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Skills Required by Farmers in the Processing of Cassava into Flour to Combat Hunger in a Depressed Economy in Kogi State, Nigeria

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Abstract

The purpose of this study was to identify the skills required by farmers in the processing of cassava into flour for increased income generation in Kogi state, Nigeria. In line with the specific purpose of the study, one research question and one corresponding null hypothesis were formulated to guide the study. The survey research design was adopted for the study. The sample for the study was 100, comprising of 80 Extension Agents and 20 farmers of cassava purposively drawn from a population of 674 registered farmers and 256 Extension Agents from three randomized Local Government Areas using Cluster sampling technique. Instrument for data collection was a structured questionnaire validated by three experts in the Department of Vocational Education, University of Calabar with a Cronbach alpha coefficient of 0.87. The Independent t-test was used to test the hypothesis at the 0.05 level of significance. The result of the analysis revealed that there is no significant difference in the mean rating of Extension Agents and cassava farmers with the skills required for processing cassava into flour. Based on the findings, it was recommended that these skills should be packaged into a training programme for farmers by Extension Agents to train farmers in order to improve their processing of cassava tubers into flour.

Key words: Skills, Cassava, Farmers, Flour and Kogi State.

Introduction

Cassava (Manihot esculenta) is a major food and industrial crop in tropical and sub-tropical Africa, Asia and Latin America. It is also a major staple food in Nigeria. Cassava serves various functions as it is eaten raw or in processed forms.Cassava is a poor source of protein, as it contains only 1 to 3 percentage on dry matter bases (Montagnac, Davis, & Tanumihardjos. 2009) and is low in amino percentage, with acid such as methionine, lysine tryptophan, phenylalanine and tyrosine (Falade & Akingbala, 2010). Cassava is a drought tolerant, famine reserve crop and can withstand extended period of drought. Some varieties can survive on annual rainfall of only 500 mm if suitably distributed. The authors also said that cassava is not a crop for the early dry areas and that the varieties can be divided into two main groups: short season (6-11months) varieties: these are usually sweet, they cannot be left in the ground more than 9-11months and Long season (12 months or more) varieties: these are generally better, but they are stored much longer in the ground without serious deterioration, in some cases for 3-4years. The authors explained further that in the wet and dry tropics, cassava may be expected to produce useful tubers within the growing season (6 months or more), if the plants survive the dry season and not harvested, further growth occurs when rain begins again, and the plant produces leaves to replace those lost during the dry season. Cassava grows in most soils that are well drained and not excessively fertile. High fertility favours top growth at the expense of tuber developer. Light to medium loams are most suitable and facilitate tuber development and harvesting.

Cassava is propagated by means of cutting which is usually 20-45 cm in length, though little attention is sometimes given to it after the first few months of planting. Therefore weeding should begin after

6 months in the case of early maturing varieties, but after 12 months or so in the case of long term varieties. Cassava leaves may be consumed as a vegetable, or cooked as a soup ingredient or dried and fed to livestock. The stem is used for plant propagation and grafting while the roots are typically processed for human and industrial consumption and a good source of carbohydrates when consumed. Cassava is a major staple crop in Kogi state as cassava itself and its products are found in the daily meals of the people. Azogu (2010) asserted that within 4years, the quantity of cassava produced in Nigeria increased by 10 million tones. Nyerhovwo (2005) stated that 80 percent of Nigerian resides in the rural areas and they eat cassava meal at least once a day and when compared with rice and maize, cassava has a carbohydrate content which is about 40% higher than rice and 25% than maize. The author explained further that it is a cheap source of calories for both human and animal consumption. Cassava is a perishable commodity with a self-life of less than 3 days after harvest. Processing provides a means of producing shelf stable products, thereby reducing losses, adding value at a local level and reducing the bulk to be marketed (Phillips, Taylor & Akaroda, 2005). Some cassava foods such as garri, flour and tapioca are highly priced by urban populations and thus have managed to retain their markets. Cassava is currently utilized for two main purposes; human food and industrial usage. The authors further stated that estimates for the percentage of cassava used for industrial utilization range from 5 to 16%, while the rest used directly for human consumption, about 10% of its demand consists of high quality cassava flour used in biscuits, and other confectioneries. Failure to adequately develop post-harvest and marketing systems for cassava has for many years limited the contribution of the crop in economic growth and poverty reduction

Umanah (2005) noted that cassava can be used in different ways by farmers. In Kogi state, cassava is widely used to make Garri, tapioca and fufu but the product which has the longest shelf life is the cassava flour, which is not widely produced in the state due to lack of adequate skills. Ben (2008) defines skill as a well established fact of doing something which involves the acquisition of performance capability. It is on this note that the former Nigerian President Olusegun Obasanjo, who was a farmer in the year 2001 and was aware of the problems farmers were facing and the fact that Nigerian Government was spending huge amounts of money on wheat, which is used to produce bread and other confectioneries directed the Federal Institute of Industrial Research to find ways of including local raw materials in the production of bread. The outcome of the research is that cassava flour can be mixed with wheat at up to 10% without any adverse effect on the taste and texture of the product. Therefore, cassava flour is a profitable ingredient in the production of bread in Nigeria today.

Over the years, high quality cassava flour has been used to generate income in other parts of the country, but this is not the case in Kogi state because of lack of training in skills to equip farmers in the production of high quality cassava flour. High Quality Cassava Flour (HQCF) is fine flour produced from wholesome freshly harvested cassava (10-12months after planting) and rapidly processed roots. HQCF is unfermented, smooth, odourless, white or creamy flour blend with no gluten. Commercial production of HQCF is relatively new in Kogi State. It has contributed appreciably to cassava industrial revolution, especially in Nigeria and Ghana (Sanni, Onadipe, Illona, Mussagy, Abass,& Dixon. 2009) with enormous potentials in other countries within the sub-region. The products have been found to be suitable for making a variety of pastries, whole or in the composite forms (cakes, cookies, doughnuts and breads) and convenience foods. It is also an acceptable raw material for the manufacture of industrial items such as textiles, plywood, and paper among others.The processing of cassava tubers into high quality cassava flour as a primary industrial raw material has the potential to pump-start rural industrialization, increase market value of cassava and improved farmers earnings and their livelihoods.

Nevertheless, for income generation in cassava flour production, skills are required in the processing of cassava flour, which is in the context of the present study. The present study intends to identify the skills required by farmers in the production of cassava flour for increased income generation in Kogi State.

Statement of the Problem

Farmers in Kogi state are supposed to be furnished with adequate training in processing skills in cassava flour for increased income and profit maximization. The processing of cassava into flour is often left in the hands of the aged women farmers; this has actually posed a problem because some of these women are not well educated, and lacks requisite skills as well as the physical strength to embark on such activities. This retards the rate of adoption of commercial cassava flour production. This is due to illiteracy of the farmers, low capital investment, inadequate information and no surplus for sale, which has led to the low income generations of farmers. The researchers feel that if the skill for the production of cassava flour in this study gets to the reach of farmers, they could be efficiently engaged in the processing of cassava into flour both for family and commercial purpose to enhance their economic status and self-reliance hence this study.

Purpose of the Study

The study seeks to identify the skills required by farmers in the production of cassava flour for increased income generation in Kogi State. Specifically, the study sought to identify the skills required for the processing of cassava tubers into flour

Research Question and Hypothesis

What are the processing skills required for cassava flour production?

There is no significant difference in the mean ratings of Extension Agents and cassava farmers with the processing skills required for cassava flour production

Methodology

The study employed the survey research design. The study was undertaken in Kogi State. The targeted population consists of 930 respondents from which 80 Extension Agents and 20 cassava farmers were purposively selected using cluster sampling technique. A 12-skill items questionnaire titled "Skills Required by Farmers in the Production of Cassava Flour Questionnaire (SRFPCFQ) was developed from literature by the researchers and used for data collection with four point scale of HR, AR, SR and NR (HR - Highly required = 4 points; AR - Averagely required = 3 points; SR - Slightly required = 2 points and NR - Not required = 1 point). The instrument was face validated by three experts from the Department of Vocational Education (Agricultural Education Unit) University of Calabar, Calabar. The reliability coefficient of 0.89 was obtained with the use of the Cronbach alpha technique. The instrument was administered by the researchers personally to the Extension Agents and with the assistance of the Extension Agents to the farmers. The completed copies were retrieved and analyzed using mean and standard deviation to answer the research question and independent t-test analysis to test the hypothesis at the 0.05 level of significance. The decision rule is any item with a mean score of 0.01 to 1.0 was regarded as not required while any item with a mean score of 1.01 to 4.00 was regarded as required

Results

The data for answering the research question is presented in Table 1 Significant at 0.05 level, df=98, Critical t-value = 1.984

The data presented in Table 1, revealed that all the 12 items had their mean values ranged from 2.57 – 3.44 which were above 1.00, indicating that the respondents agreed that all skill items are required by farmers in the processing of cassava tubers into flour. The table also revealed that the standard deviation of the responses ranged from 0.52 – 0.89, indicating that the respondents were not too far from

Table 1. Mean and Standard Deviation of Respondents on Processing Skills Required For Cassava Flour Production

Item No	Processing skills	X	S.D	Remark
1.	Harvest mature cassava tubers	2.56	0.67	Required
2	Put harvested tubers into bags	3.01	0.87	'
3	Transport bags of cassava tubers to site of processing	3.44	0.89	"
4	Off-load bags from means of transport.	2.98	0.78	"
5	Peel the bark of cassava tubers	2.73	0.57	"
6	Wash peeled tubers with clean water	2.68	0.58	"
7	Chip cassava tubers into pellets	2.57	0.54	"
8	Sun-dry pellets or Grate the chipped cassava tubers	2.82	0.62	"
9	Press the grated cassava tubers	2.76	0.73	"
10	Cake break the grated cassava tubers	2.59	0.64	"
11	Milled the dried cassava into flour	2.63	0.52	"
12	Store the milled cassava flour	2.68	0.63	"

Table 2. Independent t-test analysis showing the difference in the mean rating of male and female cassava processors on the processing skills required for cassava flour production. N=100

Processing skill	N	X	S.D	t-Cal
Extension Agent	80	24.13	2.327	1.501
Farmers	61	23.26	3.430	

the mean and from the opinion of one another in their responses. The result of the analysis in Table 2 reveals that the calculated t-value of 1.501 is statistically less than the critical value of 1.984 at .05 levels of significant with 98 degrees of freedom. This result implies that the mean rating of Extension Agents with a mean score of 24.13 and a standard deviation of 2.33 is not statistically different from the mean score of 23.26 with a standard deviation of 3.43 for cassava farmers. With this result, the null hypothesis that there is no significant difference in the mean score of Extension Agents and Cassava Farmers on the processing skills required for cassava flour production was retained.

Discussion

The result of the hypothesis indicated that there is no significant difference in the mean rating of Extension Agent and Cassava Farmers on the processing skills required for cassava flour production. This result implies that both Extension Agent and Cassava Farmers responses on the required skills for processing of cassava flour production do not differ significantly. The result from this hypothesis supports the report of Phillips, Taylor, Sanni, and Akoroda. (2005) who viewed processing as that which provides a means of producing shelf stable products, thereby reducing losses, adding value at a local rural level storage and reducing the bulk to be marketed. They further noted that the processing of cassava roots into high quality cassava flour as a primary industrial raw material has the potential to jump-start rural industrialization, increase market value of cassava and improve farmers' earnings and their livelihoods. The result of this hypothesis also confirms the report of Damardjati, Widowati, and Dimyati. (2005) who noted that cassava flour processing is divided into three (3) different operations as follows: Ability to harvest and handle fresh cassava roots, produce dry cassava chips and mill the dried cassava chips into flour. This implies that both male and cassava farmers have almost equal ability for cassava flour production.

Conclusion

Based on the finding of this study, it was concluded that processing skills are required in the production of cassava flour for increased income generation in Kogi State and that the variable under investigation contributes significantly to the production of cassava flour for an increased income generation as a way of combating food insecurity in a depressed economy.

Recommendation

Since most farmers are not aware of the conversion of cassava tubers into flour, extension workers should inculcate into farmers the skills required in the processing of cassava flour and new technology are needed to reduce the amount of labour required for the processing of cassava tubers into flour because of the numerous hazard suffered by the farmers.

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