



OCCUPATIONAL COMPETENCIES REQUIRED BY PRISONERS IN SUGAR CANE PRODUCTION FOR SUSTAINABLE LIVING AFTER SERVING IN ENUGU STATE, NIGERIA

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ABSTRACT

The purpose of this study was to identify occupational competencies required by prisoners in sugar cane production for sustainable living after serving in Enugu State, Nigeria. Three research questions and hypothesis guided the study. The study made use of survey research design. It was carried out in Enugu State. The population for the study was 516 consisting of 484 teachers of agriculture and 32 agricultural extension agents. The entire population was involved in the study. The instrument used for data collection was a 30- competency structured questionnaire which was face validated by three experts. Split half technique and Pearson Product Moment Correlation method were adopted to determine the internal consistency of the instrument. A reliability coefficient of 0.83 was obtained. Five hundred and sixteen copies of the questionnaire were administered to the respondents with the help of six research assistants. Five hundred and nine copies of the questionnaire were retrieved and analyzed using weighted mean and standard deviation while the hypotheses were tested using t- test statistics. It was found out that all the 30 occupational competencies identified in sugar cane production were required by prisoners. It was also found out from the hypothesis tested that there is no significant difference in the mean responses of teachers of agriculture and extension agents on the 30 occupational competencies in sugar cane production. The study therefore, recommended that the thirty (30) identified occupational competencies be packaged into a programme and used for training of prisoners in sugar cane production in Enugu State.

KEYWORDS: population study, agriculture extension, sugarcane production, prisoners etc.

INTRODUCTION

Sugar cane, *Saccharum* is a perennial vegetable and industrial crop. FAO (2010) recorded that sugar cane belongs to a grass-family known as Gramineae. It is a native to warm temperature and tropical regions of Asia. The author described that sugar cane has stout, jointed, fibrous stalk and measure two to six meters tall. Wikipedia (2011) put that there are many cultivars of sugar cane available to the cane farmers, usually hybrids of several species. Some of the cultivars, according to the author include *Saccharum officinarum*, *S.spontaneum*, *S.barberi* and *S.sinense*. Rosa (2005) noted that the main content of sugar cane is sugar. It yields the highest number of calories of sugar per unit area of any plant. The author observed that, today, sugar cane has many industrial uses and is one of the most widely and cheapest domestic products. Yoconbou and Jeanne (2007) submitted that about 70% of the world sugar is derived from sugar cane while the remaining 30% is derived from sugar beet. In Nigeria, Ministry of Agriculture, Sokoto State (2011) submitted that sugar cane is cultivated for its stems. The Ministry stated that sugar cane is already produced on a small scale basis in many areas of Sokoto State, North West Nigeria. The ministry added that the government of the state is however promoting the commercial cultivation and processing of sugar cane to boost local economy. In

Enugu State, sugar cane can be grown by ex-prisoners for its uses.

Prison, in the submission of Della (2005) is a secured place where somebody is confined as punishment for a crime committed or while waiting to stand trial. Encarta (2009) explained a prisoner as a person deprived of liberty and kept under involuntary confinement or customary especially one on trial or in prison. Prisoners, in the context of this study, are individuals involuntarily confined in prisons as punishment for crimes committed or while awaiting trial. In Enugu state, there are many prisoners; the number of years spent by each of them in prison depends on the gravity of the offence committed as may be stipulated by law court. After the expiry of their tenure in prisons, they are freed to go back to the society as ex prisoners. In the area of the study, the researchers observed that most ex-prisoners do not possess competency on any occupation before imprisonment, and that was even one of the major contributors of their committing crimes. It was also observed by the researchers that a few that had competencies in certain occupations lost them while serving in prison for lack of practice. As a result, most of the ex-prisoners become brutal and commit worse crimes than the ones that led them into prisons. They do this in gasping to sustain their living and cope with their colleagues who could have amassed wealth, built houses and bought cars while they were serving in the

prison. To ameliorate this ugly situation for the ex-prisoners, the prisoners could be trained in sugar cane production.

In area of the study, sugar cane consumed by individuals especially students are imported from northern states of the country such as Sokoto. This is evidenced by the report of FAO (2010) that Sokoto State is the largest sugar cane producing state in Nigeria. Also, a pilot study conducted by the researchers indicated that about 13 to 18 Lorries of sugar cane come into Enugu State every week. This indicates that sugar cane has market in Enugu State and ex-prisoners cannot experience loss if they acquired the required competencies while in prison and embark on the production after serving. Besides, a focused interaction with agricultural extension agents in Enugu State revealed that sugar cane thrives well in the State. They confirmed that though there is no known (registered) sugar cane plantation in the State, but stands of sugar in certain household farms show good yield of it. Furthermore, a visit by the researchers to skill acquisition centres in the study area proved that there is no existing training package in sugar cane production. Base of the observations and findings of the researchers, there is a wide gap between the rate of sugar cane demand and supply in the market, hence, makes it necessary to identify occupational competencies in sugar cane production. Therefore, the purpose of the study was to identify occupational competencies required by prisoners in sugar cane production for sustainable living after serving in Enugu State. Specifically the study sought to identify occupational competencies in establishment of a sugar cane farm, management of a sugar cane farm and harvest and marketing of sugar cane.

METHODOLOGY

Three research questions guided the study. A survey research design was adopted for the study. Nworgu (2006) explained that a survey research design is one in which a group of people or items is studied by collecting data through interview or questionnaire and analyzing them. Therefore, the questionnaire was used to collect data for this study. The study was carried out in Enugu State- made up of three agriculture zones: Awgu, Enugu and Nsukka. The population for the study was 516 consisting of 484 teachers of Agriculture and 32 agricultural extension

agents. There was no sampling for the study due to the manageable size of the population; therefore, the entire population was involved in the study.

A 30 competency cluster item questionnaire was developed from literature reviewed and used for data collection. The questionnaire had a four-point response option of highly required (HR), averagely required (AR), slightly required (SR) and not required (NR) with a corresponding value of 4, 3, 2 and 1 respectively. Three experts face validated the instrument; two from the department of Vocational Teacher Education (Agriculture) and one from the department of crop science, University of Nigeria, Nsukka. Their corrections and suggestions were used to produce the final copy of the questionnaire. Split half technique and Pearson product moment correlation method were adopted to determine the internal consistency of the instrument. A reliability coefficient of 0.83 was obtained. Six research assistants who were familiar with the area of the study were hired and given orientation on how to administer the questionnaire to the respondents. Five hundred and sixteen copies of the questionnaire were administered to the respondents; five hundred and nine copies were retrieved and analyzed.

Weighted mean was used to answer the research questions. A mean of 2.50 was used for decision making. Any item with mean ratings of 2.50 or above was regarded as a competency item that is required while any competency item with a mean less than 2.50 was regarded as not required. Also, any item with a standard deviation of 1.96 or below revealed that the respondents were close to the mean and not too far from one another in their responses.

RESULTS

The results for the study were obtained from the research questions answered and hypothesis tested through data collected and analyzed.

Research Question 1

What are the occupational competencies required by prisoners for establishment of a sugar cane farm in Enugu State?

Hypothesis 1

There is no significant difference in the mean ratings of the responses of teachers of agriculture and extension agents on occupational competencies required by prisoners for establishment of a sugar cane farm in Enugu State. The data for answering research question 1 and testing hypothesis 1 were presented in table 1.

TABLE 1: Mean ratings and t- test Analysis of the Responses of the teachers of agriculture and extension agents on competencies required by prisoners for establishment of a sugar cane farm in Enugu State. (N: 509)

S/N	Establishment of Sugar cane farm	X	SD	t-cal	t-tab	Remark RQ	HO
1.	Plan for establishment by identifying resources required, making budget, and drawing activities schedule.	3.67	0.52	1.36	1.96	Rq	NS
2.	Organize the resources and source fund for the budget.	3.45	0.71	1.40	1.96	Rq	NS
3.	Acquire a fertile land for the farm establishment.	3.57	0.55	0.79	1.96	Rq	NS
4.	Survey the land to establish boundaries.	2.94	0.71	0.45	1.96	Rq	NS
5.	Prepare the farm land by clearing existing	3.43	0.65	0.97	1.96	Rq	NS

	vegetation and stumping of trees.						
6.	Till the soil to specification to facilitate rooting.	3.31	0.78	1.23	1.96	Rq	NS
7.	Demarcate the land with pegs into plots	2.73	0.85	0.50	1.96	Rq	NS
8.	Select healthy sugar cane stems for planting.	3.45	0.71	1.41	1.96	Rq	NS
9.	Cut selected stem 5-10 cm with at least two buds.	3.28	0.77	1.17	1.96	Rq	NS
10.	Sow sugar cane stem 4-8 cm into the soil.	3.61	0.72	1.6	1.96	Rq	NS

Note: X = mean, SD = standard deviation, RQ = Research Question, HO = Null hypothesis, N = number of respondents, Rq=Required, NS=Not Significant.

Data in table 1 showed that the 10 competency items had their mean values ranged from 2.73 to 3.67, indicating that their mean values were above the cut off point of 2.50. The implication of this is that all the 10 items were required by prisoners for establishment of a sugar cane farm after serving in Enugu State. The standard deviation values ranged from 0.52 to 0.85, indicating that the respondents were not too far from the mean and close to one another in their responses.

Data presented in table 1 also revealed that 10 items had their calculated t-values ranged from 0.50 to 1.41 which were less than t-table value of 1.96 at 0.05 levels of significance and 507 degree of freedom. This indicated that there is no significant difference in the mean ratings

of the responses of the groups of respondents on 10 competency items that could be used to establish a sugar cane production farm. Therefore, the null hypothesis of no significant difference was upheld for the 10 items.

Research Question 2

What are the occupational competencies required by prisoners for management of a sugar cane farm in Enugu State.

Hypothesis 2

There is no significant difference in the mean ratings of the responses of teachers of agriculture and extension agents on occupation competencies required by prisoners for management of a sugar cane farm in Enugu State.

The data for answering research question 2 and testing hypothesis 2 were presented in table 2.

TABLE 2: Mean ratings and t-test analysis of the responses of the teachers of agriculture and extension agents on occupational competencies required by prisoners for management of a sugar cane farm in Enugu State (N: 509)

S/N	Management of a sugar cane farm	X	SD	t-cal	t-tab	Remark RQ	HO
1.	Apply water to the farm during drought or dry season.	3.83	0.12	1.31	1.96	Rq	NS
2.	Apply organic manure at the rate of 150k-250kg/ha after planting or harvest.	3.01	0.21	0.43	1.96	Rq	NS
3.	Weed the farm regularly depending on the rate at which weeds grow.	3.96	0.17	1.04	1.96	Rq	NS
4.	Control pests and diseases through appropriate method.	3.90	0.23	0.17	1.96	Rq	NS
5.	Reduce sugar cane cluster to 2-3 stem per stand.	3.27	0.75	1.13	1.96	Rq	NS
6.	Cut sugar cane for transplanting when the stem is vigorous (4-6months).	3.39	0.64	1.07	1.96	Rq	NS
7.	Provide security especially between the ages of 8 to 12 months of planting.	3.33	0.72	1.09	1.96	Rq	NS
8.	Allow ratoons to re-grow on stumps for 5-10 times.	3.40	0.59	1.62	1.96	Rq	NS
9.	Replace sugar cane stumps when subsequent yield decreases.	3.52	0.63	1.20	1.96	Rq	NS

Note: X = mean, SD = standard deviation, RQ = Research Question, HO = Null hypothesis, N = number of respondents, Rq=Required, NS=Not Significant.

Data in table 2 revealed that 9 competency items had their mean values ranged from 3.01 to 3.90, indicating that their means values were above the cutoff point of 2.50. The implication of this is that all the 9 items were required by prisoners for management of a sugar cane farm in Enugu State. The standard deviation values ranged from 0.12 to 0.75, indicating that respondents were not too far from the mean and close to one another in their responses.

Data presented in table 2 also revealed that 9 items had their calculated t-values ranged from 0.43 to 1.62 which were less than t-table value of 1.96 at 0.05 levels of significance and 507 degree of freedom. This indicated that there is no significant difference in the mean ratings of the responses of the groups of respondents on 9 items required for management of sugar cane farm in Enugu State. Therefore, the null hypothesis of no significant difference was upheld for the 9 items.

Research Question 3

What are the occupational competencies required by prisoners for harvest and marketing of sugar cane in Enugu State?

Hypothesis 3 There is no significant difference in the mean ratings of the responses of teachers of agriculture

and extension agents on occupational competencies required by prisoners for harvest and marketing of sugar cane in Enugu state.

The data for answering research question 3 and testing hypothesis 3 were presented in table 3.

TABLE 3: Mean ratings and t-test analysis of the responses of the teachers of agriculture and extension agents on occupational competencies required by prisoners for harvest and marketing of sugar cane in Enugu State (N: 509)

S/N	Harvest and marketing of sugar cane	X	SD	t-cal	t-tab	Remark RQ	HO
1.	Cut sugar cane stem close to the ground at 12-14 months for eating or planting	3.34	0.77	0.97	1.96	Rq	NS
2.	Trim the leaves on the stem to the top to delay spoilage/decay	3.29	0.71	0.12	1.96	Rq	NS
3.	Store it in a cool dry place.	2.83	0.66	0.51	1.96	Rq	NS
4.	Bundle the stems in to carryable sizes.	3.50	0.59	0.95	1.96	Rq	NS
5.	Transport bundled stem to market for sale.	3.42	0.61	0.41	1.96	Rq	NS
6.	Sort bundles into grades/sizes.	2.64	0.95	0.31	1.96	Rq	NS
7.	Fix prices for each grade.	3.63	0.65	0.96	1.96	Rq	NS
8.	Advertise sugar cane locally or through the media.	3.41	0.88	1.06	1.96	Rq	NS
9.	Sell to buyers at the site or in the market.	3.55	0.57	1.00	1.96	Rq	NS
10.	Keep appropriate record of sales.	3.56	0.71	1.44	1.96	Rq	NS
11.	Calculate the expenditure and income to determine profit.	3.28	0.70	0.76	1.96	Rq	NS

Note: X = mean, SD = standard deviation, RQ = Research Question, HO = Null hypothesis, N = number of respondents, Rq=Required, NS=Not Significant.

Data in table 3 revealed that 11 competency items had their mean values ranged from 2.64 to 3.63, indicating that their mean values were above cut off point of 2.50. The implication of this is that all the 11 items were required by prisoners for harvest and marketing of sugar cane after serving in Enugu State. The standard deviation values ranged from 0.59 to 0.95, indicating that respondents were not too far from the mean and close to one another in their responses.

Data presented in table 3 also revealed that all the 11 items had their calculated t-values ranged from 0.12 to 1.44 which were less than t-table value of 1.96 at 0.05 levels of significance and 507 degree of freedom. This indicated that there is no significant difference in the mean ratings of the responses of the groups of respondents on 11 items required for harvest and marketing of sugar cane in Enugu State. Therefore, the null hypothesis of no significant difference was upheld for the 11 items.

RESULTS & DISCUSSION

The result of the study found out that 10 competencies in establishment of a sugar cane farm, 9 competencies in management of a sugar cane farm and 11 competencies in harvest and marketing of sugar cane are required by prisoners in sugar cane production for sustainable living after serving in Enugu State. The finding of this study is in agreement with the findings of Enete, Amusa and Eze (2009) in a study carried out on entrepreneurial competencies required by students in schools of agriculture in Southwestern Nigeria for processing

cocoyam into flour and chips for employment on graduation, where it was found out that 11 competencies in planning cocoyam processing enterprise, 12 competencies in general cocoyam processing practices and 10 competencies in marketing cocoyam processed products were the entrepreneurial competencies required by students in schools of agriculture in Southwestern Nigeria for processing cocoyam into flour and chips for employment on graduation.

The result of the study is consonant with the findings of Egbe and Eze (2010) in a study on identification of occupational work-skills needed in oil palm production for training secondary school graduates in skill acquisition centre in Ebonyi State where it was found out that 10 work skills in planning establishment of oil palm enterprise, 10 work skills in managing oil palm enterprise, 11 work-skills in processing and marketing palm produce and 10 work-skills for taking care of oil palm plantation were needed in oil palm production for training secondary school graduates in skill acquisition centers in Ebonyi State.

The result of the study is conformity with the findings of Olaitan, Eze and Elom (2010) in a study carried out on entrepreneurial competencies required by secondary school graduates for entering into oil palm processing enterprise in southeastern states in Nigeria where it was found out that 11 entrepreneurial competencies in planning for oil palm processing enterprise, 16 competencies in processing oil palm fruits and 18 competencies in palm oil marketing were required by secondary school graduates for entering into oil palm processing enterprise in Southeastern States of Nigeria.

The findings of the authors cited above help to validate the result of the study on the occupational competencies required by prisoners in sugar cane production for sustainable living after serving in Enugu State.

Finding on the hypothesis revealed that there was no significant difference in mean ratings of the responses of the teachers of agriculture and extension agents on the 30 occupational competencies required by prisoners in sugar cane production for sustainable living after serving in Enugu State. This indicated that the professional experience of the respondents in their various occupations did not significantly influence their responses and since the 30 competency items were judged required, the two groups of respondents were in support of the competencies counting on their experience.

CONCLUSION

In Enugu State, many prisoners are neither highly educated nor skilled on any occupation. These prisoners do not possess the required competencies for entering into agricultural occupations such as sugar cane production after serving. A high percentage of them, after serving, commit crimes worse than the one that lured them into prisons in trying to earn a living and probably cope with their age mates in wealth. Hence, they constitute nuisance and burden to their parents, society and government in terms of sustenance. Therefore, the study was carried out to identify occupational competencies required by prisoners in sugar cane production for sustainable living in Enugu State. The study found out that 10 competencies in establishment of a sugar cane farm, 9 competencies in management of a sugar cane farm and 11 competencies in harvest and marketing of sugar cane were required by prisoners in sugar cane production for sustainable living after serving in Enugu State.

It was therefore recommended that the 30 occupational competencies identified by this study be packaged into a training programme and used for empowering prisoners for employment and sustainable living after serving in Enugu State. The identified competencies could also be used by skill acquisition centers to train youths and other individuals who may be interested in sugar cane production.

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