used for chips stones as they are easy to handle and store well for periods of several months.(IITA ,(1995).

Kay (1983) identified the various processes involved in yam production as followô planning, planting, management, harvesting storing, processing into edible food and marketing. MarckWardart (2001) defined production as the process of bringing into existence by intellectual or creative ability. According to Ezeh (1996), production is the process of making or growing things such as food or material in large quantity. Hornby (2001) described production as the action of manufacturing, growing, and extracting things in large quantities. Yam production is a high labour intensive venture and grows in association with many vegetables and tree crops. It could be both a subsistence food or as a product for commercial export and industrial uses as it exists in Anambra State.

Degras, (1993) stated that production of yam has many benefits which is derived from it.

Some species of yam provide active compound in modern medicine. Apart from carbohydrate content, yams are fairly good source of protein, vitamin especially vitamin A, B, C. Yams are often used in certain ceremonies as like New Yam festival and other social religious occasions.. Coursey (1989) emphasized that yam serve as a major cash crop which form a major source of wealth of the people.

People meet their social and financial commitment from harvested yams that are sold. In the opinion of Akoroda (1992),the basic properties of some species of yam are utilized for hunting, and poison materials. The tubers of *Dioscorecea* SPP contains steroidal sapogenôs related to sex hormones and corticosenteriods,. These provide a source of diosgenin which is used in the manufacture of oral contraceptive drugs and cortisone. .Iwena (2008) added that yam production and marketing of yam increases the revenue base of a state.

Processing of food for human consumption is of prime importance in determining the consumersô acceptance for the particular food, (F.A.O,2000). Ihekeronye (1986) defined processing as an activity designed to alter the shape and size of a product with a view to improving the handling and quality. Nweke (1992) emphasized that processing involves transformation of the raw produce into other forms in which it can be stored or eaten. Processing improves the acceptability, palatability and digestibility of the produce. In the view of Onwueme (1991), Processing is seen as a means of reducing post harvest losses of tropical roots and tuber crops. Siki (1999) stated that yam can be processed into the following major products and they include: yam flour, yam flakes, yam chips and pounded yam. Uguru (1996) emphasized that in Anambra State yam can be processed into various types of food which includes pounded yam, boiled yam, roasted or gilled

yam, fried yam, yam balls, mashed yam, yam chips, and yam flakes He stressed that these yam produce are mostly consumed by every house hold in the state.

Assiedu (1992) identified the benefits derived in yam processing as follows:

- Reduction of moisture contents to a level where the products becomes less prone to bacterial and mould attack.
- Removal of odour usually associated with bacteria that break down nitrogenous materials.
- Enhancement of the protein content of yam based products
- Detoxification and extraction of poisonous substances
- Break down of starch component to products which can be consumed as flakes.

Many farmers in Anambra State engage in the production and processing of yam as an enterprise. According to Emone (2003), an enterprise is any business activity that can yield reasonable profit to an individual. Hornby (2001) defined enterprise as a business activity developed and managed by individual in order to make profit. Therefore production and processing enterprise in yam means cultivating and altering of harvested yam products to improve their quality towards profits making for a livelihood. In Anambra State, Nweke (1992) stated that production and processing of yam follows a sequence of activities such as planning, planting, management, Harvesting and storage, grading according to size

and storing in the barns. The next activity after grading is determined by the nature of the product needed by the processor. Where the product needed is yam flakes, the following steps are taking: Peeling, washing, slicing, steeping, mashing drum and drying. The author emphasized that if the product needed is yam flour: peeling, washing, slicing drying, grinding and sieving will be required to achieve it and where producing of yam ñfufuò is required, the following procedure should be adopted

- Peeling,
- Cutting
- Washing
- Cooking and
- Pounding.

All these processes listed above are the various methods of processing yam for human consumption.

To be competent in yam production and processing a person must be skilled.

Hull (1992) viewed skill as well established habit of doing things by people. An individual possess a skill if he has acquired necessary performance ability, which leads to perfection. Skill according to Okorie (2000) is the habit of acting, thinking and behaving in specific activity in such a way that the process becomes natural to the individual through practice. Osinem and Nwoji (2005) defined skill

as the ability to perform and act expertly. It is that expertness, practiced ability or proficiency displayed in the performance of a task. A person that works productively is skilled because he has acquired the habit of performing a task in an acceptable manner within his job. Skill in the context of this study can be regarded as performance activities required by secondary school graduates in yam production and processing in Anambra State.

Okorie and Ezeji (1998) classified skills into technical and human skills. They highlighted technical skills as those that call for proficiency in specific activity particularly those involving methods processes, procedures or techniques for their performance. While they explained human skills as those involving leadership ability for working effectively in a group situation. To achieve efficiency in yam production and processing individuals must work hard. Okorie (2000) explained work as a function of useful experiences which precipitate from purposeful teaching and learning. Osinem and Nwoji (2005) defined work as a form of activity or job that has social approval and satisfies a real need of the individual to be active, productive, creative, respectful and to acquire prestige.

In Anambra state, people work manually by using traditional farm tools and methods in production and processing many tasks and in work situation are termed work skills. In the opinion of Farrant (1975) work skills are activities requiring co-

ordination and principle of performance to such an extent that it will become easy, efficient and automatic.

Work skill in yam production and processing involves demonstration of certain activities, which makes performance efficient and paramount. In Anambra State secondary school, Agricultural science is taught to students to equip them with production and processing skills in crop found in their environment.

Secondary school graduates in Anambra State are youths that have completed six years of secondary school education. Some of them obtained admission into higher institution after graduation while many of them that graduated did not posses any work skill for some occupation. The reason is because the secondary schools were not equipped with any production and processing skills in school and their teachers could not accomplish the objectives of the secondary school Agriculture curriculum.

According to Olaitan (1996) objectives of secondary school Agricultural science include the following:

- Stimulation of students interest in Agriculture
- Enabling Students acquire basic knowledge and practical skill n Agriculture.
- Preparation of students for occupation in Agriculture.
- Preparation of students for further studies in Agriculture.

The above objectives as contained in the secondary school curriculum have only dwelt on the areas of theory rather than practice which invariably could not lead to the development of the needed skills by secondary school graduates for occupation in yam production and processing enterprise. Many of the students also could not obtain admission into higher institutions nor find satisfying job within the environment, hence most of them are idle and fully dependent n their parents. most of whom are peasant farmers, they could obtain satisfaction from the peasant farming activities of their parents and therefore some of them migrate to urban centers as touts without any sustainable future.

Farmers in Anambra State grow yam as one of the major staple crop. It is observed that they engage in the traditional method in yam production and processing. The traditional methods involve the use of hoe heaping, planting of yam as inter crop and practice of shifting cultivation without the use of any fertilizer. Also the processing of yam involves grinding it with local machines and sieving with constructed wire gauze sieve. The yam tubers are processed into flour, flakes or roasted yam. These products are sold to generate income by those in the business. Yam production and processing are on the increase at the neighboring states such as Ebonyi, Enugu and Delta State. Hence it has formed an important commodity for trade between Anambra and her neighbors. Based on this

development, there is difficulty in meeting the demands of people for cultivated, harvested and processed yam crop.

Presently, farmers have been encouraged through farm inputs to improve on the cultivation of yam to boost yield. There are opportunities for any person to enter into yam production and processing enterprise which accompanies huge profit making. The Anambra State government is eager and has established skill acquisition center to cater for areas like weaving, soap making, bread making on the parts of the youths and handicapped ones. Unfortunately that of yam production and processing are not identified and integrated in to these skill acquisition centers. Idle youths or secondary school graduates that roam the streets as touts can be trained in yam production and processing to earn and sustain a living. Hence there is need to identity work skills required by secondary school graduates for success in yam production and processing enterprise in Anambra State.

Statement of the Problem

In Anambra State farmers usually experience difficulty in getting enough yams for planting. At times the yams are not available at the right time. This affects the production and processing level. They cultivate and use yam in various forms such as minisett and ware yam, and process it into yam flour, flakes and pounded yam. The quantity of yam to be produced depends to a large extent on the

amount of planting material at their disposal. The quantity of yam to be produced and processed seems to be very low because farmers are restricted to local cultivars as planting materials. The technique of production and processing is crude hence, farmers adopt the traditional method of yam multiplication (Anambra State ministry of Agriculture journal vol 5 no 19 pg 79-85). Based on the high demand of yam and yam products the government of Anambra State has made available farm inputs such as fertilizer, herbicides and use of improved varieties to increase production of yam tubers, but the use of traditional techniques for production and processing of yam may not be able to cope with the increase in demand of yam tubers as a result of the inconsistency on the part of the farmers on non-usage of government farm inputs to boost yam field in future .(food and agricultural organization).(1980)

In Anambra State students offering Agricultural Science are required to be taught crop production and processings especially of some of the crops in their environment. Yam is one of the most important crop in Anambra state and therefore it is taught to students in the secondary schools one of the major problems is that the syllabus stress information on knowledge about yam rather than on skills development. Teachers of Agriculture do not exceed the content of the syllabus, which is void of skill, hence most of the Agricultural science students graduate from school without skill in the production and processing of yam

(.Anambra ministry of agriculture, 2008) Some of the student who graduated from school secured admission to higher institution while some could not. Those who stayed with their parents as dropouts could not get satisfaction with the tradition methods or techniques adopted by their parents in production and processing of yam into various forms. Hence they are not encouraged to stay with them in yam production business. They therefore migrate to cities in search of white collar jobs which were not available for the level of education They therefore constitute problems for people of Anambra State by engaging in anti-social behavior. In realization of the menace of the unemployed youths, the government of Anambra state established skill acquisition centers at various strategic places to equip them with occupational skills for work and good living. The experiences of the researcher with these skill acquisitions centers revealed that they develop work skills to youths in areas like soap making weaving, sewing and bread making but the programme to develop skill in yam production and processing was absent at centers.

If skills in yam production and processing enterprise are identified and made available to the centers, it might help them to provide required training to interested youth or Secondary School graduate to find occupation in yam production and processing thereby improving their income for a living and reduce the problems that they cause in the society, hence this study.

Purpose of the Study

The overall purpose of the study was to identify works skills required by secondary school graduates for success in yam production and processing enterprise in Anambra State.

Specifically, the study seeked to:

1. Identify, work-skills required by secondary school graduates in planning for yam production.
2. Find out the skills required by secondary school graduates in planting yam.
3. Identify the skills required by secondary school graduates in the management of yam field.
4. Ascertain the skills required by secondary school graduates in harvesting and storage of yam.
5. Identify the skills required by secondary school graduates in processing yam in to various forms.
6. Find out the skills required for marketing of yam and Yam products.

Significance of the Study

This study will be of benefit to the Anambra State government, teachers of Agriculture, management or staff of skill acquisition centers, yam producers and processors. This study will provide information to the government on skills in yam

production and processing. The government could request skill acquisition centers to package the identified skills into a programme for training youths or secondary school graduates in yam production and processing enterprise. The information on yam production and processing provided could also help government to identify facilities necessary for yam production and processing to the teacher of Agriculture. The teachers of Agriculture could use the information on yam production and processing for training secondary school students in young formers Club (YFC).

This study will provide information on yam production and processing to the staff and management of skill Acquisition centers. The management of these skill acquisition centers could use this information on yam production and processing to develop training programmes for unemployed youths or secondary school graduates.

This study provide information on yam processing to processors of yam into either, flakes, flour, chips or pounded yam. Yam processors could use this information on yam processing to develop training programmers for idles youths and unemployed secondary school graduates in the community.

Research Questions

The following research questions were answered by the study.

1. What were the work-skills required by secondary school graduates n planning for yam production?
2. What were the work-skills required by secondary school graduates in the planning of yam?
3. What were the work-skill required by secondary school graduates in the management of yam field?
4. What were the work-skill required by secondary school graduates in harvesting and storage of yam?
5. What were the work-skill require by Secondary School graduates in processing of yam in to various forms?
6. What were the work-skill require in marketing of yam and yam products.?

Hypotheses

The following null hypothesis was tested in the study at the 0.05 level of significance.

1. There was no significant differences in the mean ratings of teachers of Agricultural science and extensions agents of the work-skills required by secondary school graduates in planning for yam production in Anambra State.
2. There was no significant differences in the mean ratings of teachers of Agricultural sciences and extension agents of the work-skill required by secondary school graduates in planting of yam.

3. There was no significant difference in the mean ratings of teachers of Agricultural science and extension agents of the work skills required by secondary school graduate in management of yam field.
4. There was no significant differences in the mean ratings of teachers of Agricultural science and extension agents of the work-skills required by secondary school graduates in harvesting and storage of yam.
5. There was no significant differences in the mean ratings of teachers of Agricultural sciences and extension agents of the work-skill required by secondary school graduates in processing of yam in to various forms.
6. There was no significant differences in the mean rating of teaches of Agricultural science and extension agents of the work-skills required by secondary school graduates in marketing of yam and yam products.

Delimitation of the Study

The study was restricted to the identification of work-skill required by secondary school graduates for success in yam production and processing enterprise in Anambra State. The study covered the six education zones in Anambra State which in includes: Aguata zone, Nnewi zone, Ogidi zone Awka zone, Otuocha zone, Onitsha zone.

Assumption of the Study

The experienced agricultural science teachers were presumed qualified to respond to the questionnaire for this study because they have been trained in the various aspects of yam cultivation and processing enterprises.

The extension agents work with farmers in the state, helping hem to solve their farming problems in yam production and processing therefore they will be familiar with steps in yam production and processing.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The review of related literature for this study was organized under the following sub headings:

1. Theoretical framework of the study.
2. Approaches to skill identification in crop production.
3. Work-skill required in planning for yam production.
4. Work-skill required for planting of yam.
5. Work-skill required for management of yam yield.
6. Work-skill required for harvesting and storage of yam.
7. Work-skill required for processing of yam.
8. Work-skills required for marketing of yam products.
9. Related Empirical Studies.
10. Summary of literature review.

Theoretical frame work of the Study

The theoretical frame work of this study based on occupation theory and production theory. Occupation according to Barnhart (1995) is the work a person does regularly to earn his living. It is a principal activity in oneôs life that one does to earn money. And activity that serves as oneôs regular source of livelihood. Marckwardart (2001), similarly explained occupation as oneôs regular principal or

immediate business. What a person devotes oneôs self especially oneôs regular work, employment, trade, job pursuit or means of getting a living. Various occupational theories have been stated some of the occupational theories stated by Olaitan (2001) include the following:

I. **Occupation skill element theory:** This theory states that occupation must have skill element in which individual could be train-ed for a life long employment for living. Yam production and processing enterprise has some skill element like planning for yam production ,planting of yam, management of yam field, harvesting of yam processing of yam and marketing of yam and yam products in which an individual must acquire for success in self employment.

Occupation theory of value: This theory states that occupation must have value that attracts individuals into it some of these values may be economic, social and prestige functions for the identification of skill which individual is to be trained. In Anambra state, occupation has value and yam production is an occupation and has social, economic and prestige value which attracts many people in to it for economic purpose. The social and prestige value of yam production could help the secondary school graduates to achieve their economic goals of yam and yam products

According to Reynolds (1975), production theory consist of an analysis of how a producer combine the various inputs to produce desired out put in an economically efficient manner. The production process usually requires a wide range of inputs like any other input resource. The input resources in this process are known as factors of production. In the opinion of Hanson (1996), the factors of production include land, labour, capital and management or entrepreneur as inputs which are used to produce goods and services. Land is natural resource Essan and Olayide (1994) stressed that land aids production in that it is on it that firms and factories are built. Land also servers as site where some forms of economic activities such as yam production and processing are carried out. Therefore in the context of this study, land is a gift of nature that provides the means for yam cultivation, management of yam field and harvesting and storage of yam and marketing yam and yam products

Labour is an important input in production process. According to Harry (1998) labour is the actual effort or activity or both physical in carrying out activities. In his own view Okorie (2000) stated that labor is an input to production, it requires skills such as ability to prepare land suitable for desired crop, carryout seed selection and raising of seedlings. Hanson (1976) stated that as labour organizers its own work of others and is responsible for making vital decisions of policy regarding the method of production. Labor in the context of this study

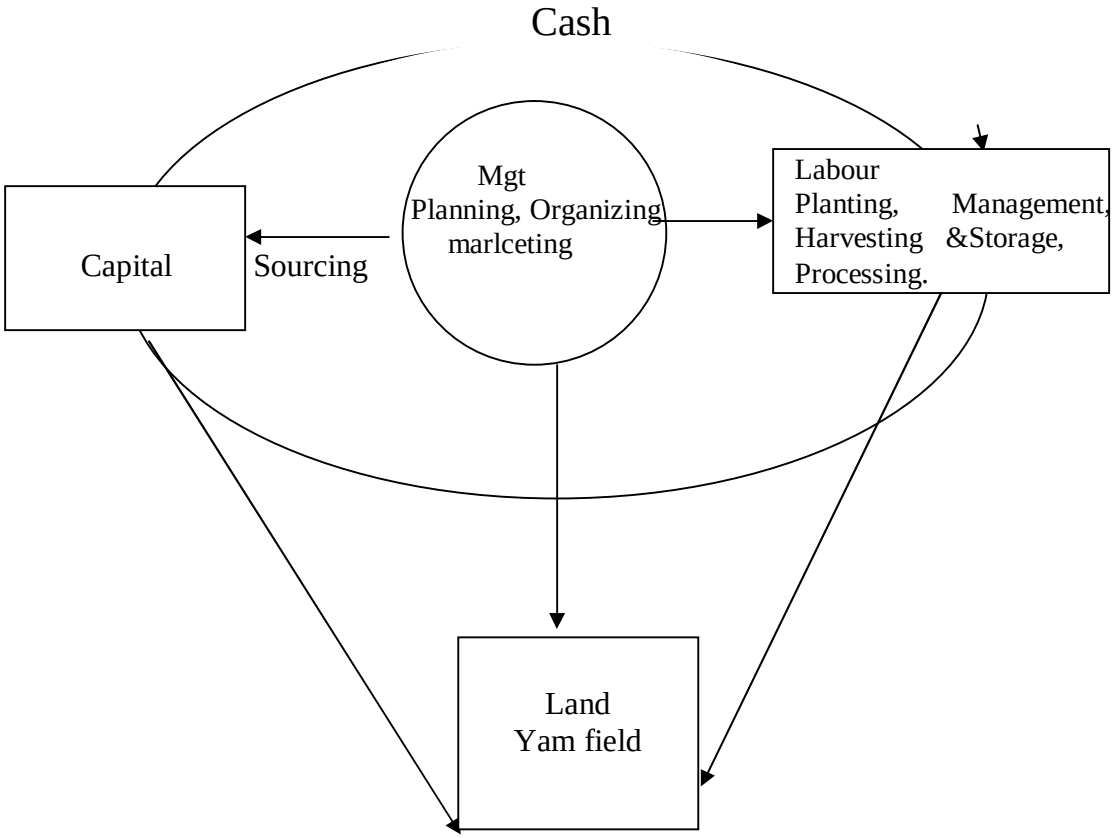
referred to the skills required in planting of yam, management of yam field, preparing of planting materials for field establishment, harvesting and storage of yam, processing of yam and marketing of yam and yam products .In the context of this study, it becomes clear that man makes use of labor to perform some certain activities in yam production and processing. These study will identify skills in the above areas on which individual secondary school graduates could be developed to generate required labor for success in yam production and processing enterprises. Capital is another factor of production usually referred to as man-made factors or wealth used in production and processing enterprise capital may be fixed or circulatory, fixed capital include building, machine, power plan while circulatory consists of stock of raw material, cash and semi-finished goods. When capital is judiciously used, it will enhance increase in the productivity of other factors of production such as in land and labor and towards obtaining desired objectives of maximum profit. Nigerian Educational Research and Development council, (1991) stated that capital is any wealth that is employed in the production process..Essang and Olayide (1994) stated that capital is man made factor of production, consisting of physical cash, building, machineries, semi finished goods, eqsuipments and tools used in production. Egbo (2006), emphasized that capital is sum of money that can be invested into a business. In setting up yam production and processing enterprise certain amount of money is required for effective use of land, labor and

management of the farm. With reference to this study, capital consists of raw materials, such as yam sets, barn, fertilizers, fungicides, tie ropes, staking material store and cash required by secondary school graduates for efficient production to be achieved.

Entrepreneur is also considered as another factor of production after land, labor, and capital. The entrepreneur organizes production and processing strategies and bears the risk of an enterprise. Dow and Hedon (1991) stressed that entrepreneurs are those who organize the factor of production output, seek out and exploit new business opportunities. Iwena(2008), saw an entrepreneur as a person or group of persons who coordinate, organize and controls the use of other factors of production. The author added that the entrepreneur is the person who combines other factors of production such as land, labour and capital to produce goods and services Hanson(1976) stated that an entrepreneur organizes its own work and that of others and is responsible for making vital decision or policy regarding the method of production to be employed and the quality of commodity to be produced. In their own opinion Olayide and Heady (1982), explained that

The functions of entrepreneur are to maximize profit in an enterprise. It therefore, means that other factors of production are simply regarded as productive resources available to the entrepreneur who constantly seeks for more profitable and efficient ways of using resources to produce and process yam.

In the context of the study entrepreneur herby referred to the secondary school graduates who must be able to combine other factors of production land, labour and capital for effective planning, management of yam field harvesting and storage, processing and marketing of yam and yam products in order to achieve stated objective of maximizing profits of the enterprise.



Schematic diagram of theory of yam production.

Okaro (1980) revealed that a large number of house holds, grow yam as cash crop, selling at least half of the products of the year production. This agreed with occupational theory of economic value. Ogbazi (2004) emphasized that for one to be a specialist in yam production and processing enterprise, he must be skilled in

managing land, labour, capital and entrepreneur. This agreed with production theory.

The above theories therefore guided the study in the identification of those skills required for success in yam production and processing enterprise.

All the skills identified in yam production and processing will equip the individual with the appropriate skill they need to engage in yam production and as an occupation for a worthwhile living.

Approaches to Skill Identification in Crop Production

There are several approaches used in identification of skills in crop production. They include the following:

1. Competency Based Approach.
2. Job Analysis Approach
3. Task Analysis Approach
4. Modula Approach.

Competency Based Approach

Sullivan (1995) defined competency as skill performed to a specific standard under specific condition. In addition Olaitan, Nwachukwu, Igbo, Onyemachi and Ekong (1999) stated that Competency approach is a process of designing and delivering strategies which helps a student to acquire knowledge, skills, and attitudes needed for successful entry into an occupation and that it involves

arranging these skill knowledge and attitude needed for successful entry into an occupation and that it involves arranging these skills, knowledge, and attitude to be learnt in hierarchy of difficult. Sullivan explained that in a competency based training system the unit of progression is mastery of specific knowledge and skills and is learner or participant-centered. Competency-based training for yam production then is training based upon the learners ability to demonstrate attainment or mastery of yam production skills performed under certain conditions to specific standards (the skills then becomes competencies). Sullivan further enumerated the essential elements, characteristics, advantages and limitations of competency based training as follows.

I. Essential Elements of a competency. Based system are:

II. Competency to be achieved are carefully identified, verified and made public in advance.

III. Criteria to be used in assessing achievement and the conditions under which achievement will be assessed are explicitly stated and made public in advanced.

IV. The instructional development and evaluation of each of the competency specified.

V. Assessment of competency takes the participant knowledge and attitudes into account but requires actual performance of the competency as the primary source of evidence.

VI. Participants progress through the instructional programme at their own rate by demonstrating the attainments of the specified competencies.

Characteristics of competency Based Training programs are:

I. Competencies are carefully selected.

II. Supporting theory is integrated with skills practiced

III. Detailed training materials are keyed to the competencies to be achieved and are designed to support the acquisition of knowledge and skills

IV. Methods of instruction involve mastery learning the premise that all participants can master the required knowledge or skill, provided sufficient time and appropriate training method are used:

V. Participant knowledge and skills are assessed as they enter the program and the with satisfactory knowledge and skills may by pass training or competencies already attained.

VI. Flexible training approaches including print, audio visual and stimulations (models) keyed to the skills being mastered are used.

VII. Learning should be self-paced

VIII. Satisfactory completion of training is based on achievement of all specified competencies.

Advantages of Competency Based Training.

One of the primary advantages of competency. Based training is that the focus is on the success of each participant where trainees of each participant where trainees have of attain a small number of specific and job-related competencies. The benefits identified include:

I. Participants will achieve competencies required in the performance of their job.

II. Participant builds confidence as they succeed in mastering specified competencies.

III. Participants receive a transcript or list of the competencies they have achieved.

IV. Training time is used efficiently and effectively as the trainer is a facilitator of learning as opposed to a provider of information.

V. More training time is devoted to working with participants including or in small group as opposed to presently locatives.

VI. More training time is denoted to evaluate each participant ability to perform essential job skills.

Limitations of Competency Based Training

I. Unless initial training and following up assistances is provided for the trainers, there is a tendency to teach as we were taught and the trainer slip back into the role of the traditional teacher.

II. A competency based training course is only as effective as the process used to identify the competencies when little or no attention is given to identification of the essential job skills, then the resulting training course is likely to be ineffective.

III. A course may be classified as competency based but unless specific competency based training materials and training approaches eg learning guides, check lit and coaching are designed to be used as part of a competency based as approach.

It is unlikely that the resulting course will be truly competency based.

Job Analysis Approach.

Job analysis calls for analysis of the job and organization of instructional units around these tasks. Osuala (1999) described job analysis as detailed listing of duties operations and skills necessary to perform a clearly defined job such operations are skills organized into a logical sequences which may be used for teaching, employment or classification purpose. In another opinion, guide (2001) contended that job analysis is a process to identify and determine in details the

particular. Job duties and determine on detail the particular job duties and requirements and the relative importance of these duties as for a given job. He added that job analysis data may be collected from incumbents. Although interviews or questionnaires, the product of the analysis is a description of the person. Guide further enumerated the purpose of job analysis. The purpose of job analysis is to establish and document the relatedness of employment procedures such as training, selection, compensation, and performance appraisal.

(I) Determining training needs

Job analysis can be used in training needs assessment to identify or develop training content assessment task to measure effectiveness of training, equipment to be used in delivering the training and methods of training (ie small group computer based video, classroom).

(II) Compensation

Job analysis can be used in compensation to identify or determine skills level, compassable job factor, work environment eg hazard, attention physical effort) responsibilities eg fiscal supervising required level of education (Indirectly related to salary level.

(II) Selection Procedure

Job analysis can be used in selection procedure to identify or develop job duties that should be included in advertisement to be identify or develop appropriate salary level for the position.

To help determine what salary should be offered to a candidate Minimum requirements (education and experiences for screening applicants).

- Interview questions
- Selection test/Instruments (eg written test, oral test, job simulation).

  Application appraisal/evaluation form and orientation materials for applicants/new lines.

(iv) Performance Review

Job analysis can be used in performance review to identify or develop

- Goals and objectives, performances standards, evaluation criteria.
- Length of probationary periods and Duties to be evaluated.

Methods of Job Analysis

A typical method of the job analysis would be to give the incumbent a simple questionnaire to identify job, duties, responsibilities, equipments used, work relationship and work environment. The completed questionnaire would then be used to assist job analyst who would then conduct an interview of the identified job duties, responsible equipment, relationship and work environment would be

reviewed with the supervisor for accuracy. The job analyst would then prepare a job description or job specification. Job analysis should collect information on the following areas:

I. **Duties and tasks:** Information to be collected about the items may include: frequency, duration, effort, skill, complexity, equipments standards etc.

II. **Environment:** The work environment may include unpleasant conditions such as offense ordours and temperature extremes, they may have a significant impact on the physical requirements to be able to perform a job, there may also be definite risks to the incumbent such as noxious fumes, radioactive substances, hostile and aggressive people, and dangerous explosive.

III. **Tools and Equipments:** Some duties and tasks are performed using specific equipments and tools equipments may include protective clothing, shoes caps, gloves etc. these items need to be specified in a job analysis.

IV. **Relationship:** Supervision given and received relationship with internal in external people.

V. **Requirement:** The knowledge, skills and abilities (KSAôA) required to perform the job while an incumbent may have higher (KSAôS) than those for the job, a job analyst typically only states the minimum requirement to perform the job. More so Olatan (2003) highlighted the strength and weakness of job analysis as follows:

i. It established a priority for selection and placement on the job.

ii. It estimates criteria of job success.

iii. It estimates traits which differentiate success or the ob from the success on the other.

iv. It furnishes preliminary estimation of the traits which may be evaluated in selecting persons for the job..

The Weakness

I. There may be difficulty identifying specific character traits for workers.

II. Workers may not be appropriately pleased because of difficulties in identifying appropriate character traits for workers.

III. What a worker does on the job may be studied instead of what gets done on the job.

IV. Job analysis is also general or vague to provide insight on what should be taught to prepare a student or a job.

V. It does not permit learning from one operation to another.

Task Analysis

Hackos and Redish (1998) explained that task analysis analyses what a user is required to do in terms of action and or cognitive processes to achieve a ask. In another view Olaitan, (1999) noted that task analysis is the identification of classes

of learning behavior expected to be performed by learner and it is concerned with the process of breaking work into smaller units which males up an occupation area. hackôs and Redish added that a detailed task analysis can be conducted to understand the current system and the information flows within it. These information flows are important to the maintenance of the existing system and must be incorporated or substituted in any new system. They also explained that task analysis makes possible to design and allocate task appropriately within the system and the user interface can then be accurately specified. In task analysis, tasks are decomposed or break down from high level do consistent sub tasks and operations. The authors further presented method of task decomposition as follows:

i. Identify the task to be analyzed
ii. Break this down into 4 to 8 subtasks. These sub tasks should be specified in terms of objective and should cover the whole area of interest.
iii. Draw the subtasks as a layered diagram ensuring that it is competed.
iv. Continue the decomposition process ensuring that the decomposition and humbling are consistent
v. Present the analysis to some one also who has not been involved in the decomposition but who knows the task well enough to cheek or consistency. The strength and weakness of task analysis as in Olaitian 2003 are as follow:

I. It provides bases for collecting interrelated information about work in order to allocate priorities.

II. It helps to make decisions about structuring a learning environment.

III. It makes content selection process in any work valid.

IV. It helps in specifying instructional objectives

V. It is useful in the designing of instructional activities.

VI. It helps in determining teaching strategy

It is useful in evaluating programmes.

The Weakness are:

i. It limits the application of skill to specific jobs.

ii. It does not prepare students for change in occupation

iii. It learns out the transfer of skills to other situations to chance depending on intelligence about personal imitation of the students.

iv. Occupational details are provided for the trainee without having human understand why this is a necessary step.

v. It stresses knowledge and skills, without the dimension of attitudes and judgments.

Modular Approach

Modular approach as explained by Sullivan (1995) Implies the subdivision of the total required qualification for a given occupational profits into a set of employable competencies or skills, each of which then has to be delivered by one module. In addition Olaitan and Ali (1997) noted that modular approach to curriculum design is a unit of curriculum based on the development of entry lives competencies of students. In Modular instruction Sullivan maintained thatò breaking up of curriculum content is done differently where each unit is self contained that is each unit is independent and contains all the theoretical knowledge, practical skills and attitudes required to achieve the skill targeted by the unit. These methods of breaking up curricular content can be changed, modified or deleted without having to change the whole curricula. He stated that modularized instruction is competency-based instruction that is assessment of trainee is done against a clearly defined task that one has to perform under certain condition and up to certain standard regardless of the time spent in training. Sullivan, further commended that the typical size o module can be approximated as follows;

One full occupational qualification range may contain 20 to 40 competencies, for two years of full training this corresponds to about 3 or 4 per

module. Module was defined by Sullivan as an instruction unit conceived to deliver an employable skill. The content of a module are:

- Teaching /learning subject.
- Instruction/learning methods
- Teaching/learning objective (if possible in operational zed form).
- Required equipment and
- Assessment Method.

Strength of the Modular Approach

According to Tasbulatova (2001), modular design is significant in several ways:

I. It is for immediate goal attainment
II. It promotes the individualization of training.
III. It strengthens the ability of the learner to work independently
IV. It promotes active participation of teachers and learners within the training processes.

Limitation of Modular Approach

Sullivan (1995) enumerated the limitations of modular approach as follows:

i. Subject Limitations.

Modular that are absolutely independent or self-contained cannot be achieved over the entire spectrum of subjects. Some subjects have a very strong internal sequence that cannot be violated.

ii. Instructional Limitation

In order to obtain the necessary flexibility in the implementation of the modular approach the following will be required:

I. A minimum size of the teaching instruction, so that equipments and facilities are not left idle and parallel or groups can be executed.

II. Corresponding continuous demand for the range of the modules offered, which requires a careful analysis of ht demand for skills in the labour market as well as continuous co-ordination with employers as to the specific range of modules to be offered.

III. The administrative capacity to manage formal plus informal participants.

IV. A full range of equipments, for each occupation offered.

Work-Skill required in Planning in Yam for Production

The success of any enterprise depends on proper planning. Evans (1999) asserted that at the foundation of any project either individual business social or environmental, it involves those processes or steps in data collection, analysis,

projections of supply, demand, estimates of equipment, manpower and training need. He remarked further, that it introduces order in any development to avoid haphazard and ill-conceived projects. In the view of Ezeocha (1990) planning is the business of identifying ways and means and objective and working out ways and means of achieving them. He also pointed out that it is a process of setting out in advance a process of action. According to Jhingan (1997) planning is viewed as the making of major economic decision, what and how much is to be produced, to whom it is t be allocated by the conscious decisions of a determinate authority on the basis of comprehensive survey of the economic system as a whole. Planning in any yam production and processing enterprise would entail a careful study and decision on what, how, when and where these processed products will be allocated, so as to meet the economic need of the people of Anambra State.

Olaitan and Mama (2001) stated that planning is a deliberate attempt by an individual to arrange and document farm activities in order before implementing them. This implies that for any achievement to be recorded in yam production and processing enterprise, activities must be arranged and followed in order to achieve in meaningful result sequentially in order to advice a meaningful result. They stated the two types of planning to include: long and short range planning. They said that long range planning may take place annually focusing on farming or business activities while short range planning may cover weekly or monthly

activities in the farm or business. They further highlighted the objectives of planning to include formulation of specific objectives of the enterprise, revising he objectives periodically, drawing up programme plan for the business, deciding on the type of duration to adopt, budgeting for the enterprise, planning for procurement of processing inputs, selection of a business site, specifying the type of enterprise to embark on, selection of appropriate equipments for specific operations preparation of a calendar for the various events and assigning specific task to personnel available. In addition Upton (1973) summarized some general abilities for planning a firm as follows:

I. Plan a farm of sufficient size to support the objective of the farm.

II. Fit the capabilities, interest and knowledge of the farmer to the type of farm operations

III. Plan the farm for as long a period as possible.

IV. State the highest net income for the farm as the goal instead of the low cost of production per unit or high production per unit.

V. Locate the farm around the existing special markets and land productivity.

VI. Base the cropping system on the type of soil and the plan that will return the greatest net farm profit over a period of years.

VII. Raise sufficient number of livestock so that all grain and hay can be fed on them.

VIII. Use power machinery that are necessary to make the greatest not profit.

IX. Design farm buildings for present day needs organize farm production to make efficient use of labour free.

X. Plan all farm operation to make efficient use of the available money.

XI. Plan all farm operations to make the most efficient use of the available money.

XII. Storing schedule or timing for getting the farm produce to market during the highest price period

XIII. Keep a complete at of farm records necessary to make sound improvements and high profits from a farm.

XIV. Plan to study the farm.

XV. Leave plenty of space in the plan for changes.

Cooke (1993), affirmed that planning is thus a response to the firms perception of its control needs and the objective standards. It sets in order to achieve them. He stressed that for the firm to be successful, the following factors must be considered, the size and management structure of the business, the type, native and range of work to be undertaken, the planning policy for the technical and management expertise required for the business. Olaitan (2003) postulated some basic assumptions of instructional planning to include:

1. Instructional planning must be for every individual context should be taught to individual such that it will help him grow and develop a worthy adult in his community or society.

2. Instructional planning must proceed in a phase that is short and long term phases. He said that short term phases are the opportunity given to individuals in the plan t acquire or assemble materials and activities sequentially with good mastery in any field.
3. Instructional planning must be systematic and logically arranged from known to unknown, simple to difficult and broad to narrow knowledge or skill.
4. Instructional planning must be taken from the content of an entire programme and given its appropriate place in sequence.

Those to benefit from any enterprise, especially yam production and processing must be acquainted with some level of instruction to adopt in planning activity.

In the opinion of Ellah (2001), planning for any enterprise requires the under listed skills stating realizable objective in terms of internal environmental constraints and future trends revising the objective periodically, developing productivity objectives, developing budgetary objectives stating objective in measurable terms, employing management by objective, determining which resources are needed, providing inputs for scheduling starting and ending of activities, conducting periodic review of activities, establishing control system which monitor the activities being performed and appraising annual performance of the business. In the opinion of Mbeahuruike (2001) planning skills involving

stating the objective periodically, developing productivity objective developing budgetary objective, stating objective objectives determining resources needed for the progamme, providing inputs for scheduling, starting and ending dates or all activities, establishing control system and appraising annual performance of the farm. In the view of Dumbiri (2005) he out lined the planning steps to include the following establishing of polices, identification of alternative course of action, choosing coarse of action, creating procedures and rule for workers, establishing of budget for the farm, establishment of time table for the farm enterprise and establishment of standard products.

The views and submissions of the above authors will help the researcher to identify the skills required for planning in yam production and processing enterprise.

Work-Skill required for Planting of Yam

In the view of hornby (2001), planting means to put seed in the ground to grow. In the context, planting of yam is the act of putting yam miniset, yam seed, or the seed yam in the soil to grow. In the opinion of Akororda (1992), adequate yam planting materials can be raise through minisett propagation, Minature complete yam, yam seed and yam set. The author emphasized that three of the above listed planting materials are normally used in tropical regions for planting of yam. Uguru (1996), agreed with the authors stating that planting materials in yam

are about four in number and they include: the miniature complete yam, the cut-up ware yam, the minisett and yam seeds produced after flowering. The author stressed that yams are largely planted using either the seed yam or the minisett depending on the location and availability of the planting material. Iwena (2008) agreed with the above authors emphasizing that yam can be propagated in the tropical regions by using either of the planting materials and they include yam setts, yam seed, miniature complete yam and the minisett yam. He emphasized that usage of any of this planting materials depends on the location and the soil texture of that environment. According to IITA (2001), the best planting material in the cultivation of yam is the use of yam minsett and seed yam this is as a result of less prone to rotting after planting. They stressed that raising of minisett as a planting materials is normally done in the middle of the year in order to raise enough planting materials for subsequent farming years.

In the view of Onynweaku and Mbuba, (1991) yam minisett is a set of yam less than one quarter of minimum size of yam set usually grown or planted. Chikwendu, Chinaka and Amatayo (1995) stated that yam minisett is gotten through a process by which sets of 25g of yam sets are obtained from a mother tuber of 100g while as many as forty (40) sets could be cut from 1,000g of mother seed yam. Okoli, Igbokwe Ene and Nwokoye (1982) stated that yam minisett production was introduced in 1982 by the national Root Crop Research Institute

Umudike Umuaha in order to enhance raising yam production and seed yam multiplication in the country. Onyenwaku (1989) enumerated the importance of minisett in yam production to include

1. Over coming the shortage of planting materials.
2. Reduction in the cost of seed yam.
3. Provision of more food for human consumption.
4. Improving the propagation of breeders materials for replication test would be much faster.

Chikwendu, Chinaka Anatayo (1995), reported that obtaining minisett as a planting materials and planting it in the soil could be achieved through the following steps.

Cut out the head and the tail of the seed yam,

Cut out discs weighing about 100grms from the seed yam

Cut it into four such that each quarter weighs about 25grms.

Dry the cut surface in the air.

Treat with suitable fungicides or minisett dust

Use one sachet of 10grms to 150 to 200 sets

Put the 150 to 200 minisett in a container with cover

Set ready for planting in the soil.

The author stressed that on getting to plant the minisett the following procedures should be adopted.

Clear the land appropriately

Prepare the seed bed.

Insert the sets gently into the seed bed in a correct position with the side containing the back on the ground.

Plant the yam sets 5cm to 10cm deep and 25cm intra rows.

To obtain uniform sprouting, group minisett from head, middle and tail portion of the parent tubers and plant them in a separate plot.

The author emphasized that the established seed bed should be maintained for about 7 months prior to the anticipated time of planting in the field.

In the view of IITA (2001), adequate yam planting material can be raised through minisett propagation. The authors outlined the following skills to be used as follows.

Establish a seed bed for raising yam planting materials.

Plant tubers about three to five germination points.

Allow the planted tubers to produce shoots and roots

Carefully separate the small new plants from the mother by cutting off a portion of the tuber to which it is attached.

Treat the cut surface with wood ash to avoid damage by bacteria or fungi.

Set ready for planting in their permanent location.

In the view of Uguru (1996), seed yam is often used as a planting material in the tropical regions. IITA (1993) reported that seed yam refers to the planting materials derived from the tuber. The authors emphasized that it could be a small whole tuber weight ranging from 15-95g or 150-250g. Asani, Otoo, and Hahn (1985) saw seed yam as tuber of yam in seed sizes selected as planting materials in seasons of yam planting.

According to Onwueme and Shinna (1991), seed yam is less prone to rotten after planting and therefore used as best planting materials. They added that the head portion sprouts more readily than the middle and tail portion.

The land preparation in yam production of any kind of planting material in the field as submitted by Degras (1993), stated that yam should be grown on sites that receives substantial farm manure and that the soil should be a fertile and well drained soil. Erebor (2003) stressed that site clearing is usually done on the set of the early rain. He emphasized that the idea is for the yam that would be planted to make use of the residual moisture for sprouting and also take full advantage of the entire rainy season of the following year for growth and tuber production. According to Akinyosonye (1992), land preparation for yam cultivation is a more complicated operation that it is for most other food crops. He stressed that the ground must be thoroughly cleared and mounds or ridges are made at a distance of

1 meter apart. The author added that mounds may be either small or relatively high mounds of about 1.5 meters in height. Nerdc (1991), added that the land should be cleared appropriately and ridges or mounds prepared in order to produce a substantial yield. They emphasized that planting of yam can also be done on a flat surface.

Nerdc (1991) stressed that planting of yam is a skilled job which should be carried out systematically and the author contended that the under listed skill should be acquainted with, in planting of yam in the field.

Clear the field of vegetative growth.

Treat the soil and plating materials with fungicides to control leaf spot, diseases and other soil rodents when the yam is in the soil.

Fumigate the soil infested with root knot nematodes

fumigate pest with a nematicide such as nemagon.

Till the soil and apply organic manure.

Make mounds or ridge of about 1m apart and 2-3m in diameter.

Select the seed yams to be planted.

Cut large tubers into sets for planting

Leave the medium sized ones uncut in order to produce the required large sizes on harvesting.

Trim the small petiole and leave one through which the stem would shoot off.

Open up the top of the mounds either by hand or using a native hoe to a depth of about 12-18cm.

Place the seed inside the hole.

Spacing is about 90 cm x 100 cm.

Fill it with soil.

When plantings, the cut surface must be placed so that they face upwards, the buds will face down wards.

Cap the top of the mounds with a layer of dry grass

Carefully press in position with a hand full of soil.

In addition, Iwena (2008) submitted that the planting of yam involves the following abilities.

Treat the planting materials against yam beetle by rolling them in an insecticide such as aldrin dust.

Plant at the onset of the rainfall, so that they have would the entire rainy season to make their growth.

Till the soil into ridges or mounds.

Apply organic manure on the ridges or mounds.

Stand astride or beside the ridges or mounds.

Hold the hoe in one hand.

Make a hole on the ridges or mounds.

On holding the hoe in the soil,

Use the other hand to inset the yam set or seed yam into the hole.

Gradually withdraw the hoe.

Cover the hole with some soil

Put a mulch of dry grass on top of the planting hole.

Further more, Degras (1993), added that planting of yam involves the following.

Plant to specification especially with the eye of the vines facing up.

The back of the sliced ones will touch the soil before covering it with soil in order for it to shoot from the back and absorb immediate nutrients from the soil.

Insert the tuber into the center of the mound or ridges.

Space according to the sizes of the yam planted.

Deep the yam tubers inside to encourage the plant root deeper and to ensure that the new tubers produced are not partially exposed above the soil.

Plant with modified planter or tuber plating machines where available. To this IITA (2001), added that this mechanized yam planters operate essentially by opening up a ridge or mound having the planting pieces inserted and then close up the ridge or mound.

Check for sprouting through observation of the shoot above the ground within the period of 3 weeks to one month.

Replace the unsprouted or decayed ones on time.

The flooded cultivation of yam as also reported by Erebor (2003) required the following operations.

Make the mound or ridges high in flooded areas.

Carefully check the route through which the flood passé to avoid destruction of mounds or ridges.

Make the ridge destruction of mounds or ridges.

Make the ridges or mounds against the flood route to avoid erosion.

Create a channel through which the flood will be passing to avoid destruction of the ridges and mounds.

Insert by hand or hand fork the plating piece into the loose puddle soil.

Draw the top soil together with a hoe.

Spacing of ridges is about 120cm apart.

Plant the seed yam 15cm deep.

Place the cut surface upwards at an angle of 45^0 prevent water settling on top.

The views and submission of the above authors will help the researcher to identify the skills required for planting of yam.

Work-Skill required for Management of Yam Field

Field management according to Herren and Donahue (1991) is the organization and operation of farm so as to obtaining the maximum amount of continuous income. Onwueme and Shinna (1991) added that it involves effectiveness of different operations in the farm and the consideration of productive resources.

Uguru (1996) stated that effective field management practices in yam field include the following.

Mulching, staking, weeding, fertilizer application pests and diseases control harvesting and storage. Akinyosoye (1993) stated that for a good yield to be achieved, the following field management practice must be accomplished and they include mulching, staking weeding, fertilizer application pest and diseases control, harvesting and storage

According to Aiyegbay Joy, Adeyahju (1983), mulching is the covering of the soil surface with crop residues such as straw, maize stalk, palm frond. In the submission of Uguru (1996), mulching refers to the process of spreading leaves, saw dust and gasses or hay on the soil surface usually in the farm. He added that it can be any material placed over the surface of the soil grasses. to prevent loss of water by evaporation. Therefore mulching of yam field is the covering of the ridge and mounds with dry grass and leaves in order to reduce soil temperature conserve soil moisture and prevent rotting of yam sets.

Iwena (2008) outlined the following as mulch materials cut-grass, leaf litter, vegetables, trash of stables saw dust of various crop residue, crop and other organic materials. He added that mulch materials could be raised from either grasses or leaves that are about 3-5cm thick.

Akubuilo, Anochili, Offurum, Muoka (1989) emphasized that yam need to be mulched because of the following reasons

Mulch protects sprouting yams from the heat of the sun and dry weather.

Mulching reduces evaporation and ensures the retention of an adequate moisture level in the soil around the seeds.

Mulching helps to keep weeds and erosion on check and when the grasses decay, humus is added to the soil.

Olaitan, (2008), stressed that mulching prevents a great variation of soil temperature during the day.

Mulching of the yam mounds and ridges reduces the rate of leaching by reducing the speed of percolation of rain water into the soil.

The decomposed much material, which becomes organic matter improves the structure of the soil and at the same time release its nutrients to the soil.

In the opinion of Ojomo (1979), mulching is done to reduce soil temperature within the mounds and so reduce detoration of the tubers during the period of dormancy.

In the submission of IITA (2001), mulch should be spread on the yam field through the following procedure.

Select a mulch material, which is 3.5cm thick.

Leave a small gap between the mulch and the base of the plant.

Place a cap of selected much material on the top of the mound or ridges.

Weight the mounds or ridges with stones or ball of earth to prevent the mulch materials from being blown by wind or storms. Sanche and Salinas (1981) emphasized that mulching should be a continuous practices and that mulch materials should not be placed directly on the crop because the decomposition of the mulch may have deleterious effects on the plants.

In yam production, staking is a necessary practice that should be carried out for efficient yield. Coursey (1989), defined staking of yam as the provision of support to yam plant to which the terms can cling naturally or trained to cling.

IITA (2001), saw staking of yam as the provision of support on which the vine of yam twine. This is to ensure that sufficient sunlight reaches the leaves of yam of which absence may drop yield by40 percent.

According to Okwor and Asadu (1998), the following benefit are derived form staking yam

Mulching the plant removes vine off the ground.

Helps the roots of yam to develop rapidly after the plant has been staked with an increasing rainfall. Staking reduces the risk of diseases infestation, where the leaves are not resting on the ground. Uguru (1996) out lined that following as staking materials Cassi, Assia, leucena and Bamboo stakes

He added that areas where trees are scarce, maize stalks can be used to serve as stakes for yam vines.

Akinsami (1999) enumerated the following as staking materials and they include stems of maize guinea corn stem, raffia palm, cut shrubs, rope or any strong material.

IITA (2001) outlined the following procedures to be adopted in staking yam.

Fix two stakes at the end of he furrows.

Use trellis to join it at the two ends with the help of the strings, connects many yam stands within the two ridges. The authors added that the vines should be trained to twine round the stakes either in clockwise or anti-clock wise direction and this should be done regularly.

According to Akonyoonye (1993), the following steps are to be adopted in order to stake yam.

Select tall stakes of 3 or more meters in length in order to give a good support to the vine .

Insert stakes of hard wood trees near the base of shoots.

Each shoot should have an individual stakes.

Train the vines to cling on the trees.

The author added that in some areas where yam are planted after crop like Guinea corn or maize have been harvested, the stems of these crops can be used to stake yam.

Coursey (1989) emphasized that strings or ropes could be attached to the trees spared when bushes are cleared example oil palm tress.

The ends of the trees should be pegged into the ground near the yam mound. This will lead the vines to ascend to a considerable height. He stated that in using stakes, thin stakes should be selected.

Select branched stakes in order to provide possibilities for extension of growth.

Selected stakes should be 2-5cm in thickness.

Insert the stakes near the base of the shoots.

Stakes should be at least 6 feet in height

Train the vines to cling on the stakes.

In the management of the yam field, weeding is an important task which must be carried out in order to achieve a good yield.

In the opinion of Akinsami (1999), weeding is the removal of groups of plants and grasses which grow where it is not wanted thereby interrupting the growth of crops in the field. Erebor (2003) saw weeding of yam field as the removal of unwanted

grasses and plants from the yam field He added that weeding the yam field could be achieved through traditional hand pulling, hoeing or use of herbicides. Uguru (1996) emphasized that weeding of yam field is necessary with the following reasons.

Weed harbors insects and other organisms which are harmful to yam plants. These insects latter feed of yam roots and stems and finally kill them.

Yams do not stand competition with weeds because yam does not absorb nutrients very readily from the soil especially in the early stage of the growth.

The author finally added that weeds compete for light and valuable soil minerals with yam in the field and with these efforts should be made to eliminate weeds from the yam field.

Orkwor and Asadu (1998), stressed that weeds could be suppressed from the yam field by adopting the following procedures.

Weed the yam field 2-3 months using short handled hoes.

Remold the mounds or ridges so as not to expose the yam tubers to sunlight Remolding should follow each round of weeding.

He added that weeding should be carried out from 3-16 weeks after planting.

Saidu (1998), reported that contact herbicides such as parquet, at 0.5 kg/ha should be applied at 3 weeks after planting.

TCA (5kg/ha) of pre-emergence herbicides should be used with diuron (3kg/ha) or altrazine (3kg/ha) for effective weed control.

In the submission of Nerdc (1993), for yam to attain optimal yield, they require nutrients which can be supplied through the application of inorganic manure and organic manure. King and Wilson (1991), defined inorganic manure (chemical fertilizer) as chemical substances generally inform of powder granules, pellets or crystals which can be added to the soil in order to improve the fertility of the soil.

The authors stressed that inorganic fertilizers are added to the soil so that the important minerals lacking in the soil would be replenished back. According to Uguru (1996) yam respond well to nitrogen and potassium fertilizers with following recommendation fertilizer formation.

NPK 20 ï 0- 20

NPK 12 ï 12 ï 18

NPK 10 ï 10 ï 20.

The author stated that ammonium sulphate can be applied at 25kg per hectare in areas of land located in Northern Nigeria.

Akinsami (1991) under listed the following procedure application of inorganic fertilizer to yam field.

Make a shallow hole of 8-10cm in radius around base of the plant.

Scatter evenly some quantity of fertilizer of about a box of matches full in the hole. Cover the hole with some quantity of soil.

The author stressed that inorganic fertilizer are applied when sprouting has started and the vine has begin to produce leaves.

Oko. (1993) Defined organic manure as decayed plants residues and animal waste products, which have been carefully selected to supply the needed nutrient to plants.

According to Uguru (1996), organic manure could be added to the soil before and after planting. The author noted that applying organic manure in the soil before planting of crops is normally done after tilling the soil and that about 20-25 metric tones of organic manure can be applied in a hectare of land. Moreover, Iwena (2008) added that applying organic manure after planting is normally done immediately after planting of the crops or when the vines are sprouting this is to ensure good and rapid growth

Oko (1993) reported that where yam are planted in a high moisture regime. Fertilizers applied there are subjected to leaching and therefore should be applied in split doses 6 and 12 weeks after planting. The author added that earthening of the yam mound during fertilizer application should be carried out in order to cover the tuber that may shoot out.

Hahn (1994) noted that protection of yam from diseases and pest is necessary in order to produce a high and good yields. Erebor (2003) saw diseases as a departure from normal state of health presenting marked symptoms or outward visible signs.

According to Olaitan and Omonia (2006) plant disease is a condition in the plant when its physiological processes are functioning abnormally. Therefore yam diseases are abnormalities in growth, development and production of yam, which occurs as a result of fungi, virus and bacteria diseases that exists with in and outside the yam field.

Uguru (1996), noted that the following operations are required for prevention of diseases in yam.

Plant disease free materials.

Practice crop rotation,

Cut and burn the affected vines.

Use resistant varieties.

Dust the yam sets with Aldrin dust and Gammalin before plating.

Apply 5% chlordane dust on the yam before planting

practice farm sanitation where the disease is uncontrolled.

Hahn, (1994) outlined the following procedures for the prevention of diseases in the yam field.

Apply fungicides such as copper ox chloride or alkaline material such as wood ash.

Treat the soil with captain fungicide for effective controlling of leaf spot caused by several species of penicillum.

Sanitary disposal of crop residue will provide a cheap method of control.

Fumigate the soil infested with a nematode, with a nematicide such as nemagon, furadan and oxamil. They cause gall formation to cracks and root proliferation on the tuber.

Sterilize the soil by heat.

Cut and burn the affected vines so as to prevent the fungus from producing spores on the field.

Apply Thiodan 5% to the field to avoid crickets from cutting the vines off from the planted materials.

Nwauzor (1990) added that yam rot which is a nematode disease caused by Anguillduna brody should be controlled by Destroying of destroy all the affected yams. Application of 2.5% Aldrin dust or 5% chlordane dust is also required. He added that planting yam after yam in crop rotation should be avoided.

The author stressed that viral disease should be controlled by plating resistant varieties and spreading of insecticides.

Witch Broom which is a fungal disease caused by phyllecutypa dioscorea should be controlled by farm sanitation, Growing of resistant varieties, practicing of crop rotation and spraying of insecticides on the field.

The views and submission of the above authors will help the researcher to identify the skills required for management of yam field.

Work-Skill required for Harvesting and Storage of Yam.

Harvesting is necessary in any yam enterprise. hornby (2001), define harvesting as the process of cutting and gathering grain, tuber crops and other food crops planted in the field. Therefore harvesting of yam tubers involves the cutting, digging, gathering and handling of mature yam tubers up to their final removal from the field. Eze (1979) affirmed that yam matures as from 7-9 months after planting. This is indicated on the leaves as they turn yellow and followed by the drying and death of the vines. Uguru (1996) maintained that yam harvesting is better when the soil is most so as to minimize damage to tubers. With most farmers in Anambra state, the yam tubers, are harvested in piece meal with machetes, diggers, or hoes as required by the house hold. Anthony(1992) emphasized that there are two types of harvesting in yam and they include Double harvest and single harvest. The authors stated that in double harvesting each yam planted is harvested twice, which involves early harvesting of the tubers 5 months after emergence between July and September. The crown is then rebuilt in the soil to

produce another crop while in single harvest; the crop is harvested once between October and January as soon as the leaves of the entire plant dry up.

Matured yams are harvested as commented by Nerdc (1991) with the following skills.

Check for maturity through the withering of leaves and vines turning yellow.

Loose the soil around the mounds and ridges with a digging instrument.

Dig the mounds or ridges deeply.

Dig to see the yam tubers inside the mounds or ridges.

Avoid bruising on body of the tubers.

Pull the plant gently to avoid the tuber damaging inside the mound or ridges.

Pick manually the tubers.

Pack in heaps.

Sometime multiple harvesting is practiced on yam such harvest required the following abilities as contented in Purseglove (2002).

Dig around the mound or ridges of the plant.

Remove tuber carefully to avoid bruising.

Leave the head to produce new generations of tubers which will be harvested latter.

Replace the soil around the mound of the plant.

More so, Coursey (1989) reported that mechanical harvesting of yam is a difficult because of non-uniform geometry of the tubers in the ground.

He emphasized that yam can be lifted with potable spinner machine and that it is mostly used in large scales farm. He added that the cost of mechanical harvesting is too high for resources-per farmer.

In the view of Opara (2001) storage of yam is necessary in order to preserve it for future use. According to Anthony (1992) storage is the keeping of agricultural produce safe for future use. The author noted that yam cannot be stored indefinitely like grains because of the water content.

The author recommended the following methods for storage of yam.

1. Grade the yam according to sizes.
2. Erect a bamboo stick or palm fronds in which the yam will be tied.

Tie the yam on the bamboo stick or palm frond known as barn and lay it uprightly. Pile up the remaining ones that were not tied in the barn in a well-ventilated room.

NERDC(1991) added that for proper storage of yam, the tubers should be tied IN a shaded well ventilated barn, in such a way that they do not touch one another. The author reported that plants which sprout easily are used as the upright of the barn. When the yam sprouts, their leaves sprout the desired shade for the tubers and reduce the need to replace the upright every year.

In the submission of Uguru (1996) the following procedures are needed in storage of yam.

Construct barns that have racks.

Select the yams to be tied according to sizes.

Tie the yams vertically.

Arrange them in rows.

Tie the seed yams separately in order to provide a uniform shape..

Onwueme and Shina (1991) noted that yams are stored or raised on plat forms, they are also buried in dry well drained soils or high grounds.

The views and submission of the above authors will help the researcher to identify the skills required by Secondary School graduates in harvesting and storage of yam.

Work-Skill required for Processing of Yam into various forms.

The production of yam is seasonal, thereby making it available only during short period of the year. During the season, they are plenty and relatively cheap. The farmers do not like to sale these crops at cheap price to avoid loss. Therefore, there is need to store and process them So that the farmer can make a higher profit.

To achieve this, there are various skill required for processing of yam to prolong their storage life.

In the view of Nweke (1992) yam flour is one of the processed forms of yam which require the following processing skills.

Wash the tubers thoroughly in water.

Peel the washed tuber

Cut into slices about 2 inches.

Cook for 20 to 25 minutes

Blend into pulp

Spread out the blended yam about 75 Inches.

Dry for 6 to 8 hours at a temperature of 122-158^{0}F or 50 ï 70^{0}c until the pulp is dry.

Mill the dried product finely.

Sieve in order to remove particles.

Package in a polyethylene sacks.

Store in a cool dry place.

Siki (1999) remarked that yam flour is yam product, which is highly recognized by every yam producing area. he highlighted the following skills to be adopted.

Peel the selected yam tubers.

Slice the peeled tubers.

Dry under a high temperature.

Mill the dried yam into flour.

Sieve in order to get a good result.

Also IITA (2001), emphasized that yam flour can also be prepared on a commercial scale by the following procedure.

Clean yam tubers by soaking in water.

Scrub using scrubber to remove surface dirt.

Rinse thoroughly

Boil for 30 minutes to 1 hour until soft

Drain thoroughly.

Peel, cut and slice yam about 2 to 3mm in thicken

Dry in dryer at 60^0c until yam becomes brittle.

Remove from dryer.

Mill using harmer mill/pulverize.

Sieve the pulverized yam.

Package in a polythene bag.

Store in a cool dry place.

According to Ephraim (2008), yam flakes is one of the products of yam which is normally consumed by majority of household that eats yam. The authors highlighted on the procedures for producing yam flakes and they include as follows.

Peel the yam tubers.

Wash the tubers to remove dirt.

Cut/slice into small shape.

Blanch in 0.1% of sodium metabisulphide.

Drain thoroughly

Boil for 30 minutes.

Grind and mash the yam.

Weigh the mashed yam.

Knead on a flat surfaces.

Roll and cut into 1mm shape thickness.

Dry under the sun or oven dryer at 90^0C.

Allow to cool at room temperature .

Pack in polythene bags.

Seal the packs in carbon boxes.

Label. Appropriately.

Store in a cool dry place.

In the submission of NERDC (2001) processing of yam into chips is a relatively new way of processing yam similar to banana chips. He stressed that the yam are sliced thinly, deep dried in hot oil for about 5 minutes.

Then allow cooling at room temperature and it is finally packaged in polythene bags.

Similarly processing of yam into chip can be done on commercial scales according to Opara (2001) by the following methods.

Peel the yam.

Wash the peeled yam

Soak the washed yam in water for one hour.

Slice the soaked yam is 1mm thick.

Separate the individual slices.

Add some quantity of salt.

Deep dry the separated individual slices.

In the opinion of Uguru (1996), roasted yam is a product of yam, which is being consumed on daily bases. The author outlined the following methods for roasting yam.

Select the desired tubers of yam.

Set up fire with wood.

Scrap the back of the of the yam to be roasted

Put on the fire. For 45 minutes.

Turn always to avoid burning.

Allow to stay in fire for about 45 minutes

Scale out the body of black pigments.

Slice to desired shapes.

The author emphasized that yam can also be processed into pounded yam by the following activities.

Peel the selected yam tubers.

Wash the yam thoroughly

Boil the yam for about 30 minutes or until it become soft.

Drain the water from the yam.

Put the yam inside the motter.

Pound with mother and piston until it becomes brittle and sticks together.

Another forms of yam called Halaya and Pastilles a processed form of white yam, which is popular in Ghana, was introduced by NRCRI (2004). They submitted that yam is processed into pastilles by adopting the following procedures.

Clean yam tubers by soaking in tap water.

Scrub to remove surface dirt.

Rinse thoroughly.

Boil for 30 minutes to 1 hour.

Drain thoroughly.

Peel, cut, slice and mash the yam.

Add salt and evaporated milk

Mix appropriately.

Put the mixture on the fire

Stir while cooking.

Avoid sticking to sides of the frying pan.

Cool to room temperature.

Transfer the mixture over a kneading board

cover with wax paper

Sprinkle small amounts of sugar over the wax paper.

Spread the mashed yam mixture using a rolling pin or bottle until it is 1 mm thick.

Spread butter and small amount of sugar over the mixture.

Cut into slices of 1mm thick.

Wrap individually.

Also they outlined the following activities to be involved in the processing of Halaya and they include:

Mix yam flour with water

Blend together with one tin of evaporated milk, I table spoon of margarine ½ cup of wheat flour and 2 cups of sugar.

Cook over low heat,

Stir constantly for 25 minutes

Add ½ cup of lemon juice before removing from fire.

Put in small bottles and seal tightly.

Sore in a cool dry place.

The views and submission of the above authors will help the research to identify the skills required by secondary school graduate in processing of yam.

Work-skill required for marketing of Yam tubers and Yam Products

The final phase of yam production and processing is the marketing of the end product, the harvested yam tubers, products of yam such as flour, chips, flake, and pounded yam roasted yam. In order to reach the final consumer, it would pass through the process of marketing.

According to Norton (1995), a market is viewed as a place by which exchange of goods and services take place as a result of buyers and sellers being in contact with each other, either directly or through a medicating agents or institutions.

Miller and Stafford (1997) defined market as the sum of all transaction that takes place between buyers and sellers of a particular type of product.

They stressed that it exists between and among people, business, governments and other nations of the world.

In producing and processing of yam into various products, a marketing medium will have to be created where buyers and sellers can come in contact with one another for their own benefits. Agricultural marketing as stated by Arene (1998) involves all those legal, physical and economic services that make it

possible for products from producers to get to consumers in the form desired by consumers, and at the price agreeable to producers and consumers for effecting a change of ownership/possession. He explained that agricultural marketing involves the creation of utilities of form place, time and possession. He explained that agricultural marketing creates utility of form by processing eg the processing of yam tubers to yam flour or chips and pounded yam. Agricultural marketing create utility of place by transportation of yam products from the farms to the market places. It creates utility of time by storage eg the storage of yam tubers and products until the time of need.

It also creates utility of possession by the exchange of ownership of the product.

The American marketing Association in scheme and Smith (1980) defined marketing as the performance of business activities that direct the flow of goods and services from producers to consumers. They remarked that it is a set of activities which business performs to promote the flow of products and services between companies and people.

Marketing according to MC Carthy and Perreanlt (1984) is the creation and delivery of a standard of living.

They argued that it requires that certain marketing functions or activities be performed by various marketing institutions they include buying, selling transportation storing, grading, finance, risk taking and market information. In

marketing yam tubers and yam product certain market functions such as sorting, grading, storing, transporting, financing risk-taking market information, buying and selling would be observed in order to achieve profit maximization.

Werber and Associated (1980), puts forward that marketing is the exchange of activities conducted by individuals and organization for the purpose of satisfying human wants. They stressed further that marketing required management of seven functions they include market delineation, which described the characteristics of potential customer. Purchasing motivation reveals why they buy. Product adjustment matches the design of product with buyers needs and want. Physical distribution determines the most effective means of moving the products to consumers communication involves making consumers aware of the products and persuading them to buy it.

Transaction function included activities at the point of purchase. Post transaction refers to activities refer the purchase that ensures satisfaction in the product.

Legge (1992) maintained that marketing is the science or act of offering products to purchasers in a market in such a way as to maximize the revenue received. He further said that marketing provides the language in which people can talk about how purchasers react to products, why they buy them, when they need them and what they will pay for them.

Olayide and Heady (1982) emphasized that marketing deals with sum total of all business activities that direct the flow of sales of products and service form the producer (farmer) to the consumer or end users.

They stressed that such activities includes sorting grading, storing, processing, assembling of products transportation and financing of the activities.

Stunock (1982) further noted that there are many service performed as the farmers produce move along marketing channel among which are:

1. Assemble enough product together for shipment
2. Grade or sort into groups of uniform quality
3. Process the farm products into a suitable form.
4. Transport products by truck, boat, vehicle, rail and air first to processing centers and them to consumers.
5. Store products for future use.

Finance products until it is sold.

Assume that risks are likely to occur, due to spoilage poor packaging or improper handling and transportation.

Similarly Eleagu (1996), stated that there are several basic skills necessary from individual to succeed in the marketing of agricultural pr

There basic skills according to him include:

1. Find buyers or search for market.

2. Grade and standardize products.

3. Store the products.

4. Distribute and transport the products.

Process the products.

More so, Adiene (1998) latter under listed the following management skills.

I. Apply the marketing mix concept in marketing operations, which are the PS namely:

a. Product -Kind of product to produce.

b. Price - Price to charge

c. Place - Sale out lets for the products

d. Promotional activities - Resources to embark on what marketing action eg. Advertising and sales promotion.

II. Sales product policy

III. Carry-out new Product development

IV. Power to price.

V. carry out market research.

Vi. Expand market through advertisement and sales promotion

VII Monitor and control marketing and distribution activities

The views and submission of the above authors will help the researcher to identify the skills required by Secondary School graduates in marketing of yam and yam products.

Related Empirical Studies

In a study conducted by Egbo (2006), on work-skill required by secondary school graduates for entry into pig production enterprise in Enugu state he made use of the questionnaires to obtain information form 140 respondents. He found out that 54 work skills were required in pig breeding management, 42 work-skills in pig rearing to market weight and 29 work ï skill in pig processing and marketing. It was recommended that the work skill modules with their corresponding skills identified by the study could be packaged into training porgrmmes and integrate into states skill acquisition centers by Enugu state government for training unemployed secondary school graduates and other interested youth in pig production enterprise.

In a study conducted by on Onwuka (2003) on work-skill module for improving the employment opportunities of secondary school graduates in poultry occupations in Abia state, he made use of the questionnaires to obtain information from 67 respondents. He found out that in marketing any product, the respondents agreed that the following skills were required in the study and they include; record the number of produce, keep produce secured and ventilated in containers for market, for prices for produces. Identify suitable wholesalers and retail agents and four others.

In a study carried out by Dumbiri (2005) on work-skill required by graduates of secondary school for employment in fish enterprises in Delta state, he made use of questionnaire to elicit information from 105 respondents they agreed that the following under listed skills were required for the study, establishing of policies identification of alternative course of action, choosing course of action, creating procedure or rules for workers and three others.

SUMMARY OF LITERATURE REVIEW.

The Review of literature on work-skill required by secondary school graduates for success in yam production and processing enterprise was carried out in this chapter. The reviewer made use of occupational theory of value and production theory which includes management factors of production. These theories would stand as foundation for the identification of skills in which individuals would be trained. These are the fundamental theories that guided the research work. The review on the approach to skill identification in crop production showed that four approaches were suitable for identifying skills in yam production and processing these includes competency based approach, job analysis approach, task analysis, professional skill for success in yam production and processing enterprise. The task analysis approach was applied in the study.

The reviewer also assumed that secondary school graduates have some rudimentary knowledge in tuber crop production from secondary school but lack

profession skills for success in yam production and processing enterprise for making a living .

Therefore, the review of literature was based on the identification of those skills in the areas of planning of yam field, planting of yam in the field, harvesting and storage of yam, processing of yam into various forms and marketing of yam and yam products.

CHAPTER THREE

METHODOLOGY

This chapter discussed the procedure adopted in this study under the following subheadings. Design of the study, sample of the study,

Instrument for data collection, validation of the Instrument, Reliability, method of data analysis.

Design of the Study

The study adopted descriptive survey research design. Survey research design is the one in which large or small population is studied by collecting and analyzing data from the group through the use of data from the group and through the use of questionnaire or interview. The design was therefore appropriate for the study since it tends to obtain data from teachers of agricultural science and extension agents through the use of the questionnaire on work skills required by Secondary School graduates for success in yam production and processing in Anambra State.

Area of the Study.

The study was carried out in Anambra state which is made up of Six Educational zones namely Aguata Nnewi, Onitsha, Awka, Otuocha and Ogidi. These zones are in regions of yam growing. The regions favors the growth of yam and other tuber crops such as cassava, cocoyam and sweet potatoes. The people in these zones are

therefore interested in the production and processing of yam as a means of generating income for themselves and the people of the state.

Population for the Study

The population for the study was made up of 526 teachers of Agricultural science in the secondary Schools in the six Educational zones in the state. (Anambra State post primary School service commission 2008). And all the 110 extension agents in the ministry of Agriculture. (Anambra State ministry of Agricuture.2008.) Therefore the population of the study was 636.

Sample of the Study.

Due to large number of teachers and unequal proportion of teachers in the six educational zones proportionate random sampling technique was used to select 262 teachers representing 50% of the total teachers of agricultural science in the six-education zone. The entire population of extension agents, which is 110 was be used because, the population size is small.

Table 1 below showed the distribution of teacher of agricultural science in the six Education zones of Anambra state

S/N	Education zones	No of teachers of Agric science	No of teachers of Agric science selected
1	Aguata zone	70	35
2	Nnewi zone	88	44
3	Ogidi zone	84	42
4	Onitsha zone	98	49
5	Awka zone	105	52
6	Otuocha zone	81	40

Source: PPSSC Anambra State

Post Primary School service Commission, Research and statistics division The total sample of the study therefore was 373 made up 262 teachers of agricultural science and 110 extension agents.

Instrument for Data Collection.

The Instrument used for data collection was structured questionnaire The questionnaire items were generated based on the information gathered from the review of related literature

The questionnaire was made up of two sections namely section one and section two Section one solicited information on personal data of the respondents while section was structured into six areas of skills in yam production, required by secondary school school graduates for success in yam production enterprise. The

areas were planning for yam production ,planting, management of yam field, harvesting and storage of yam, processing of yam into various forms and marketing of yam and yam products.

Validation of the Instrument

The questionnaire for data collection was subjected to face validation by three experts, one from the Department of Crop Science University of Nigeria Nsukka. And two from the Department of Vocational Teacher Education. University of Nigeria nsukka.

They were requested to indicate written skills items and add the relevant ones that might have been omitted by researcher. Their suggestions were used to improve the final questionnaire.

Reliability of the Instrument

Reliability helps to ascertain the consistency of the respondents in their various opinions on the items in as instrument on different administration. Uzoagulu (1998) described reliability of a test as the consistency of the test in measuring whatever it purports to measure. The reliability of the instrument was established by administering a questionnaire to a sample of 40 respondents made up of 10 extension agents and 30 teachers of agricultural science in Nsukka zone. After two weeks, the questionnaire was collected back. The data collected was

analyzed using Pearson product moment correlation coefficient to determine the reliability coefficient of the instrument. The result obtained is 0.81

Method of Data Collection

The researcher and three assistant will administer 373 copies of the questionnaire on the respondents, which is made up of 110 extension agents and 262 teacher of agricultural science. The questionnaire was retrieved from the respondents by the researcher or the assistants

Method of Data Analysis

The data collected from the respondents was analyzed using the mean and standard deviation in answering the research questions and t ï test statistic for testing the hypotheses at the probability of 0.05 level of significance and relevant degree of freedom. The value that was attached to the response options of the questionnaire are:

Highly Required 4

Required 3

Slightly Required 2

Not Required 1

The mean of the values = $\frac{4+3+2+1}{4}$ = 2.50 + 0.5 (interval scale) = 2.55

Using 0.05 as interval scale the upper limit of the mean was 2.50+0.5=2.55 Any item with a mean of 2.55 and above was regarded as required., while any item with a mean score below 2.55 was regarded as not required . The upper limit of 2.55 was chosen because it discriminated better. The hypothesis were tested using t-test statistics at $p>0.05$ level of significance and 280 degree of freedom. Where the t-calculated value of any item exceeded the value of t-table at appropriate degree of freedom, the null hypothesis was rejected. Where the calculated t value of any item was lower than the t-table, the value the hypothesis of no significance difference was upheld. .

CHAPTER FOUR

PRESENTATION AND INTERPRETATION OF DATA

This chapter presented and interpreted the data collected for the study. The analyzed data were organized based on the research question to be answered and the null hypothesis formulated for the study.

Research Question 1

What are the skills Required by Secondary School graduates in Planning for yam product?

The data for answering this research questions were obtained from the respondents and presented in table 1**.**

Table 1 Mean Ratings of Responses of Agricultural Science Teachers and Extension Agents on the Skills Required by Secondary School Graduates in Planning for yam production enterprise in Anambra State.

Table 1

S/N	ITEM STATEMENT	$\bar{X}$	SD	Remark
1	Formulate specific objectives for the farm	3.61	0.58	Required
2	Revise the objective periodically	3.33	0.83	Required
3	Decide on farming and cropping system to adopt on the farm	3.61	0.63	Required
4	Budget for the farm	3.60	0.64	Required
5	Clear the farm around the existing special market and land productivity.	3.42	0.78	Required
6	Plans for the procurement of farm input	3.63	0.51	Required
7	Specify the species of yam to be produced	3.78	0.63	Required
8	Select appropriate equipment for specific yam operation	3.54	0.70	Required
9	Storage schedule or timing for getting the farm produce to market during the highest price period	3.38	0.83	Required

Table 1 showed that 9 skill items has their means ranging from 3.33 to 3.78. This indicated that their means were above cutoff point of 2.55. This observation implied that all the skills are Required in the planning for yam production enterprise in Anambra State.

The standard deviation of the skill item ranged from 0.51 to 0.83. This shows that the respondents were almost unanimous in the responses to the items.

Research Question 2

What are the skills required by secondary school graduate in planting of yam?

The data for answering this research questions where obtained form the respondents and presented in Table 2.

Table 2: Mean Ratings of Responses of Agricultural Science Teachers and Extension Agents on the skills Required by Secondary School Graduates in Planting of yam in Anambra State.

Table **N 282**

S/N	ITEM STATEMENT	X	SD	Remark
	Planting of seed yam in the nursery			
10	Prepare the seed bed	3.49	0.69	Required
11	Cut the disc weighing about 25g each from the seed yam	3.09	1.09	Required
12	Treat with a suitable fungicide or minsett dust.	3.77	0.65	Required
13	Insert the yam set gently into the seed bed	3.39	0.70	Required
14	Plant the yam set 5cm to 10cm deep and 25cm intra-rows.	3.59	0.65	Required
15	Maintain the seed bed for about seven months prior to the anticipated time of planting in the field.	2.59	0.97	Required
	PLANTING SEED YAM DIRECT IN THE FIELD			
16	Clear the field of negotiation	3.73	0.69	Required
17	Treat the soil and planting materials with fungicides to control leaf spot diseases	3.60	0.65	Required
18	Till the soil and apply organic manure	3.52	0.52	Required
19	Make mounds or ridges of about 1m apart and 2.3 cm in diameter	3.50	0.54	Required
20	Remove decayed tubers	3.32	0.84	Required
21	Select yam species to be planted	3.62	0.51	Required
22	Cut large tubers into setts for planting and leave medium sized ones uncut	2,69	0.82	Required
23	Plant on set of rain	2.57	0.97	Required
24	Trim the small petiole and leave through which the stem would shoot off			
25	Cover the hole with some ball of sand.			
26	Place the planting materials in slanting form at an angle of 45 degree	3.65	0.81	Required
27	Cover the hole with some ball of sand.	3.85	0.40	Required

Table 2 shows that the 18 skill item had their means ranging from 2.59 to 3.85. This indicates that their means are above the cot-off point of 2.55. This observation implies that all the skills are required for planting of yam in Anambra State. The

standard deviation of the skill items ranged from 0.40 to 1.09. This showed that the respondents were almost unanimous in the responses to the items.

Research Question 3.

What are the skills Required by secondary school graduates in management of yam field?.

The data for answering this research question were obtained from the respondents and presented in table 3.

Table 3: Mean Ratings of Responses of Agricultural Sciences Teachers and Extension Agents on the Skills Required by Secondary school Graduates in Management of Yam field in Anambra State.

Table 3 **N 282**

Table 1

S/N	ITEM STATEMENT	X	SD	Remark
28	Select mulch material which is 3.5 cm thick	3.32	0.84	Required
29	Place a cap of selected mulch materials on the top of the mound or ridges.	3.44	0.77	Required
30	Avoid placing much materials directly on the crop.	2.71	0.79	Required
31	Select tall hand wood of 3 or more metersin length in order to give a good support to the growing shoot.	2.57	0.97	Required
32	Each shoot should have an individual stake.	2.64	1.00	Required
33	Insert the stake near the base of the shoot	2.63	0.98	Required
34	Weed the yam 2.3 months after planting with short handled hoe.	3.69	0.49	Required
35	Repeat weeding at intervals	2.69	0.5	Required
36	Apply contact herbicides such as paraquate at 0.5 kg/ha to weed.	3.58	0.66	Required
37	Make a hole of about 8-10cm in radius around the base of the plant and apply evenly. Some quantity of fertilizer.	3.70	0.47	Required
38	Repeat organic manure application when the vines are sprouting to ensure good rapid growth.	3.09	1.10	Required
39	Apply fertilizer in split doses at and 12 weeks in areas form to leaching.	3.81	0.52	Required
40	Practice crop rotation	2.87	0.83	Required
41	Practice farm sanitation where the diseases is controllable	3.08	1.11	Required

Table 3 shows that 14 skill item had their means ranging from 2.57 to 3.70. This indicates that their means are above the cut-off point of 2.55. This observation implies that all the skills are required for management of yam field in Anambra State.

The standard deviation of the skill items ranged from 0.47 to 1.11 This showed that the respondents were almost unanimous in the response to the items.

Research Question 4.

What are the skills Required by secondary school graduates in harvesting of yam?

The date for answering this research question were obtained from the respondents and presented in table 4.

Table 4: Mean Ratings of Responses of Agricultural Science Teachers and Extension Agents on the Skills Required by Secondary School Graduates in Harvesting and Storage of yam.

Table 4: **N282**

S/N	ITEM STATEMENT	X	SD	Remark
42	Check maturity through leaves and vines	3.09	1.00	Required
43	Loose the soil around mounds and ridges with a digging instrument	3.53	0.73	Required
44	Avoid bruising on the body of tubers.	3.79	0.57	Required
45	Pull the crop gently to avoid damage inside the mounds or ridges.	3.86	0.41	Required
46	Pick manually	3.89	0.32	Required
47	Leave the hand to produce a second tuber that will be harvested latter.	2.59	0.98	Required
48	Replace the soil around the hand of the plant.	2.58	0.97	Required
49	Erect a barn made of palm fronds in which the yam tubers will be tied.	3.87	0.59	Required
50	Tie the yams tightly in the barn.	3.79	0.57	Required
51	pileup the remaining yam that were not tied in a ventilated room	3.33	0.79	Required

Table 4 shows that 10 skills item had their means ranging from 2.58 to 3.79. This indicated that their means are above the cut-off point of 2.55. This observation implies that all the skills are required for harvesting and storage of yam. The standard deviation of the skill item ranged from 0.41 to 1.00. This shows that the respondents are unanimous in their responses.

Research Question 5

What are the skills required by the secondary school graduates in processing of yam. into various forms?

The data for answering this research questions were obtained from the respondents and presented in tables below.

Table 5: Mean ratings of responses of Agricultural Science Teachers and Extension Agents on the Skills Required by Secondary School Graduates in Traditional Method of processing yam into flour.

Table 5: N282

S/N	ITEM STATEMENT	X	SD	Remark
52	Peel the selected yam tubers	3.10	1.10	Required
53	Cut yam into slices	2.59	0.98	Required
54	Dry under a high temperature	3.23	0.97	Required
55	Mill the dried product	3.26	0.87	Required
56	Sieve to remove large yam particles.	2.69	0.86	Required
57	Bag and store in a cool dry place	3.38	0.83	Required

Table 5 shows that 6 skills item had their mean ranging from 2.2.59 to 3.38. This indicates that their means are above the cut-off point of 2.55. The observation implies that all the kills are required in traditional processing of yam into flour.

The standard deviation of the skill item ranged from 0.83 to 1.10. This shows that the respondents were almost unanimous in their responses to the items.

Table 6: Mean Ratings of Responses of Agricultural Science Teachers and Extension Agents on the skills required by secondary school graduates in commercial processing of yam into flour.

Table 6: Commercial Processing of Yam into Flour N 282

S/N	ITEM STATEMENTS	X	SD	Remark
58	Wash the tubers in water	2.57	0.97	Required
59	Cut the tubers into three depending on the size	2.59	0.98	Required
60	Drain properly for 20-25 minutes	2.72	0.79	Required
61	Cut into slices about 2-5mm in thickness	2.55	0.97	Required
62	Dry in a dryer at 600c until yam becomes brittle	3.53	0.68	Required
63	Grind using hammer mill or pulverize.	3.58	0.66	Required
64	Sieve the pulverized yam	3.30	0.81	Required
65	Bag the mill flour	3.51	0.73	Required
66	Store in a cool dry place.	3.52	0.68	Required

Table 6 Shows that 9 skills item had their means ranging from 2.55 to 3.58. This indicates that the60r means are above the cut-off point of 2.55. This observation implies that all the skills are required in commercial processing of yam into flour. The standard deviation of the skills item ranged from 0.68 to 0.98. This showed that the respondents were almost unanimous in their responses to the items.

Table 7: mean Ratings of Responses of Agricultural Science Teachers and Extension Agents on the skills required by secondary school graduates in processing of yam into flake (consumable state)

Table 7: PROCESSING OF YAM INTO FLAKES **N 282**

S/N	ITEM STATEMENT	X	SD	Remark
67	Peel yam tubers	3.53	0.64	Required
68	Wash to remove dirt	3.43	0.76	Required
69	Cut/slice into small shapes	2.59	0.98	Required
70	Blanch in 0.1% sodium metabi sulphide for 5 minutes	3.59	0.68	Required
71	Drain thoroughly and boil for 30 minutes	2.71	0.82	Required
72	Grind and mash yam	3.31	0.89	Required
73	Weigh the mashed yam	2.63	0.92	Required
74	Roll and cut into 1mm shape thickness.	3.58	0.59	Required
75	Dry under sun or in the oven drier at 90^0c	3.49	0.72	Required
76	Allow to cool at worn temperature	3.45	0.75	Required
77	Pack in polythene bags	3.41	0.80	Required
78	Seal the packs in carton	3.30	0.84	Required
79	Label appropriately and store in a cool dry place.	3.36	0.80	Required

Table 7 shows that 13 skills items had their means ranging from 2.59 to 3.59. This indicates that their means are above the cut off point of 2.55. This observation implies that all the skills are required for processing of yam into flake (consumable state). The standard deviation of the skill items ranged from 0.59 to 0.89. This showed that the respondents were almost unanimous in their responses to the items.

Table 8: Mean Ratings of Responses of Agricultural Science Teachers and Extension Agents on the skills required by secondary school graduates in processing of yam into chips.

Table 8: PROCESSING OF YAM INTO CHIPS **N 282**

S/N	ITEM STATEMENT	X	SD	Remark
80	Peel the yam	3.34	0.82	Required
81	Wash the peeled yam with water.	3.34	0.82	Required
82	Soak the yam inside water for one hour	2.60	0.98	Required
83	Slice the soaked yam at 1mm thickness.	2.72	0.78	Required
84	Separate the individual slices.	2.88	0.83	Required
85	Mix with some quantity of salt	3.48	0.76	Required
86	Deep only the separated individual slices or oven drier at 500c	3.48	0.76	Required
87	Cool at room temperature.	3.45	0.87	Required

Table 8 showed that 8 skills item had their means ranging from 3.60 to 3.48. This indicates that their means are above he cut off points of 2.55. This observation implies that all the skills are required for processing of yam into chips. The standard deviation of the skill items ranged from 0.76 to 0.98. This shows that the respondents were almost unanimous in their responses.

Table 9: Mean Ratings of Responses of Agricultural Science Teachers and Extension Agents on the skills required by Secondary school graduates in processing of yam into Roasted yam.

Table 9: PROCESSING OF YAM INTO ROASTED YAM N 282

S/N	ITEM STATEMENT	X	SD	Remark
88	Select the desired tubers of yam	2.72	0.78	Required
89	Set up fire with fire wood	3.70	0.47	Required
90	Place the yam on fire	3.69	0.49	Required
91	Turn always to avoid burning	3.54	0.64	Required
92	Allow to heat for 45 minutes	2.69	0.83	Required
93	Scrap out the back of the yam	3.59	0.65	Required
94	Slice to desired shapes.	2.67	0.91	Required
95	Keep in a warmer	3.70	0.47	Required

Table 9 showed that 8 skills item had their mean ranging from 2.67 to 3.70. This indicates that their means are above the cut-off point of 2.55. The observation implies that all the skills are required in processing of yam into Roasted yam. The standard deviation of the skill items ranged from 0.49 to 0.91. This shows that the respondents were almost unanimous in their responses to the items.

Table 10 Mean Ratings of Responses of Agricultural Science Teachers and Extension Agent on the skills Required by secondary school graduates in processing of yam into pounded yam.

Table of 10: PROCESSING OF YAM INTO POUNDED YAM N282

S/N	ITEM STATEMENT	X	SD	Remark
96	Pell the yam and wash thoroughly	3.62	0.63	Required
97	Slice the yam	3.55	0.69	Required
98	Boil the yam for 30 minutes	2.66	0.90	Required
99	Drain water from the yam	2.61	0.80	Required
100	Put the yam in the mortar and pound with piston until it becomes brittle and slices together	3.45	0.78	Required
101	Put in a warmer.	3.53	0.68	Required

Table 10 showed that 6 skills item had their means ranging from 2.61 to 3.62. This indicates that their means are above the cut-off point of 2.55. This observation implies that all the skills are required for processing of yam into pounded yam. The standard deviation of the skill items ranged from 0.63 to 0.90. This showed that the respondents were almost unanimous in their responses of the items.

Research Question 6

What are the skills Required by secondary school graduates in marketing of yam and yam products?

The data for answering this Research question were obtained from the respondents and presented in table 11.

Table 11: Mean Ratings of Responses of Agricultural Science Teachers and Extension Agents on the Skills Required by Secondary school Graduates in marketing of Yam and Yam products.

S/N	ITEM STATEMENTS	X	SD	Remark
102	Advertise yam products	3.30	0.67	Required
103	Select the product line to enter into relation to market condition.	2.56	0.80	Required
104	Sort yam products into groups of uniform quality	3.48	0.81	Required
105	Open inventory record book	2.51	0.82	Required
106	Fix appropriate price to the product	3.53	0.62	Required
107	Distribute and transport the product to buyers.	3.74	0.30	Required
108	Sell the products	3.85	0.49	Required
109	Keep the sales record book	3.59	0.50	Required
110	Expand market through advertisement and sales promotion	3.34	0.46	Required

Table 11 shows that the 9 skill items have their means ranging from 2.56 to 3.74. This indicates that their means are above the cut-off point of 2.55. This observation implies that all the skills are required for marketing of yam and yam products in Anambra State.

The standard deviation of the skill item ranged from 0.30 to 0.67. This shows that the respondents are unanimous in their responses.

Hypothesis I

Ho_1 There will be no significant difference between the mean ratings of the responses of Agricultural Science Teachers and Extension Agents on the skills Required by secondary school graduates in planning for yam production Enterprise.

The data for testing the hypothesis are presented below in table 12 below

Table 12 t ï test Analysis of the mean Ratings of Responses of Two Groups of Respondents on the Skills Required by secondary school Graduates in panning for yam production Enterprise in Anambra State.

S/N	Skills required in planning for yam production	Agric Sc. Teachers (N_1 =200) X_1	Extension agents (N_2= 82) SD_1	X_2	SD^2_2	t cal	t tab	R
1	Formulate specific objective for the farm	3.71	0.44	3.62	0.57	1.28	1.96	Not - Signifi cant
2	Revise the objective periodically	3.47	0.47	3.43	0.50	0.62	1.96	N/S
3	Deide on the farming and the cropping system to adopt on the farm	3.71	0.39	3.59	0.66	1.53	1.96	N/S
4	Budget for the farm	3.74	0.39	3.71	0.56	0.44	1.96	N/S
5	Locate, plan the farm around existing special market and land productivity	3.47	0.70	3.49	0.65	0.23	1.96	N/S
6	Plan for procurement of farm input.	3.65	0.44	3.68	0.40	1.35	1.96	N/S
7	Specify the species of yam to be produced.	3.52	0.38	3.45	0.40	1.35	1.96	N/S
8	Select appropriate equipment for specific operation.	3.34	0.46	3.40	0.29	-1.3	1.96	N/S
9	Storage schedule or tuning for getting	3.58	0.30	3.52	0.52	0.98	1.96	N/S

Data presented in table 12 reveals that each of the 9 skill items have calculated t-value which ranges from -0.23-0.53 which are less than the table. t ï value of 1.96 (two tailed test) at 0.05 level of significance and 280 degree of freedom. This indicates that there was no significant difference between the mean ratings of the two groups of respondents (Agricultural Science teachers and Extension Agents)

on the skills required by secondary school graduates in planning for yam production. With this result, the null hypotheses of (Ho_1) of no significant difference was up held for the 9 skills.

Hypothesis 2

$H0_2$ There will be no significant difference between the mean ratings of the responses of Agricultural Science teachers and Extension Agents on the skills required by secondary school graduates in planting of yam.

The data for testing the hypothesis are presented below in table 13

Table 13

t – test Analysis of the mean ratings of responses of two groups of respondents on the skills required by secondary school graduates in planting of yam.

S/N	Skills Required in Planning of Yam	Agric Sc. Teachers (N =200) - X_1	Extension Agents (N= 82) SD_1	- X_2	SD_2	t cal	t tab	R
10	Prepare the seed bed	3.44	0.38	3.37	0.33	1.55	1.96	Not significant
11	Cut the discs weight about 25g each from the seed yam	2.85	0.91	2.68	1.26	1.11	1.96	N/S
12	Treat with a suitable fungicide or minisett dust	3.65	0.45	3.63	0.49	0.32	1.96	N/S
13	Insert the yam set gently into the seed bed.	3.28	0.41	3.23	0.60	0.80	1.96	N/S
14	Plant the yam set 5cm to 10cm deep and 25cm intrarow	3.60	0.53	3.46	0.60	1.83	1.96	N/S
15	Maintain the seed bed for about seven months prior to the anticipated time of planting in the field.	3.53	0.60	3.48	0.58	0.65	1.96	N/S
11	**PLANTING SEED YAM DIRECT IN THE FIELD**							
16	Clear the field of negotiation	3.21	0.68	3.11	0.45	1.45	1.96	N/S
17	Treat the soil and planting materials with fungicide to control leaf spot diseases.	3.40	0.28	3.30	0.73	1.20	1.96	N/S

18	Till the soil and apply organic manure.	3.22	0.54	3.13	0.91	0.84	1.96	N/S
19	Make mounds or ridge of about 1m apart and 2-3m in diameter	3.22	0.51	3.26	0.41	1.04	1.96	N/S
20	Remove decayed tubers	3.38	0.51	3.26	0.54	1.72	1.96	NS
21	Select yam species to be planted.	3.49	0.33	3.45	0.47	0.70	1.96	N/S
22	Cut large tubers into setts for planting	3.30	0.43	3.20	0.50	1.59	1.96	NS
23	Trim the smale petiole and leave through which the sterm shoot off.	3.38	0.51	3.26	0.54	1.72	1.96	N/S
24	Plant onset of rain	3.30	0.54	3.32	0.40	0.34	1.96	N/S
25	Make a hole on the mound or ridges of about 12-18cm depth	3.33	0.35	3.43	0.89	-1.02	1.96	N/S
26	Place the planting materials slanting form at an angle of 450 degree	3.29	0.65	3.25	0.63	0.48	1.96	N/S
27	Cover the hole with some ball of soil	3.30	0.54	3.32	0.40	0.34	1.96	N/S

Data presented in Table 13 reveals that each of the 16 skill items has calculated t value which ranges from -1.02 to 1.83. This indicates that the t-cal are less than the table t value of 1.96 (two tailed test) at 0.05 level of significance and 280 degree of freedom. This reveals that there was no significance difference between the mean ratings of the two groups of respondents (Agricultural Science Teachers and Extension Agents on the skills required by secondary school graduates in planting of yam. With this result, the null hypothesis ($H0_2$) of no significant difference was upheld for the 16 skills in planting.

Hypothesis 3

There will be no significant difference between the mean ratings of responses of Agricultural Science Teachers and Extension Agents on the skills required y secondary school graduates in management of yam field.

The data for testing the hypothesis are presented in table 14 below.

Table 14

S/N	Skills Required in Management of yam Field	Agric Sc. Teachers (N_1 =200) X_1	Extension Agents (N= 82) S_1^2	X_2	S_2^2	t cal	t tab	R
28	Select a mulch material which is 3-5cm thick	3.23	0.31	3.27	0.27	1.35	1.96	Not signifi cant
29	Place a cap of selected mulch material on the top of the mounds or ridges.	3.33	0.50	3.41	0.40	-1.41	1.96	N/S
30	Avoid placing mulch material directly on the crop	3.45	0.36	3.40	0.90	0.49	1.96	N/S
31	Select tall hard wood of 3 or more meters in length in order to give a good support to the growing shoot (state)	3.58	0.42	3.56	0.59	0.28	1.96	N/S
32	Each shoot should have an individual state	3.51	0.58	3.48	0.63	0.37	1.96	N/S
33	Insert the stake near the base of the shoot	3.55	0.40	3.54	0.50	0.14	1.96	N/S
34	Weed the yam 2-3 months after planting with short handled hoe	3.55	0.59	3.68	0.42	1208	1.96	N/S
35	Repeat the weeding at interval	3.56	0.50	3.49	0.55	1.02	1.96	N/S
36	Apply contact herbicides such as paraquate at 0.5kg/h to weed	3.45	0.40	3.39	0.94	0.56	1.96	N/S
37	Make a shallow hole of about the base of the plant and apply evenly some quantity of fertilizer	3.45	0.38	3.41	0.74	0.46	1.96	N/S
38	Repeat organic manure application when the vines are sprouting to ensure good rapid growth	3.59	0.45	3.54	0.59	0.69	1.96	N/S
39	Apply fertilizer in split does at and 12 weeks in areas form to leaching	3.51	0.42	3.44	0.79	0.76	1.96	N/S
40	Practice; crop rotation	3.40	0.32	3.32	0.81	0.87	1.96	N/S
41	Practice farm sanitation where the diseases is un controllable	3.45	0.40	3.40	0.76	0.56	1.96	N/S

The analysed data in table 14 reveals that each of the 14 skill item had calculated t value which ranges from -1.41 to 1.35 which are less than the t-table of 1.96 (two tailed test) at 0.05 level of significance and 280 degree of freedom. This indicated that there was no significant difference between the mean ratings of response of the two groups of respondents (Agricultural science teachers and extension Agents) on the skills required by secondary school graduates in management of yam field. Inference from the findings is that the null hypothesis (Ho_3) of no significant difference was upheld for the 14 skills in management of yam field.

Hypothesis 4

Ho_4) There will be no significant difference between the mean ratings of the responses of agricultural science teachers and Extension agents in the skills required by secondary school graduates in harvesting and storage of yam.

The data for testing the hypothesis are presented in table 15 below.

Table 15

T-test Analysis of the mean Ratings of Responses of two groups of respondents on the skills required by secondary school Graduates in harvesting and storage of yam.

S/N	Skills Required in Harvesting and Storage of Yam	Agric Sc. Teachers (N_1 =200) X_1	Extension Agents (N_2= 82) S_1^2	X_2	SD_2^2	t cal	t tab	R
42	Check for maturity through yelling of leaves and vines	3.20	0.66	3.13	0.69	0.78	1.96	N/S
43	Loose the soil around mounds with a digging instrument.	3.22	0.62	3.13	0.47	1.32	1.96	N/S
44	Avoid bruising on the body of tubers	3.35	0.56	3.49	0.57	-1.88	1.96	N/S
45	Pull the crop gently to avoid damage under the mound or ridges	3.54	0.47	3.49	0.67	0.62	1.96	N/S
46	Pick manually	3.54	0.47	3.49	0.67	0.62	1.96	N/S
47	Leave the head to produce a second tuber that will be harvested latter	3.45	0.45	3.55	0.67	-1.24	1.96	N/S
48	Replace the soil around the hand of the plant.	3.62	0.47	3.52	0.58	1.39	1.96	N/S
49	Erect a barn made of palm fronds in which the yam tubers will be tied.	3.68	0.51	3.71	0.41	0.52	1.96	N/S
50	Tie the yam tubers tightly in the barn.	3.45	0.49	3.40	0.59	0.68	1.96	N/S
51	Pile up the remaining yams that were not tied in a ventilated room.	3.53	0.42	3.56	0.59	10.41	1.96	N/S

Table 15 presents the analyzed data for testing hypothesis 4. The table reveals that each of the item had calculated t-value which ranges from -0.41 to 0.83 which are less than the t-value of 1.96 (two tailed test) at 0.05 level of significance and 280 degree of freedom. This indicates that there was no significant difference between the Mean Ratings of Responses of the two Groups of respondents (Agricultural

science teachers and Extension Agents) on the skills Required by secondary school graduates in harvesting and storage of yam in Anambra State. The result revealed that the null hypotheses (Ho_3) of no significant difference was upheld for the 10 skills in harvesting and storage of yam.

Hypothesis 5

Ho_5 There will be no significant difference between the mean ratings of the Reponses of Agricultural Science Teachers and Extension Agents on

the skills Required by secondary school graduates in processing of yam into various forms.

The data for testing the hypothesis are presented in table below

Table 16:

t-test Analysis of the mean Ratings of Responses of two Groups of Respondents on the skills required by secondary school graduates in traditional processing of yam into flour.

S/N	Skills Required in pad processing of yam into flour	Agric Sc. Teachers (N_1 =200) X_1	Extension Agents (N= 82) SD_1	X_2	SD_2^2	t cal	t tab	R
52	Pell the selected yam tuber	3.33	0.61	3.43	0.62	-1.24	1.96	N/S
53	Cut yam into slices	3.62	0.37	3.52	0.58	1.45	1.96	N/S
54	Dry under a high temperature	3.68	0.51	3.71	0.50	-0.45	1.96	N/S
55	Mill the dried product	3.72	0.48	3.77	0.53	-0.74	1.96	N/S
56	Sieve to remove large yam particles.	3.40	0.43	3.32	0.81	0.85	1.96	N/S
57	Bag and store in a cool dry place.	3.38	0.43	3.34	0.59	0.56	1.96	N/S

The analyzed data in table 16 shows that each of the 6 skill item had calculated t-value which ranges from -0.45 to 0.85 which are less than t table of 1.96 (two

tailed test) at 0.05 level of significance and 280 degree of freedom. This indicates that there was no significant difference between the mean rating responses of the two groups of respondent. (Agricultural science teachers and Extension agents on the skill required by students in traditional processing of yam into flour.

11. COMMERCIAL METHOD OF PROCESSING OF YAM INTO FLOUR

Table 17
T-test analysis of the mean ratings of responses of two groups of respondents on the skills required by secondary school graduates I commercial processing of yam into flour.

S/N	Skill Required in Commercial Method of Processing of yam into Flour	Agric Sc. Teachers (N_1 =200) X_1	Extension Agents (N= 82) SD_1	X_2	SD_2^2	t cal	t tab	R
58	Wash the tubers in water	3.47	0.52	3.41	0.47	0.94	1.96	N/S
59	Cut the tubers into three depending on the size	3.42	0.53	3.38	0.71	0.23	1.96	N/S
60	Boil for about 20-25 minutes	3.48	0.53	3.44	0.64	0.50	1.96	N/S
61	Drain properly	3.56	0.38	3.49	0.67	0.88	1.96	N/S
62	Cut into slices about 2-3mm in thickness.	3.51	0.44	3.59	0.52	-1.22	1.96	N/S
63	Dry in a dryer at 60^0c until yam becomes brittle.	3.25	0.76	3.32	0.49	-0.97	1.96	N/S
64	Grind using hammer mill or pulverize	3.14	0.72	3.27	0.52	-1.94	1.94	N/S
65	Sieve the pulverized yam	3.24	0.68	3.41	0.16	-1.94	1.94	N/S
66	Bag the mill flour	3.29	0.70	3.41	0.47	-1.67	1.94	N/S
67	Store in a cool dry place	3.09	0.67	3.04	0.56	0.81	1.94	N/S

The analyzed data in table 17 shows that each of the 10 skill item had calculated t-value which ranges from -0.97 to 0.94 which are less than t table of 1.96 (two tailed test) at 0.05 level of significance and 280 degree of freedom. This indicates that there was no significant difference between the mean rating responses of the two groups of respondent. (Agricultural science teachers and Extension agents on the skill required by students in commercial processing of yam into flour.

B PROCESSING OF YAM INTO FLAKES

Table 18

T-test Analysis of the Mean Ratings of Responses of two croups of Respondents on the skills Required by Secondary School Graduates in processing of yam into flakes.

S/N	Skill Required in Processing of yam into Flakes	Agric Sc. Teachers (N =200) X_1	Extension Agents (N= 82) SD_1	X_2	SD_2	t cal	t tab	R
68	Peel the yam	3.15	0.55	3.12	0.48	0.64	1.96	Not significant
69	Wash to remove dirt	3.44	0.51	3.45	0.52	-0.15	1.96	N/S
70	Cut/slice into small shapes	3.35	0.36	3.33	0.77	0.23	1.96	N/S
71	Blanch in 0.1% sodium metabi sulphide	3.30	0.63	3.24	0.50	0.85	1.96	N/S
72	Drain thoroughly and boil for 30minutes	3.35	0.42	3.29	0.60	0.83	1.96	N/S
73	Grind and mash the yam	3.27	0.79	3.20	0.65	0.77	1.96	N/S
74	Weigh the mashed yam	3.34	0.42	3.29	0.62	0.66	1.94	N/S
75	Roll and cut into 1mm shape thickness.	3.27	0.79	3.22	0.65	0.55	1.94	N/S
76	Dry under sun or in the oven drier at 90^0c	3.38	0.53	3.46	0.40	-1.38	1.94	N/S
77	Allow to cool at room temperature	3.28	0.48	3.16	0.51	1.82	1.94	N/S
78	Pack in polythene bag	3.54	0.48	3.66	0.59	-1.63	1.94	N/S
79	Seal the packs in cartons	3.69	0.49	3.59	0.55	1.43	1.94	N/S
80	Label appropriately and store in a cool dry place.	3.56	0.48	3.54	0.69	0.24	1.94	N/S

The analyzed data in table 18 shows that each of the 13 skill item had calculated t-value which ranges from -0.15 to 0.83 which are less than t table of 1.96 (two tailed test) at 0.05 level of significance and 280 degree of freedom. This indicates that there was no significant difference between the mean rating responses of the two groups of respondent. (Agricultural science teachers and Extension agents on the skill required by students in flake processing of yam).

C. PROCESSING OF YAM INTO CHIPS

Table 19

T-test Analysis of the mean Ratings of Responses of two groups of Respondents on the skills Required by secondary school Graduates in processing of yam into chips.

S/N	Skill Required in Processing of yam into Chips	Agric Sc. Teachers (N_1 =200) X_1	Extension Agents (N= 82) SD_1	X_2	SD_2^2	t cal	t tab	R
81	Peel the yam	3.45	0.82	3.40	0.72	0.51	1.96	Not signif icant
82	Wash the peel yam	3.55	0.55	3.26	0.73	0.56	1.96	N/S
83	Soak the yam inside water for one hour	3.23	0.70	3.49	0.40	-1.81	1.96	N/S
84	Slice the soaked yam at 1mm thick	3.34	0.46	3.40	0.39	-1.11	1.96	N/S
85	Separate the individual slices	3.52	0.38	3.45	0.40	1.35	1.96	N/S
86	Mix with some quantity of salt	3.58	0.40	3.52	0.52	0.94	1.96	N/S
87	Deep dry the separated individual slices in oven drier at 50^0c.	3.74	0.58	3.68	0.37	0.79	1.94	N/S
88	Cool at room temperature	3.34	0.45	3.40	0.51	-0.93	1.94	N/S

The analyzed data in table 19 shows that each of the 8 skill item had calculated t-value which ranges from -1.11 to 0.94 which are less than t table of 1.96 (two tailed test) at 0.05 level of significance and 280 degree of freedom. This indicates that there was no significant difference between the mean rating responses of the two groups of respondent. (Agricultural science teachers and Extension agents on the skill required by students in chips processing of yam).

D. PROCESSING OF YAM INTO ROASTED YAM

Table 20

T-test Analysis of the mean rating of Responses of two Groups of Respondents on the skills Required by Secondary School Graduates in Processing of yam into Roasted yam.

S/N	Skill Required in Processing of yam into Roasted yam	Agric Sc. Teachers (N_1 =200) X_1	Extension Agents (N= 82) SD_1	X_2	SD_2^2	t cal	t tab	R
89	Select the desired tubers of yam.	3.71	0.50	3.62	0.51	1.35	1.96	N/S
90	Set up fire with fire wood	3.47	0.57	3.43	0.50	0.51	1.96	N/S
91	Place the yam on fire	3.59	0.50	3.71	0.46	-1.93	1.96	N/S
92	Turn always to avoid burning	3.74	0.59	3.71	0.56	0.40	1.96	N/S
93	Allow to heat for 45minutes	3.49	0.45	3.40	0.55	0.29	1.96	N/S
94	Scrap out the back of yam	3.85	0.44	3.78	0.59	1.3	1.96	N/S
95	Slice to desired shapes	3.71	0.31	3.85	0.25	-3.9	1.96	N/S
96	Keep in a warmer	3.47	0.57	3.43	0.50	-0.51	1.96	N/S

The analyzed data in table 20 shows that each of the 7 skill item had calculated t-value which ranges from -1.93 to 1.35 which are less than t table of 1.96 (two tailed test) at 0.05 level of significance and 280 degree of freedom. This indicates that there was no significant difference between the mean rating responses of the two groups of respondent. (Agricultural science teachers and Extension agents on the skill required by students in roasted processing of yam).

E. PROCESSING OF YAM INTO POUNDED YAM

Table 21
T-test Analysis of the Mean Ratings of Responses of two Groups of Respondents on the skills Required by Secondary School Graduates in processing of yam into pounded yam.

S/N	Skill Required in Processing of yam into Pounded yam	Agric Sc. Teachers (N =200) X_1	Extension Agents (N= 82) SD_1	X_2	SD_2^2	t cal	t tab	R
97	Peel the yam and wash thoroughly	3.74	0.30	3.68	0.27	1.64	1.96	Not signif icant
98	Slice the yam	3.58	0.30	3.52	0.52	0.98	1.96	N/S
99	Boil the yam for 30minutes	3.52	0.38	3.45	0.40	1.35	1.96	N/S
100	Drain water from the yam	3.34	0.46	3.40	0.29	-1.31	1.96	N/S
101	Put the yam into the mortar and pound with piston until it becomes brittle and sticks together	3.87	0.34	3.78	0.59	1.47	1.96	N/S
102	Put in a warmer.	3.47	0.40	3.46	0.34	0.21	1.96	N/S

The analyzed data in table 21 shows that each of the 6 skill item had calculated t-value which ranges from -1.31 to 0.98 which are less than t table of 1.96 (two tailed test) at 0.05 level of significance and 280 degree of freedom. This indicates that there was no significant difference between the mean rating responses of the two groups of respondent. (Agricultural science teachers and Extension agents on the skill required by students in pounded processing of yam).

Data presented in table 18 ï 21 reveals that each of the skill 43 skill items has calculated t-value which ranges from -0.15 to 0.98 which are less than t-value of 1.96 (two tailed test) at 0.05 level of significance and 280 degree of freedom. This indicates that there was no significant difference between the mean ratings of responses of he two groups of respondents (Agricultural Science Teachers and Extension Agents) on the skills required by secondary school graduates in process of yam into various forms. The null hypothesis ($H0_5$) of no significant difference was upheld for the 43 skills item in processing of yam into various forms.

Hypotheses 6

There will be no significant differences between the mean ratings of responses of Agricultural science teachers and Extension Agents on the skills required by secondary school graduates in marketing of yam and yam products.

The data for testing the hypotheses are presented in table 22 below

Table 22
T-test analysis of the mean ratings of Responses of two Group of Respondents on the skills Required by Secondary School Graduates in Marketing of yam and yam products.

S/N	Skill Required In Marketing of Yam and Yam Products	Agric Sc. Teachers (N =200) X_1	Extension Agents (N= 82) S_1^2	X_2	S_2^D	t cal	t tab	R
103	Advertise your product	3.47	0.37	3.43	0.30	0.95	1.96	N/S
104	Select the product line to enter to relation to market condition	3.24	0.27	3.71	0.26	0.85	1.96	N/S
105	Sort yam products into groups of uniform quality	3.47	0.37	3.43	0.30	0.95	1.96	N/S
106	Open inventory record book	3.71	0.34	3.62	0.51	1.46	1.96	N/S
107	Fix appropriate price to the product.	3.65	0.22	3.74	0.37	-2.05	1.96	N/S
108	Distribute and transport the product to buyers	3.28	0.41	3.23	0.25	1.25	1.96	N/S
109	Sell the product.	3.44	0.38	3.37	0.33	1.55	1.96	N/S
110	Keep the sales record book	3.60	0.53	3.46	0.60	1.83	1.96	N/S

Data presented in table 22 revealed that each of the 8 skill item had calculated t-values which ranged from -2.05 to 1.63, which were less than table t value of 1.96 (two tailed test) at 0.05 levels of significances and 280 degree of freedom.

This indicates that there was no significant difference between the mean ratings of responses of the two groups of respondents (Agricultural Science Teachers and Extension Agents) on the skills required by secondary school graduates in marketing of yam and yam products in Anambra State. The result

revealed that the null hypotheses ($H0_6$)of no significant difference was upheld for the 8 skill in marketing.

Major Findings of the Study

The following findings, emerged from the study.

A. Skills in Planning for Yam production

The respondents indicated that the skills listed below were by secondary school graduates in planning for yam production.

1. Formulate specific objective for the farm.
2. Revise the objective periodically.
3. Decide on the farming and the cropping system to adopt on the farm.
4. Budget for the farm.
5. Locate Plan the farm around existing special market and land productivity.
6. Plan for the procurement of farm input
7. Specify the specie of yam to be produced
8. Select appropriate equipment for specific farm operation.
9. Storage schedule or timing for getting the farm produce to market during the highest price period.

B. Skills in Planting Yam

The respondents indicated that the skills listed below were required by secondary school graduates in planting yam.

Raising of Seed yam using Minisett Technique

1. Prepare the seed bed
2. Cut the discs weighing about 25g each from the seed yam
3. Treat with a suitable fungicide or miniset dust
4. Insert the yam set gently into the seed bed
5. Plant the yam set 5cm to 10cm deep and 25cm intra rows.
6. Maintain the seed bed for about seven months prior to the anticipated time of planting in the field

11. PLANTING SEED YAM DIRECT IN THE FIELD

7. clear the field of negotiation
8. treat the soil and planting material with fungicides to control leaf spot diseases.
9. Till the soil and apply organic manure
10. Make mounds or ridges of about 1m apart and 2-3m in diameter.
11. Select yam specie to be planted
12. Cut large tubers into setts for planting and leave medium sized ones uncut.
13. Trim the small petiole and leave through which the stem would shoot off.
14. Make a hole on the mound or ridges of about 12-18 cm depth.
15. Place the planting materials in slanting form at an angle of 45 degree.
16. Cover the hole with some ball of soil.

C. Skill for Management of Yam Field.

1. Select a mulch material which is 3-5 cm thick.
2. Place a cap of selected mulch material on the top of the mounds or ridges.
3. Avoid placing mulch material directly on the crop.
4. Select tall hard wood of 3 or more meter in length inorder to give a good support to the growing shoot.
5. Each shoot should have individual stake.
6. Insert the stake near the base of the shoot
7. Weed the yam 2-3months after planting with short handled hoe.
8. Repeat the weeding at intervals.
9. Apply contact herbicides such as paraquate at 0.5kg/ha to weed.
10. Make a shallow hole of about 8-10cm in radius around the base of the plant and apply evenly some quantity o fertilizer.
11. Repeat organic manure application when the vines are sprouting to ensure good rapid growth.

12 Apply fertilizer in split does at and 12weeks in areas form to leaching.

13. Practice crop rotation.
14. Practice farm sanitation where the disease is uncontrollable.

D. Skills Required for the Harvesting and Storage of yam

1. Check maturity through leaves and vines

2. Loose the soil around mounds and ridges with a digging instrument
3. Avoid bruising on the body of tubers.
4. Pull the crop gently to avoid damage inside the mounds or ridges.
5. Pick manually
6. Leave the hand to produce a second tuber that will be harvested latter.
7. Replace the soil around the hand of the plant.
8. Erect a barn made of palm fronds in which the yam tubers will be tied.
9. Tie the yams tightly in the barn.
10. Pileup the remaining yam that were not tied in a ventilated room.

E. Skills Required for processing of Yam into Various Forms

I. Traditional method of processing yam into flour

1. Peel the selected yam tuber
2. Cut yam into slices
3. Dry under a high temperature
4. Mill the dried product
5. Sieve to remove large yam particles
6. Bag and store in a cool dray place

II. Commercial Method of Processing Yam into Flour

7. Wash the tuber in water
8. Cut the tuber into three depending on the size

9. Boil for about 20-25 minutes
10. Drain properly
11. cut into slice about 2-3mm in thickness
12. Dry in a dryer at 60^0c until yam becomes brittle
13. Grind using hammer mill or pulverizer
14. Sieve the pulverized yam
15. Bag the mill flour
16. Store in a cool dry place.

III. Processing of yam into Flakes (Consumable State)

1. Peel yam tubers
2. Wash to remove dirt
3. Cut slices into small shapes
4. Blanch in 0.1% sodium metabi sulphide minutes
5. Drain thoroughly and boil for 30 minutes
6. Grind and mash the yam
7. Weight the mashed yam.
8. Roll and cut into 1mm shape thickness
9. Dry under sun or in the oven drier at 90^0c
10. allow to cool at room temperature
11. pack in polythene bags

12. Seal the packs in cartons
13. Label appropriately and store in a cool dry place.

IV. Processing of yam into Chips

1. Peel the yam
2. Wash the peeled with water
3. Soak the yam inside water for one hour
4. slice the soaked yam at 1mm thick
5. Separate the individual slices
6. Mix with some quantity of salt
7. Deep dry the separated individual slices or oven drier at 50^0c
8. Cool at room temperature.

V. Processing of yam into roasted yam

1. Select the desired tubers of yam
2. Set up fire with firewood
3. Place the yam on fire
4. Turn always to avoid burning
5. Allow to heat for 45 minutes
6. Scrap out the back of the yam
7. Slice to desired shapes.

VI. Processing of yam into pounded yam

1. Peel the yam and wash thoroughly
2. Slice the yam
3. Boil the yam for 30 minutes
4. Drain water from the yam
5. Put the yam in the mortar and pound. With piston until it becomes brittle and sticks together
6. Put in warmer.

F. Skills Required for Marketing of Yam and Yam Products

1. Advertise your products
2. Select the products line to enter into relation to market yam
3. Sort yam products into groups of uniform quality
4. Open inventory reco5rd book
5. Fix appropriate price to the products
6. Distribute and transport the product to buyers
7. Sell the products
8. Keep the sales record book
9. Expand market through advertisement and sales promotion

Findings On Hypotheses

It was found out from this study that

1. There was no significant differences between the mean ratings of the responses of Agricultural science teachers and Extension Agents on the skills required by secondary school graduates in planning for yam production.
2. There was no significant difference between the mean ratings of the responses of Agricultural science teachers and Extension Agents on the skills required by secondary school graduates in planting of yam.
3. There was no significant difference between the mean ratings of the responses of Agricultural science teachers and extension Agents on the skills required by secondary school graduates in management of yam field.
4. There was no significant difference between the mean ratings of the Reponses of Agricultural Science Teachers and Extension Agents on the Skills required by secondary school graduates in harvesting and storage of yam.
5. There was no significant difference between the mean ratings of the responses of Agricultural Science teachers and Extension Agents on the skills required by secondary school graduates in processing of yam.
6. There was no significant difference between the mean ratings of the responses of Agricultural science teacher and extension Agents on the skill

required by secondary school graduates in marketing of yam and yam products.

Discussions of the Findings

A. Skills in planning for yam production

It was found out by the study that the respondents indicated by secondary school graduates in planning for yam production

1. Formulation of specific objective for the yam
2. Planning for the procurement of farm inputs
3. Planning the farm around the existing special market and land productivity.
4. Specify the species of yam to be produced.
5. Decide on Farming and cropping system to adopt and others.

The findings above were in consonance with the opinion of Olatan and Mama (2001) who stated that planning of any farm operation should include the following activities. Formulate specific objective for the farm decide on farming and cropping system to adopt on the farm and plan for the procurement of farm inputs.

Also the findings are in conformity with the opinion of Upton (1973) who said that some general abilities for planning a farm includes to plan the farm around existing special market and land productivity and to schedule storing or timing for getting the farm produce to market during the highest price periods.

B. Skills for Planning of Yam

The findings from this study on the skills for planting of yam revealed that some skills are required by secondary school graduates for raising of seed yam using minisett technique which includes the following:

1. Preparing the seed bed
2. Treating with a suitable fungicide or miniset dust.
3. Cutting the discs weighing about 25g each from the seed yam.
4. Inserting the yam sett gently into the seed bed
5. Planting the yam set 5cm to 10cm deep and 25cm intra rows.

   While that of planting seed yam direct includes.

6. Clearing the field of negotiation
7. Treating the soil and planting materials with fungicide to control leaf spot diseases.
8. Selecting of yam species to be planted
9. Making a hole on mounds or ridges about 12 ï 18cm depth
10. Covering the hole with some ball of sand and others.

The observation by Purseglore (1992) further validates the findings of the study. He stated that the planning of yam involves ability to plant at the onset of the rainfall, Trimming the small petiole and leaving through which the sterm would shoot off, making a hole on the mounds or ridge, of about 12-18cm depth, placing

the planting materials in saluting form at an angle of 45^0 degree covering the soil with some ball of sand.

C. Skills for Management of Yam Field

It was found out that the respondents indicated that the skills listed below were required by secondary school graduates in management of yam field some of these skills are:

1. Selecting mulch materials which is 3.5cm thick
2. Placing a cap of selected mulch materials on the top of the mound or ridges
3. Making a hole of about -10cm in radius around the base of the plant and apply evenly some quantities of fertilizer.
4. Apply fertilizer in split doses at and 12weeks in areas form to leaching.
5. Weed the yam 2-3months after planting with a short handled hoe.
6. Practicing farm sanitation

The findings above agree with the specification of Ene (1990) who recommended that for management of yam field, mulch materials should be selected and spread evenly on the yam after sprouting. Also the findings are in conformity with the view of Uguru (1996) who listed some management of yam field skills as weeding the yam farm, at the early stage of growth, applying split does of fertilizer at 6 and 12 weeks after planting, applying pre-emergency herbicides for effective weed control, making a hole of about 8-10cm in radius

around the base of the plant apply evenly some quantities of fertilizer and other related skills. Also in agreement with the above findings are the views of Asadu (1995). In his opinion, Asadu, (1995) said that staking in yam should be carried out in order to ensure adequate exposure of the leaf surface to sunlight and increase yield.

He also noted that protection of yam from disease and pests requires the following operations: practicing farm sanitation where the disease is uncontrollable, practicing crop rotation using disease free materials, spraying of insecticides and fungicides to controlling yam tuber bettle which are major insect pest of yam and other elated operations.

D. Skills for Harvesting and Storage of yam

Findings from the study revealed that some skills for harvesting of yam were required by secondary school graduates. The respondents indentified these skill to include the following.

1. Checking maturity through leaves and vines
2. Loosening the soil around the base of the plant with a digging instrument.
3. Pulling the plant gently to avoid bruising on the body.
4. Picking manually.
5. Erecting a barn made of palm fronds in which the yam tubers will be tied and others. The above findings are in line with the opinion of Onwveme and Shina

(1999) who commended that matured yams are harvested that matured yams are harvested with the following skills checking for maturity through yellowing of leave, and vines, loosing the soil around the base of the plant with a digging instrument pulling the plant gently to avoid bruising on the body. Harvesting of yam 8 ï 12 months after planning.

Furthermore, Iwena (2008) added that harvested yam should be tied in an erected barn and packing the untied ones in a well ventilated room to avoid damage.

E. Skills for Processing of Yam

It was found out that the respondents indicated that the skills listed below were required by secondary school graduates in processing of yam into flour, these includes:

1. Peeling the selected yam tuber.
2. Drying under a high temperature
3. Milling the dried products
4. Drying under a high temperature
5. Sieve to remove large yam particles
6. Bag and sore in a cool dry place.

11. Skills for Commercial Processing of yam into flour

7. Cutting the tubers into three depending on the size
8. Grind using hammer or pulverize

9. Sieve the pulverized yam
10. Bag the mill flour
11. Store in a cool dry place.

These findings were inline with Iwena (2008) who remarked that yam flour is one of the few processed forms of yam which requires the following processing skills. Peeling any variety of selected yam, slicing and drying the yam. Milling the yam into flour.

These findings were also in agreement with the view of Onwueme (1978) who recommended that yam flour can also be prepared on a commercial scale by the following process: Peeling the tubers, cutting the tubers into slices, boiling for not more 25 minutes sieving the pulverized yam and other related skills.

From the findings of the study on the skills required for processing of yam into flake consumable state. It showed that some skills were identified by the respondents as required by secondary school graduates. They include:

1. Peeling the yam
2. Washing to remove dirt
3. Cutting into slices
4. Blanching in 0.1% sodium metabi sulphide for 5 minutes.
5. Drying under the sun or oven at 90^0c
6. Rolling and cutting it into 1mm shape thickness.

Processing of yam into chips involves the following:

1. Peeling the yam
2. Washing the peeled yam
3. Slice the soaked yam at 1mm thickness separate the individual slices
4. Mix with some quantity of salt
5. Drying the individual separated slices in oven drier at 90^0c and other related skills

These findings were in agreement with to opinion of Ihekoronye and Ngodi (1985) who noted that yam flake is processed by the methods cleaning the yam tubers, washing them, cooking the yam for about 30 minutes, mashing the yam, Roll cut it into 1mm thickness and dry under sun or oven drier at 90^0. Also the findings are in line with the opinion of FAO (1980) which maintained that processing of yam into flake can also be done on commercial scale by adopting the following procedure: Peeling of yam, washing of yam, slicing of yam and adding of metabi sulphide at 0.01% and drying in a drier at 90^0 packing the processed yam flake in polythene bag or paper and labeling it properly. Furthermore, skills identified in processing of yam into chips are as follows: peeling the yam, washing the peeled yam, soaking the yam, inside water for one hour, slice the soaked yam. These findings were in agreement with the opinion of F.A.O. (1980) which emphasized that yam chips are processed by the following activities: peeling the

yam, washing the peeled yam, soaking in salt water, slicing at 1mm thickness and deep drying the separated individual slices in oven drier at 50^0c.

Also skills identified for Roasting of yam are as follows: selecting the desired tubers of yam, setting up fire with fire wood placing the yam on fire, scrapping out the back of the yam. There findings are in consonance with the view of Ijeomah (1983) who stated that roasting activities include: selecting of desired tubers, setting up fire with fire wood, placing the yam on fire, allowing to heat for 45minutes scrapping out the back and slicing to desire shaped.

The following skills were identified for processing of yam into pounded yam peeling the yam and washing thoroughly slicing the yam.

Boiling the yam for 30 minutes

Draining water from the yam.

Putting the yam in the mortar and pound with piston until it becomes brittle and sticks together. These findings are in line with the view of Okaw (2006) who noted that pounded yam is processed by the following skills peeling the yam and washing thoroughly slicing the yam, Boiling the yam for 30 minutes

Draining the water from the yam

Putting the yam in the mortar and pounding with piston until it becomes brittle and stocks together, putting in a warmer.

F. Skills for Marketing of Yam and Yam Product

It was found out that the respondents indicated that the skills listed below are required by secondary school graduates in marketing of yam and yam products.

1. Advertising yam products for sale
2. Grading sorting yam and yam products into groups or uniform quality.
3. Selecting buyers for yam products
4. Distributing and transporting the products to buyers.

The findings above are in consonance with the opinion of Arene (1998) who stated that in marketing management skill, the marketing mix concept should be applied. They are: kind of product to produce, price to change sales promotions.

Furthermore, the findings are in agreement with the view of Adiene (1998) who said that for an individual to succeed in the marketing of agricultural products, several basic skills are required. These basic skills according to him include: finding buyers or searching for market, grading and standardizing product, distributing and transporting the products and five other related skills.

This affirms the statement of Sturrock (1983) who noted that as performed among which are grading or sorting products into groups of uniform quality and transporting products to processing centers and then to consumers.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter presents the summary of the statement of problem, purpose of the study, procedure used and the major findings of the study. The conclusion, implication of the study, limitation of the study, recommendation and suggestions for further study were also presented.

Restatement of the Problem

In Anambra state yam is one of the staple food crops and is being produced by many farmers for the substance of their families. However, the production of yam had been low in the state because of the farmers mature of farming and their interest in producing other crops. They were also not conversant with the various techniques and methods needed in producing and processing there yam into various forms.

The government of Anambra state may want to improve the fund accruable to it through contribution from export of yam and yam products to other states, which is an interstate export crop. But it is difficult for the government to convince the farmers to engage in sole cropping of yam and on large scale too because it will deprive them from cultivating other crops.

On yearly basis, many secondary school graduates of Anambra state who could not gain admission into higher institution or engage in any skilled job roam

about in the street without any employment, this constituting security risk individuals and wasteful to the economy of the state. These youths could be trained in skill acquisition centers for skills in occupation including yam production and processing.

But the skills acquisition centers meant for training these idle and unskilled youths in certain occupations do not have programmes for training youths for jobs in yam production and processing. Therefore it is necessary that the skill in yam production and processing should be identified and developed into programme to be used by skill acquisition centers for training some of the idle youths on skills or commercial production and processing of yam in the state hence this study.

Purpose of the Study

Specifically the study sought to:

1. Identify the skills required by secondary school graduates in planning for yam production.
2. Find out the skills required by secondary school graduates in planting of yam.
3. Identify the skills required by secondary school graduates in management of yam field
4. Find out the skills required by secondary school graduates in harvesting and storage of yam.

5. Identify skills required by secondary school graduates in processing of yam.

6. Identify skills required by secondary school graduates in marketing of yam.

Description of the Procedure Used

In carrying out the study, relevant literature were reviewed to guide the study. The research employed survey research design which made use of structured questionnaires. A structured questionnaire of 110 items was developed for collecting data from the respondents.

The population was 636 made of 526 Agriculture science teachers and 110 Extension agents. Due to the small number of Extension Agents the entire population of 110 was involved in the study but proportionate random sampling was used to select a sample of 262 Agricultural science teachers from the population of 636. Therefore the total sample for the study was 372. The developed structured questionnaires was face validated using three experts.

Reliability of the instrument was determined using person product moment correlation coefficient with a coefficient estimate of 0.84 was obtained.

The structured questionnaires on skills in yam production and processing was administered on the 372 respondents to obtain data. Two hundred (200) copies of questionnaires was retrieved from the Agricultural science teachers while eighty ï two (82) copies were retrieved from the Extension agents.

The 282 copies of questionnaire from the respondents were analysed to answer the research questions developed and to test hypotheses formulated. The mean and standard deviation were employed in analyzing the data for answering research questions while t-test analysis was used to test the hypotheses formulated. The analysis generated findings that were discussed.

Majority findings of the study

The analysis of data in the study revealed that secondary school graduates in Anambra state required skills in the following areas of yam production and processing:

1. Planning for yam production (9 skills)
2. Planting of yam (16 skills)
3. Management of yam field (14 skills)
4. Harvesting and storage of yam (10 skills)
5. Processing of yam (56 skills)
6. Marketing of yam and yam products (9 skills)

Conclusion

Anambra state government requires more hands in commercial production and processing of yam which is an interstate export crop. There were many idle and unskilled secondary school graduates who could not be trained in the skills required for employment in yam production and processing.

The skill acquisition centers were established in the state meant for training youths on certain occupations including yam production and processing. This motivated the researcher to identify skills required by secondary school graduates for success in yam production and processing enterprise in Anambra state; which could be integrated into state skill acquisition centers. The study had therefore, made the following contributions to knowledge.

1. It has provided information to the secondary school graduates on skills they require for gainful employment in yam production and processing enterprise.
2. It had provided information for skill acquisition centers, administration, which they could develop into programmes for equipping secondary school graduates, with required skills in yam production and processing.
3. The information could also guide the government on policy directives on planning skill acquisition centers for were purposeful training of youths for yam production.

Implications of the Study

The findings of the study had some implications for the training of secondary school graduates in yam production and processing enterprise in the following ways:

1. If the government of Anambra state integrates the identified skills into the state, skill acquisition centers for training secondary school graduates, it

might help to equip the secondary school graduates with this, it may motivate them to engage in commercial production of yam which will further enhance the exportation of yam to other states and boast the economy of the state.

Recommendation

The following recommendation were made for implementation.

1. The identified skills in this study should be packaged by the government and integrated into skill acquisition centers where it could be used for training interested unemployed youths in yam production and processing.
2. The findings of the study should be made available to unemployed youths by the government through the media. This could help the youths to enroll in skill acquisition centers for training in skills for yam production that will enable them gain employment.

Suggestion for Further Study

It is suggested that further research could be carried out in the following areas:

1. Identification of skills for improving the abilities of trainers in the stateôs skill acquisition centers in yam production and processing enterprise.

2. Identification of facilities required for implementing skills in yam production and processing enterprise in Anambra state.
3. Professional improvement skills required by yam farmers for profitable yam production management in Anambra State.

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APPENDIX I

Department of Vocational Teacher Education,
(Agricultural Education),
University of Nigeria, Nsuka.

Dateé é é é é é é é é é

Dear Sir/Madam,

REQUEST FOR VALIDATION OF RESEARCH INSTRUMENT

I am a postgraduate student in the Department of Vocational Teacher Education Agricultural Education University of Nigeria Nsukka. I am currently undertaking a research project entitled IDENTIFICATION OF WORK-SKILL REQUIRED BY SECONDARY SCHOOL GRADUATES FOR SUCCESS IN YAM PRODUCTION AND PROCESSING ENTERPRISE IN ANAMBRA STATE.

Attached is a draft copy of the questionnaire for the study. Please you are requested to ve the items for clarity, suitability and total coverage of yam production and processing skills required secondary school graduates.

A also request that you put your comments and suggestions in the blank spaces provided. Thanks.

Yours Faithfully,

MOJEKWU IJEOMA N.
PG/MED/07/433871.

APPENDIX II

QUESTIONNAIRE
TOPIC
IDENTIFICATION OF SKILL REQUIRED BY SECONDARY SCHOOL GRADUATES FOR SUCCESS IN YAM PRODUCTION AND PROCESSING ENTERPRISE IN ANAMBRA STATE.

PART ONE
PERSONAL INFORMATION

The questionnaire items is restricted to teachers of Agricultural science and extension agents in Anambra State

(1) Name of senatorial zones: Aguata zone ( ), Nnewi zone ( ), Onitsha zone ( ), Awka zone ( ), Otuocha zone ( ), Ogidi zone ( ).
(2) Name of Local Government Area ( ).
(3) Sex: Male ( ), Female ( ).
(4) Years of Experience: 1-5 ( ), 6-10 ( ), 11-15 ( ), 16-20 ( ), 21 and above ( ).
(5) Highest Educational Qualification: OND ( ), HND ( ), NCE ( ), University Degree ( ), Master Degree ( ), Others ( ).

PART TWO

INSTRUCTION: For each item you are please requested to check the level at which secondary school graduates require skills for success in yam production and processing enterprise in each skill item. The Response categories are as follows;

Highly Required (HR)
Required (R)
Slightly Required (SR)
Not Required (NR)

INDICATE THE LEVEL OF REQUIREMENT OF THE FOLLOWING SKILLS FOR PRODUCTION AND PROCESSING OF YAM

(A) Skills Required in Planning for Yam Production.

S/N	ITEMS	HR	R	SR	NR
1	Formulate specific objective for the farm.				
2	Revise the objectives periodically.				
3	Decide on the farming and the cropping systems to adopt on the farm.				
4	Budget for the farm.				
5	Locate plant the farm around existing special market and land productivity.				
6	Plan for the procurement of farm input				
7	Specify the species of yam to be procduced.				
8	Select appropriate equipment for specific farm operation.				
9	Storage schedule or timing for getting the farm produce to market during the highest price period.				

(B) Skills Required for the Planting of Yam.

1. Raising of seed yam using miniset technique.

S/N	ITEMS	HR	R	SR	NR
10	Prepare the seedbed.				
11	Cut the discs weighing about 25g each from the seed yam.				
12	Treat with a suitable fungicide or miniset dust.				
13	Insert the yam set gently into the seedbed				
14	Plant the yam set 5cm to 10cm deep and 25cm intra rows.				
15	Maintain the seedbed for about seven months prior to the anticipated time of panting in the field.				

11. Planning seed yam direct in the field.

S/N	ITEMS	HR	R	SR	NR
16	Clear the field of negotiation				
17	Treat the soil and panting materials with fungicides to control leaf spot diseases.				
18	Till the soil and apply organic manure.				
19	Make mounds or ridges of about 1m apart and 2-3m in diameter				
20	Select yam species to be planted				
21	Cut large tubers into setts for planting and leave				

	medium sized incut.				
22	Trim the small petiole and leave through which the stem would shoot off.				
23	Make a hole on the mound or ridges of about 12-18cm depth.				
24	Place the planting material slanting form at an angle of 45 degrees.				
25	Cover the hole with some ball of soil.				

(C) Skills Required for the Management Yam Field

S/N	ITEMS	HR	R	SR	NR
26	Select a mulch material, which is 3-5cm thick.				
27	Place a cap of selected mulch material on the top of the mounds or ridges.				
28	Avoid placing mulch material directly on the crop				
29	Select tall hardwood of 3 or more meters in length in order to give a good support to the growing shoot (stake).				
30	Each shoot should have an individual stake				
31	Inset the stake near the base of the shoot				
32	Weed the yam 2-3 months after planting with short handled hoe.				
33	Repeat the weeding at intervals.				
34	Apply contact herbicides such as paraquate at 0.5kg/ha to weed.				
35	Make a shallow hole of about 8-10cm in radius around the base of the plant and apply evenly some quantity of fertilizer.				
36	Repeat organic manure application when the vines are sprouting to ensure good rapid growth.				
37	Apply fertilizer in split does at and 12 week in area from to leaching.				
38	Practice crop rotation.				
39	Practice farm sanitation where the disease is uncontrollable.				

(D) Skills Required for the Harvesting and Storage of Yam.

S/N	ITEMS	HR	R	SR	NR

40	Check maturity through yellowing of leaves and vines.				
41	Loose the soil around mounds and ridges with a digging Instrument.				
42	Avoid bruising on the body of tubers.				
43	Pull the crop gently to avoid damage inside the mounds or ridges.				
44	Pick manually.				
45	Leave the head to produce a second tuber that will be harvested latter.				
46	Replace the soil around the head of the plant				
47	Erect a barn made of palm fronds in which the yam tubers will be tied.				
49	Tie the yam tubers lightly in the barn.				
50	Pile up the remaining yams that were not tied in a ventilated room				

(E) Skills Required for Processing of Yam.

1. Traditional method of processing yam into flour

S/N	ITEMS	HR	R	SR	NR
51	Peel the selected yam tuber.				
52	Cut yam into slices.				
53	Dry under a high temperature.				
54	Mill the dried product.				
55	Sieve to remove large yam particles.				
56	Bag and store in a cool dry place.				

II. Commercial method of processing yam into flour.

S/N	ITEMS	HR	R	SR	NR
59	Wash the tubers in water.				
60	Cut the tuber into three depending on the size				
61	Boil for about 20-25 minutes.				
62	Drain properly.				
63	Cut into slices about 2-3mm in thickness.				
64	Dry in a dryer at 60^0C until yam becomes brittle.				
65	Grind using hammer mill or pulverizer.				
66	Sieve the pulverized yam.				
67	Bag the mill flour.				
68	Store in a cool dry place.				

III. Processing of yam into flakes. (consumable state)

S/N	ITEMS	HR	R	SR	NR
69	Peel yam tubers.				

70	Wash to remove dirt.				
71	Cut/slice into small shapes				
72	Blanch in 0.1% sodium metabi sulphide minutes				
73	Drain thoroughly and boil for 30 minutes				
74	Grind and mash the yam				
75	Weight the mashed yam.				
76	Roll and cut into 1mm shape thickness				
77	Dry under sun or in the oven drier at 90^0C				
78	Allow to cool at room temperature.				
79	Pack in polythene bags.				
80	Seal the packs in cartons.				
81	Label appropriately and store in a cool dry place				

IV. Processing of yam into chips.

S/N	ITEMS	HR	R	SR	NR
82	Peel the yam.				
83	Wash the peeled with water.				
84	Soak the yam inside water for one hour.				
85	Slice the soaked yam at 1mm thick.				
86	Separate the individual slices.				
87	Mix with some quantity of salt.				
88	Deep dry the separated individual slices or oven drier at 50^0C				
89	Cool at room temperature.				

V. Processing of yam into roasted yam.

S/N	ITEMS	HR	R	SR	NR
90	Select the desired tuters of yam.				
91	Set up fire with firewood.				
92	Place the yam on fire.				
93	Turn always to avoid durning.				
94	Allow to heat for 45 minutes.				
95	Scrap out the back of the yam.				
96	Slice to desired shapes.				

VI. Processing of yam into pounded yam.

S/N	ITEMS	HR	R	SR	NR
97	Peel the yam and wash thoroughly.				
98	Slice the yam.				

99	Boil the yam for 30 minutes.				
100	Drain water from the yam.				
101	Put the yam n the mortar and pound. With piston until it becomes brittle and sticks together.				
102	Put in warmer.				

F). Skills Required for marketing of yam and yam products

S/N	ITEMS	**HR**	**R**	**SR**	**NR**
103	Advertise your products.				
104	Select the product line to enter into relation to marked yam				
105	Sort yam products into groups of uniform quality.				
106	Open inventory record book.				
107	Fix appropriate price to the products.				
108	Distribute and transport the product to buyers.				
109	Sell the products.				
110	Keep the sales record book.				