Quality Assurance and Performance Gap Assessment of Agriculture Teachers in Teaching Yam Production in Colleges of Education in Nigeria

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Abstract: *This study determines quality assurance and performance gaps of agriculture teachers in teaching yam production in Colleges of Education in Nigeria. Two research questions guided the study. Twenty-eight teachers and 46 final year students of Agriculture from two Colleges of Education were used for the study. Psycho-productive Multiple Choice Test (PMCT), Competency Cluster Structured Questionnaire Items (CCSQI) and Focus Students' Group Discussion were used for data collection. Frequency counts, percentages, mean and Improvement Need Index (INI) was employed to answer research questions. It was found that: Quality was assured in the teaching Planting; Post-planting and Harvesting Operations but Quality was not assured in teaching Planning; Pre-planting and Marketing Operations. It was also found that teachers had High Competencies in teaching Planting; Post-planting and Harvesting Operations; Low Competency in Pre-planting Operations and Very Low Competencies in teaching Planning and Harvesting Operations. Performance Gaps were observed and improvements were needed.*

Keywords: Quality Assurance; Yam Production; Performance Gap Assessment; Agriculture

Originality/ Value- This quality assurance measure and Performance Gaps is an easy way of finding out of assessing if quality is assured and the needed improvements in any educational programme. It is also a means of identifying aspects where teachers need improvements in teaching any school subject.

1. Introduction

Yam production is a component of crop production taught to students of agriculture in all Colleges of Education in Nigeria. Yam *(Discorea spp)* is an essential food item in every household in Nigeria especially in Cross River State. It is cultivated for its starchy tubers. Phillips in Olaitan, Dumbiri and Uko (2010) stated that there are many varieties of yam cultivated in Nigeria including; white yam *(D. rotundata),* yellow yam *(D. cayensis);* water yam *(D. alata);* chinese yam *(D. opposita);* bitter yam *(D. dumetorum)* among others.

Every household in Nigeria especially in Cross River State. It is cultivated for its starchy tubers. Phillips in Olaitan, Dumbiri and Uko (2010) stated that there are many varieties of yam cultivated in Nigeria including; white yam *(D. rotundata),* yellow yam *(D. cayensis);* water yam *(D. alata);* chinese yam *(D. opposita);* bitter yam *(D. dumetorum)* among others.

White yam, yellow yam and water yam are popular varieties among the farming households of Cross River State. Generally, yam is eaten roasted, boiled, fried or prepared as porridge and processed into flour for making 'fufu' (pounded yam). It can be eaten in combination with other foods such as any variety of beans; vegetable; or peas. Emiola and Delarosa (1981) pointed out that yam is nutritionally high in vitamin C, dietary fibre, vitamin B_6, potassium and manganese; and low in saturated fats and sodium. They explained that dietary fibre and vitamin B_6 promote good health while the high potassium and low sodium combination produce a good potassium-sodium balance in the human body; protect osteoporosis and heart diseases. This implies that yam has a high nutrition value. This is probably why it is perceived as 'king's food' in Nigeria.

In line with the tourism potentials of Cross River State, yam attracts great cultural importance, especially during harvest and celebration of new yam which is marked with series of festivals such as Obudu, Bekwarra, Boki, Yala, *'Bakor'* new yam festivals and the popular *'Leboku'* new yam festival which has gained national and international recognitions. In Nigeria as a whole especially in Cross River, it is expected that no true son or daughter of the land should eat yam before it is celebrated. The people, no matter the status, continue eating old yams till after the New Yam Festival. Commercially, yam is a very important product that sustains over twenty percent of the populace including farmers, traders and caterers. It is sold in all markets in Nigeria including some supermarkets. Normally, new yams cannot be sold in Nigerian markets until after the new yam festival. Traders that wish to sell new yams before the new yam

festival can only display them at the outskirts of the markets. The above discourse suggests the great importance attached to yam in Nigeria. This might have informed the decision of the National Commission for Colleges of Education (NCCE) to make yam production a compulsory subject for all students of Agriculture in Colleges of Education in Nigeria (NCCE, 2008).

The NCCE is the supervisory body for all Colleges of Education in Nigeria. Her main function is to, assure quality and determine minimum standards for producing high quality teachers for the Universal Basic Education (junior secondary and primary schools) in Nigeria. To assure quality, NCCE (2008) provided that lecturers can add to the minimum standard but not remove form it. The minimum standards also indicated that lecturers who teach students of agriculture must possess at least a Bachelor Degree in Agricultural Education or any related area of specialization in Agriculture such as Crop Science and Animal Science with a Post Graduate Diploma in Education. Lecturers are saddled with the task of imparting knowledge and skills in agricultural subjects especially yam production so that students can be proficient in teaching junior secondary and primary school children and or become entrepreneurs in private yam production. It is expected that if all primary and secondary school leavers are able to produce quality and or become yam entrepreneurs, hunger and poverty will be reduced in Nigeria.

College of Education is an institution for training middle level manpower in teacher education in Nigeria. The programme lasts for a minimum of three years; Agriculture is one of the courses offered in School of Vocational Education leading to the award of Nigerian Certificate in Education (NCE) in Vocational Education. Apparently, from the experience of the researchers, students of agriculture who graduated from colleges of education in Cross River do not seem to be interested in practicing agricultural production in general and yam production enterprise in particular. Rather they seem to prefer seeking for teaching jobs and other white collar jobs that are not readily available, instead of becoming 'job creators' in the various areas of agriculture including yam production enterprise that they learnt in school. This is probably why Adewale, Oladejo and Ogunniyi in Olaitan, Amusa and Nwobu (2010) observed that there is a decline in agricultural production in Nigeria. Considering the importance of agriculture especially yam production, it becomes imperative to investigate quality assurance mechanisms of the lecturers of agriculture in teaching yam production in Colleges of Education in Cross River State of Nigeria.

Quality Assurance (QA) is a very recent concept and practice in educational administration in Nigeria. It is a term that emanated from inspection. Due to ineffective practices of inspectors and limited conceptual coverage of inspection resulting to poor attitude of teachers towards inspection and the current and better practice of Total Quality Management (TQM), a more practical and broader term Quality Assurance, emerged. According to **Cheng (2001:1)**, the educational system worldwide are experiencing three waves of reforms due to different paradigms and theories of educational quality, giving rise to different approaches to

quality assurance in education. They are**; Internal Quality Assurance** that is concerned with internal school performances especially the aspect of pedagogy; The **Interface Quality Assurance** that deals with "organizational effectiveness, stakeholders' satisfaction and market competitiveness" for ensuring "satisfaction and accountability" and **Future Quality Assurance** concerned with relevance to the new paradigm of "multiple intelligences (CMI), globalization, localization and individualization" in education. Although the latest adds value to educational system, this study has to do with the first which is basically concerned with teachers' pedagogy and their performances in terms of their competencies in assuring quality in their service delivery.

Quality Assurance entails the ability of the educational system and stakeholders, including educational administrators and teachers to assure high quality education. It is also perceived as a system of measurement. It compares standards; monitors processes and progresses. Most importantly it ensures error prevention. Adebayo (2009) has argued that QA implies measuring, improving and maintaining the quality of any human activity that has value such as education or business. He maintains that it deals with the issue of educational input and output and can be measured through quality inputs, process and output of educational institutions that produce competent workforce. This study is interested in the process aspect. It identified the areas where lecturers lack competencies or their Performance Gaps in teaching yam production. The NCCE guideline for teaching yam production in colleges of education provides that the following aspects must be taught to students, they are; planning operations; pre-planting operations; planting operations; post planting operations; harvesting operations and marketing operations. This is to enable students have all necessary skills needed for teaching yam production and owning a commercial yam enterprise.

Considering the importance of yam production reducing hunger and poverty in Nigeria, this study tried to find out if Quality was assured by agriculture teachers in the teaching of yam production, in Colleges of Education in Cross River State of Nigeria. This was done by indentifying their Competencies and comparing them with Expected Performance (QA) to the find the Performance Gaps and the Performance Index (PI) of the lecturers teaching yam production. Since QA experts agree that quality suitability is determined by the product users such as students and lecturers and not by the general public, (en.wikipedia.org/wiki/Quality Assurance), this study employed the use of students and lecturers in determining the Performance Index (PI) of lecturers in teaching yam production enterprise in line with the tenets of Vocational and Entrepreneurial Education.

1.1 Statement of the Problem:

Agriculture is an important course taught in the School of Vocational Education in Colleges of Education for the production NCE novice teachers for the UBE programme in Nigeria. Due to the importance of yam as a basic staple food in the country and for its entrepreneurial opportunities, yam production was made compulsory to all students of Agriculture in the colleges of Education so that the graduates will not only

be able to teach the subject effectively, but also practice yam production business as entrepreneurs. Despite this effort, it appears that the objective of teaching yam production is yet to be achieved. This is because yam which used to be the king food in Nigeria is fast disappearing from the dining tables of Nigerians and is being replaced by alternatives such as semolina, vita rice and wheat flour. This poses a challenge to yam crop producers and suggests entropy for yam production in Nigeria. This is probably the reason many NCE graduates of agriculture and vocational education seem to prefer white collar jobs instead of taking up yam production enterprises and becoming entrepreneurs in yam production business.

The questions is who is responsible for this and how can the situation be resolved. Accusing fingers seem to be pointing to the lecturers, since the NCCE has provided a minimum standard which has to be followed. It then becomes necessary to investigate the QA mechanisms of lecturers in teaching yam production in Colleges of education to identify their Performance Gaps.

1.2 Purpose of Study and Research Questions

The purpose of this study is to investigate Quality Assurance and the Performance Gaps of agriculture teachers in teaching yam production to students in Colleges of Education in Cross River State, Nigeria. Specifically four research questions guided the study as follows:

1.3.1. In what aspects of teaching of yam production to students do teachers have and lack competencies and in which aspects are Quality Assured by the agriculture teachers?

1.3.2. In what aspects are there Performance Gaps in teaching planting and post planning and pre-planting operations of yam production and where are improvements needed?

1.3.3. In what aspects are there Performance Gaps in teaching planting and post planting operations of yam production and where are improvements needed?

1.3.4. In what aspects are there Performance Gaps in teaching harvesting and marketing operations of yam production and where are improvements needed?

2. Literature Survey

Quality in education according to Olusola (2008) entails excellence, standard, appropriateness and real value. According to Shuaibu and Ejenavi (2007), quality of teaching is a function of teacher's qualification, teaching environment and facilities, the school population and the effectiveness of the quality control mechanism. In the context of this study, quality assurance entails excellence, appropriateness and provision of enabling environment for teachers of agriculture in colleges of education to teach yam production to students with maximum understanding. This could be done through the assessment of their performance in teaching yam production in Colleges of Education in Cross River State, Nigeria. Okorie (2000) noted that assessment is a form of evaluation that uses collected data for estimating the worth, quality or effectiveness of a programme or project.

Assessment therefore, is a process of determining the efficacy and performance of teachers of agriculture in teaching yam production to students in Colleges of Education. Olaitan et al (2010) averred that assessment of agricultural programme should include parameters such as mastery of technical information; acquisition of specific skills; quality of performance as a result of manipulation of resources on the job; level of adaptation or creativity to cope with new challenges in the place of work; provision of knowledge of results and knowledge of change or improvement required. Onocha (2002) explained that there is need for quality learners, quality teachers, quality context, quality teaching, quality learning environment and quality outcomes to ensure quality assurance in education. Okorie (2000) writing on changes and impacts of technology recommended retraining of working personnel to keep them abreast with contemporary practices in their areas of specialization. It becomes very imperative to assess the level of quality assurance of teachers of agriculture in Colleges of Education in the state so as to ascertain the dimension of improvement required based on the performance gap.

3. Methods/Approach

A descriptive survey research design was adopted for the study. The study was carried out in Cross River State, Nigeria. The population for the study comprised 60 respondents including 28 agriculture teachers and 32 final year agriculture students from Federal College of Education, Obudu and College of Education Akamkpa. There was no sampling as the number of respondents were small and of a manageable size. Three instruments were used for the study- A 20-item Psycho-productive Multiple Choice Test (PMCT) in yam production for determining the Quality Assurance modality of the teachers; a 46-Competency Cluster Structured Questionnaire Items (CCSQI) for identifying areas where the agriculture teachers required improvements and a Focus Group Discussion Guide used that elicited information from students on aspects of the course where they believe quality was assured and where they think their teachers have or lack competencies. The questionnaires have two response patterns- Needed and Performance respectively. The Needed pattern has a 4- point response option of Highly Needed, Averagely Needed, Slightly Needed and Not Needed with respective weights of 4, 3, 2 and 1 while the Performance category had response options of High performance, Average performance, Low performance and No performance with respective values of 4, 3, 2 and 1 respectively. The Focus Group Discussion Guide has four areas that captured the four research questions.

The instruments were face validated by three experts, one in Agriculture, from the department of Vocational and Special Education (Agricultural Education Unit), and one in Crop Science from the department of Crop Science, both from University of Calabar and the other in Quality Assurance from and Administration and Planning unit of the department of Educational Foundations, University of Nigeria Nsukka. For the reliability, split half reliability technique was adopted to determine the internal consistency of the first instrument and Cronbach Alpha reliability coefficient was used for the second and third instruments which yielded a coefficient reliability

indices of 0.89 and 0.78 for the Psycho-productive Multiple Choice Test items and the Focus guide respectively, while Pearson Product Moment Correlation coefficient was used to obtain the reliability of the CCSQI and a coefficient reliability of 0.83 was obtained. Twenty eight copies of the 20-item PCMT were administered on the teachers of agriculture by the researchers and their three research assistants on a one to one basis in their offices. After an interval of one month, 28 copies of the 46- CCSQI were administered on the same respondents after an interval of one month with duration of three days for completion and return of the questionnaire. All copies of questionnaire administered were retrieved intact due to that help of the research assistants who are internal members of staff of the Colleges. Frequency counts and percentages were used for the Psycho-productive Multiple Choice Test items to determine Quality Assurance of teachers; while the Improvement Needed Index (INI) was used for the CCSQI in order to identify areas where teachers of agriculture require improvements (Competency Gaps in teaching yam production to students. Quantitative analysis was used for data collected by the Focus Group Discussion Guide.

In arriving at decisions on the aspects where Quality was assured; Competence Gaps of the teachers and aspects where improvements were needed, the following were used; scores above 50% imply High Competency (HC); 50% to 40% indicates Average Competency (AC); 39% to 30% means Low Competency (LC); and below 30% was interpreted to mean Very low Competency (VLC) or Not Competent. Quality was interpreted to be ASSURED where the teachers have 50% and above competency. Quality was perceived as NOT ASSURED where there is lack of competency, (49% and below).

An Improvement Needed Index (INI) was used in taking decision on areas where improvement was needed. The weighted mean needed for each aspect was represented by ($\overline{X}$ N) while the weighted mean performance of respondents for each aspect was represented by ($\overline{X}$ P). The difference between the two Means, that is ($\overline{X}$ N- $\overline{X}$ P) was determined to indicate Performance Gap (PG) which could yield a zero (0), negative (-ve) or positive (+ve) values. A zero (0) value indicates that Improvement was not needed since the level at which the teachers performed was equal was to the level that was required, hence zero value differentia. A negative (-ve) value differentia implies that there was no need for improvement because the level at which the teachers performed was higher than what was needed. A positive (+ve) value differentia indicates that Improvement was needed since the level at which the teachers performed was lower than what was needed.

4. Results/ Discussion

The results for the study are presented in four tables as follows:

Research Question 1: In what aspects of teaching of yam production to students do teachers have and lack competencies and in what aspects are Quality Assured?

4.1 Table 1
Frequency counts and Percentage Scores of Agriculture Teachers on their Competencies (N=28)

Key: LC=Low Competence; HC=High Competence; AC=Average Competence QNA= Quality Not Assured; QA=Quality Assured

Table 1 shows the Quality Assurance/ Competency Levels of the teachers in teaching yam production. The table reveals that the teachers had High Competencies in teaching planting and post-planting and harvesting operations with 50%; 64% and 68% scores respectively indicating that Quality was Assured (QA) in these aspects. The teachers had average competency in pre-planting operation with a 43% score. The table shows that Quality was also Assured (QA) in this area. According to the tam operations, showing that Quality was Not Assured (QNA The overall score shows the percentage score of the teachers in the six major clusters of yam production with a 51% score indicating High Competency and that Quality was Assured (QA) in teaching yam production to the students.

Research Question 2: In what aspects of teaching Planning and Pre-planting Operations of yam productions are there Performance Gaps and where are Improvements Needed?

4.2 Table 2: Performance Gap Analysis & the Mean Ratings of the Perceived Improvements needed (IN) by teachers in teaching Planning and Pre-planting Operations of Yam production (N=28).

SN	Item Statements	$\overline{X}_N$	X_P	PG	Remarks
A)	Planning for yam production enterprise				
1	Formulate specific objectives for the enterprise	3.72	1.73	1.99	IN
2	Revise the objectives periodically	3.22	1.63	1.59	"
3	Make a budget for the enterprise	3.8	1.99	1.81	"
4	Identify sources of finance for the yam enterprise	3.63	2	1.63	"
5	Identify materials and equipment for the enterprise	3.53	2.92	0.61	"
6	Draw a schedule of activities for the enterprise	3.66	2.1	1.56	"
7	Identify personnel for the enterprise	3.26	1.98	1.28	"
8	Select suitable land for the enterprise	3.01	2.06	0.95	"
9	Do a soil analysis test for suitability of the land	3.33	2.77	0.56	"
10	Select tools for farm land	2.86	1.31	1.55	"
11	Prepare selected tools for farm work	3.57	2.23	1.34	"
B)	Pre-planting operations for yam production				
12	Clear the farm land for yam production	2.82	3.33	-0.51	INN
13	Pack dry weeds from the farm land	2.55	3	-0.45	"
14	Till the soil with appropriate tools.	3.74	3.02	0.72	IN
15	Fumigate the soil with appropriate fungicide before planting.				
16	Make ridges to specification	3.43	2.98	0.45	"
		3.22	3.33	-0.11	INN

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Key: $\overline{X}$ N = Mean of Competencies Needed; $\overline{X}$ P= Mean of Teachers' Performance in the Competencies; PG= Performance Gap; IN=Improvement Needed; INN=. Improvement Not Needed.

Table 2 reveals that the Performance Gap (PG) of the teachers in teaching Planning shows that **Improvements were Needed (IN)** in teaching all the eleven aspects (**Formulating specific objectives for the enterprise; Revising the objectives periodically; Making a budget for the enterprise; Identifying sources of finance for the yam enterprise; Identifying materials and equipment for the enterprise; Drawing a schedule of activities for the enterprise; Identifying personnel for the enterprise; Selecting suitable land for the enterprise; Doing a soil analysis test for suitability of the land; Selecting tools for farm land and Preparing selected tools for farm work**) of teaching **Planning yam Production**, as they had positive value differentia in all the items. In teaching **Pre-Planting Operations** of yam production, the table shows that teachers Needed Improvements (IN) in teaching two aspects (**Tilling the soil with appropriate tools and Packing dry weeds from the farm land**) with positive value differentia while Improvements were Not Needed (INN) in teaching three aspects (**Clearing the farm land for yam production; Fumigating the soil with appropriate fungicide before planting and Making ridges to specifications** with negative value differentia

Research Question 3: In what aspects are there Performance Gaps in teaching planting and post planting operations of yam production and where are improvements needed?

4.3. Table 3: Performance Gap Analysis & Mean Ratings of the Perceived Improvements needed (IN) of Teachers in Teaching Planting and Post-planting Operations of Yam Production (N=28)

SN	Item Statements	$\overline{X}_N$	$\overline{X}_P$	PG	Remarks
	Planting operations for yam production				
1	Select appropriate seedlings for planting	3.34	2.73	0.61	IN
2	Treat seedlings with appropriate chemicals	3.57	2	1.57	"
3	Secure seedlings against physical damage	3.75	2.43	1.32	"
4	Treat the face of the seedlings with appropriate fungicides	3.62	2.65	0.97	"
5	Plant yam to coincide with rainfall stability.	3.55	3.65	-0.1	INN
6	Prepare ridges of 1.2m width and 20m long	3	2.88	0.12	IN
7	Plant yam to maintain 1mx1m spacing	3.26	3.26	0	INN
	Post-Planting operations for yam production				
8	Replace seedlings that failed to germinate.	3.82	3.22	0.6	IN
9	Spread mulch of 5-10cm layer to retain moisture	3.32	2.32	1	"
10	Weed the farm at regular intervals	2.97	2.33	0.64	"
11	Practice irrigation techniques according to demands	3.73	3.43	0.3	"
12	Drain soil water when occasion demands	2.77	1.61	1.16	"
13	Apply organic or inorganic manure to specification	2.55	2	0.55	"
14	Spray insecticides to check insect pests	3.74	1.42	2.32	"
15	Control rodents in the farm by trapping	3.47	2.33	1.14	"
16	.Earthen up ridges according to demands	3.61	1.66	1.95	"

Key: $\overline{X}$ N = Mean of Competencies Needed; $\overline{X}$ P= Mean of Teachers' performance in the Competencies; PG= Performance Gap; IN=Improvement Needed; INN= Improvement Not Needed and N= Number of respondents.

Result in table 3 indicates that PG of the teachers in five out of seven aspects of planting Operations have positive values. This reveals that the teachers needed improvements in those aspects. The PG value for item seven was zero (0) showing that Improvement was Needed (IN) while that of item 5 recorded a negative value of -0.10 indicating that teachers of agriculture do Not Need Improvement (INN) in teaching those aspects. In general, the result showed that teachers Needed Improvement in most aspects (*Selecting appropriate seedlings for planting; Treating seedlings with appropriate chemicals; Treating seedlings with appropriate fungicides; Planting yam to coincide with rainfall stability; Preparing ridges of 1.2mand 20m long; Planting yam to maintain 1mx1m spacing; Selecting appropriate seedlings for planting; Treating seedlings with appropriate chemicals; Securing seedlings against physical damage; Treating the face of the seedlings with appropriate fungi; Preparing ridges of 1.2m width and 20m long*) of teaching **Planting Operations and** all aspects of (*Replacing seedlings that failed to germinate; Spreading mulch of 5-10cm layer to retain moisture; Weeding the farm at regular intervals; Practicing irrigation techniques according to demands; Draining soil water when occasion demands; Appling organic or inorganic manure to specification ; Spraying insecticides to check insect pests; Controlling rodents in the farm by trapping chemicals; Securing seedlings against physical damage; Earthen up ridges according to demands*) teaching Post Planting Operations of yam production

Research Question 4: In what aspects are there Performance Gaps in teaching Harvesting and Marketing Operations of yam production and where are improvements needed?

4.4 Table 4: Performance Gaps Analysis & Mean Ratings of Perceived Improvements needed (IN) of the Teachers Teaching Harvesting and Marketing Operations of Yam production (N=28)

SN	Item Statements	$\overline{X}_N$	$\overline{X}_P$	PG	Remarks
1	**Harvesting Operations**				
2	Select appropriate tools for harvesting of yam	3.34	2.11	1.23	IN
3	Harvest yam tubers when they are fully matured	3.45	2.8	0.65	"
4	Dig round the ridge to view the position of the tuber	3.78	2.82	0.96	"

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5	Pull out mature yam tuber gently to avoid physical damage	2.99	3.32	-0.3	INN
6	Pack harvested tubers together without bruising them	3.09	3.09	0	"
7	Arrange harvested tubers according to sizes	3.71	2.65	1.06	IN
	Store harvested tubers in barns	3.22	3.11	0.11	"
Marketing Operations					
8	Advertise yam tubers to attract customers	3.44	1.47	1.97	"
9	Grade yam tubers and determine the prices	2.87	1.28	1.59	"
10	Open a sales book for sales made.	3.04	2.02	1.02	"
12	Select buyers based on yam tuber size of their choice	3.22	2.11	1.11	"
13	Arrange for distribution of yam tubers to buyers	3.02	1.62	1.4	"
14	Balance farm account at the end of farming season to determine profit				
	Expand the size of yam farm based on profit made	3.82	2.51	1.31	"
15		3.55	2.11	1.44	"

Key: $\overline{X}$ **N = Mean of Competencies Needed;** $\overline{X}$ **P= Mean of Teachers' performance in the Competencies; PG= Performance Gap; IN=Improvement Needed; INN= Improvement Not Needed and N= Number of respondents.**

Table 4 indicates the PG and the needed areas of Improvements needed by the teachers in teaching Harvesting and Marketing Operations of Yam production. There are PG in five out of seven aspects of Harvesting Operations **(Selecting appropriate tools for harvesting of yam; Harvest yam tubers when they are fully matured; Digging round the ridge to view the position of the tuber; Arranging harvested tubers according to sizes and Storing harvested tubers in barns)** with positive values. The table reveals that the teachers Needed Improvements (IN) in those aspects. The PG value of the other two aspects **(Pulling out mature yam tuber gently to avoid physical damage; Packing harvested tubers together without bruising them)** have zero (0) and negative values respectively showing that Improvements were Needed (INN) in those aspects of teaching Harvesting Operations of Yam production. The table also shows that the PG value of all aspects of Marketing Operations have negative values indicating that the teachers Need Improvement (IN) in teaching all aspects of **(Advertising yam tubers to attract customers; Grading yam tubers and determine the prices; Opening a sales book for sales made; Selecting buyers based on yam tuber size of their choice; Arranging for distribution of yam tubers to buyers; Balancing farm account at the end of farming season to determine profit; Expanding the size of yam farm based on profit made).**

4.5 Result of the Focus Group Discussion

4.6 Summary of Findings

1) It was found that **Quality was Assured** in Planting; Pre-planting; Post-planting and Harvesting Operations aspects of teaching yam production; but **Quality was Not Assured** in Planning Activities; Pre-planting and Marketing Operations**.** It was also found that **Quality was Assured in the overall teaching of yam production** in the Colleges.
2) The teachers have **High Competencies** in teaching Planting; Post-planting and Harvesting Operations; **Average Competency** in teaching Pre-planting Operations and **Low Competency** in teaching Marketing. According to the table there is a **High Competency** in the Overall teaching of yam production operations.
3) **In teaching Planning Activities** of yam production enterprise **Performance Gaps were observed** and **Improvements were Needed** in;
   - Formulating specific objectives for the enterprise;
   - Revision of the objectives periodically;
   - Making budget for the enterprise;
   - Identifying sources of finance for the yam enterprise;
   - Identifying materials and equipment for the enterprise;
   - Drawing a schedule of activities for the enterprise;
   - Identifying personnel for the enterprise;
   - Selecting suitable land for the enterprise;
   - Doing a soil analysis test for suitability of the land;
   - Selecting tools for farm land;
   - Preparing selected tools for farm work.
4) In teaching Pre-planting operations of yam production Performance Gaps were observed and Improvements were Needed (IN) in:
   - Clearing of the farm land for yam production;
   - Packing dry weeds from the farm land and
   - Making ridges to specification
   No Performance Gaps were found and **Improvements were Not Needed (INN) in:**
   - Tilling of the soil with appropriate tools and
   - Fumigating of the soil with appropriate fungicide before planting.
5) In teaching **Planting Operations of yam production Performance Gaps were found and Improvement were Needed (IN)** in:
   - Selecting appropriate seedlings for planting;
   - Treating seedlings with appropriate chemicals;
   - Securing seedlings against physical damage;
   - Planting yam to coincide with rainfall stability;
   - Preparing ridges of 1.2m width and 20m long
   No Performance Gaps were found and Improvement was Needed (INN) in:
   - Plant yam to coincide with rainfall stability.
   - Plant yam to maintain 1mx1m spacing.
6) **In teaching Post-Planting Operations of yam production, Performance Gaps were found in all aspects and Improvements Needed (IN)** in:
   - Replacing seedlings that failed to germinate;
   - Spreading mulch of 5-10cm layer to retain moisture;
   - Weeding the farm at regular intervals;
   - Practicing irrigation techniques according to demands;

- Draining soil water when occasion demands;
- Applying organic or inorganic manure to specification;
- Spraying insecticides to check insect pests;
- Controlling rodents in the farm by trapping;
- Heartening up ridges according to demands;

7) In teaching **Harvesting Operations of Yam production, Performance Gaps were found in the following aspects and Improvements were needed (IN) in:**
- Selecting appropriate tools for harvesting of yam;
- Harvesting yam tubers when they are fully matured;
- Digging round the ridge to view the position of the tuber;
- Arranging harvested tubers according to sizes;
- Storing harvested tubers in barns WHILE;

Performance Gaps were **NOT** found and **No Improvement Needed (INN)** in;
- Pulling out mature yam tuber gently to avoid physical damage;
- Packing harvested tubers together without bruising them.
- In teaching **Marketing Operations** in yam production Performance Gaps were found and Improvements

Needed (IN) in all aspect of;
- Advertising yam tubers to attract customers;
- Grading yam tubers and determine the prices;
- Opening a sales book for sales made;
- Selecting buyers based on yam tuber size of their choice;
- Arranging for distribution of yam tubers to buyers;
- Balancing farm account at the end of farming season to determine profit;
- Expanding the size of yam farm based on profit made.

5. Discussion of Results

The results of this study revealed that Quality was Assured in teaching yam production by teachers of agriculture in Colleges of Education in Cross River State, Nigeria. This is probably because the teachers are competent in teaching most aspects of yam production except Marketing Operations where they have low competency. However they needed improvement (IN) in teaching most aspects of yam production enterprise due to lack of Performance Gaps. This result conforms with the findings of Olaitan, Amusa and Nwobu (2010) that carried out a study on quality assurance of instructors in teaching cocoyam production to students in Schools of Agriculture in South-western Nigeria. The authors found out that quality assurance of the instructors was average and that the instructors needed improvement in planning, post-planting, harvesting and marketing operations of cocoyam and needed competency in teaching cocoyam production to students. The result of this study is also in partial agreement with the findings of the study conducted by Dibio (2008) on requisite skills required by teachers of agriculture for improving the teaching of yam production in pre-planting operations, planting operations, processing and storage operations. The author identified the skills required at each stage of the operations in yam production but did not assess the competency levels of the teachers in these skill areas. The results of this study further agree with the findings of the study conducted by Alawa, Abanyam and Okeme (2010) on competency improvement needs of teachers of Agriculture in a forestation for effective teaching in Secondary Schools in Cross River State, Nigeria where found out that teachers needed improvement in nursery, pre-planting, planting and post planting operations in a forestation to be effective in teaching the students. The result also agrees with the submission of Ogwo and Oranu (2006) that teachers must be continuous learners through improvement. The finding of Lack of Quality Assurance in teaching Marketing Operations is not very surprising as most teachers seem to emphasize the pedagogical aspects of the course at the expense of the technological and entrepreneurial aspects. This implies that teachers of agriculture must be retrained to ensure their effectiveness teaching all aspects of yam production. It is therefore not surprising that students seem to shy away from the practical aspects of agriculture thereby avoiding becoming professional crop producers but tend to prefer seeking for paid employment instead.

6. Conclusion

Although was found that Quality was Assured and the teachers have competencies in teaching yam production to College of Education students, improvements were needed in most aspects of the operation. It was therefore recommended that the Performance Gaps and Improvements Needed (IN) identified by this study be packaged and used to retrain teachers of Agriculture in order to make them meet the training needs of their students and adequately motivate their interest in the farming profession in addition to teaching junior secondary school students and primary school pupils thus, justifying the inclusion of agricultural education as an area of study in vocational education.

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