ENTREPRENEURIAL SKILLS REQUIRED BY SECONDARY SCHOOL GRADUATES IN CUCUMBE *(CUCUMIS SATIVUS)* FARMING IN ENUGU AND BENIN CITIES FOR FOOD SECURITY IN NIGERIA

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Abstract

This study identified entrepreneurial skills required by secondary school graduates in cucumber production in Enugu and Benin Cities in Nigeria. Descriptive research design was used for the study. Three research questions were answered for the study. The population for the study was Agricultural Science Teachers and Agricultural Extension Officers in Enugu and Benin City. The sample for the study was 120 respondents made up of 80 Agricultural Science Teachers and 40 Agricultural Extension Officers which was drawn using random sampling technique. A 36-item structured questionnaire titled: Cucumber Production Questionnaire (CPQ) was used to collect data for the study. The instrument was validated by three experts. Cronbach Alpha method was used to determine the internal consistency of the instrument which yielded a reliability coefficient of 0.80. The data collected were analyzed using weighted mean and standard deviation to answer the research questions. It was found that secondary school graduates in Enugu and Benin Cities, Nigeria require 13 entrepreneurial skills in pre-planting and planting operations for cucumber production, 8 entrepreneurial skills in post-planting operations for cucumber production and 14 entrepreneurial skills in harvesting/handling and marketing operations for cucumber production. From the findings of this study, it was concluded that all the items identified except one were above the cut-off mark of 2.50. This indicated that secondary school graduates in Enugu and Benin City required the identified entrepreneurial skills for cucumber production in alleviating poverty and attaining food security. This can help the graduates to reduce the effects of dependency on their parents as well as making them to be self-reliant. It was therefore recommended among others that entrepreneurial skills identified by this study in cucumber production should be used to train secondary school graduates and other students and farmers for their employment as cucumber producers, integrating the identified skills into the curriculum of Agricultural Science for secondary schools for the purpose of adequate skill acquisition upon graduation and replicating this study by researchers at state or federal levels for the purpose of generalization.

Keywords: Entrepreneurial Skills, Secondary School Graduates, Cucumber Production, Food Security.

Introduction

Cucumbers are often eaten by man as a vegetable and fruit but they are scientifically considered as fruits since they have enclosed seeds and are develop from flowers. Cucumbers are warm season plants and are grown best on land with temperature of between 18.33° to 23.89°C. The plants do not tolerate prolonged exposure to temperatures below 12.78° or above 32.22°C. It originated from an area of India between the Himalayas and the Bay of Bengal (Owoeye, and Aturamu, 2022). Cucumber according to Veggie Concert (2020) are members of the cucurbit family, are vine crops and can be grown on the ground or on poles or trellises to suspend the fruits. The crop according to Ume, Onunka and Achike (2017) is the fourth most important vegetable after tomato, cabbage and onion in Asia, while it is rated as the second most important vegetable crop after tomato in Western Europe. In tropical Africa, it has not been ranked due to its limited use among the countries in Africa. In Nigeria, it is regarded as one of the most commercially viable vegetables and very profitable as a venture if propagated. It is commonly cultivated in Jos, Kano, Imo, Oyo, Kogi and some other states of the federation (Umeh and Ojiako, 2018).

Cucumbers come in three distinct types which are seedless cucumber, seeded, and mini cucumber. Cucumber farming in Nigeria has been described by Veggie Concert (2020) as one of the most profitable farming ventures anyone can go into, it is called Farmers' Automated Teller Machine (FATM) in Nigeria due to its ability to make farmers earn good income within a short period of time. Cucumber farming involves the cultivation of cucumbers with the aim of harvesting and marketing the cucumber fruits for consumption or

for sales to the public. Cucumber according to Veggie Concert (2020) has many varieties.

Common varieties of cucumber according to Veggie Concert (2020) include the English, garden, Persian, mini, and lemon. The English cucumber is the longest, is narrow, and is often marketed in a plastic wrap. The skin of English cucumbers is thin and often does not require peeling. In contrast, the garden cucumber has a dark waxy skin. The skin is normally removed by consumers because of its bitter taste. Persian cucumbers are called burpless because they tend to be smaller, sweeter, and seedless. The skin is smoother, thinner, and, similar to the English variety, and does not require peeling. These cucumbers tend to be milder and easier on the digestive system. Kirby cucumbers are the smallest. These mini cucumbers are becoming popular in the marketplace due to consumer preferences. They have a wide variety of skin colors ranging from yellow to dark green. Lemon cucumbers are round and yellow, resembling lemons, but they are sweet, have thin skins, and contain seeds and all the varieties have several benefits to man.

According to DiLonardo (2022), all the water in cucumbers can help to keep one hydrated as well as the fiber present in the fruit can help to boost one's body to stay regularly and avoid constipation. The vitamin K in cucumber helps blood to clot and keep one's bones healthy. Vitamin A also present in it has many tasks, like helping with vision, the immune system, and reproduction. It also makes sure organs like the heart, lungs, and kidneys work the way they should. The lignans present in the fruit may help to prevent osteoporosis, heart disease, and some cancers in man. Antioxidants such as beta carotene in cucumbers can help fight free radicals in the body. Cucumbers may also have health benefits outside the body. Putting them on the skin may help ease sunburn pain, swelling, and damaged skin. That's why people sometimes put a slice or two under their eyes, hoping to shrink bags and ease puffiness. Apart from the benefits that Nigerians can derive from cucumber production, it is also pertinent to look at some of the factors that affect its production in Nigeria.

Factors affecting cucumber production in Nigeria have been highlighted by Bernard Ndubuisi Okafor and Japhet Yaduma (2021) to include Climate change, scarcity of improved seeds, improper or inadequate fertilizer application, inappropriate spacing, pest and disease attacks, poor storage facilities, distance to market, and high cost of labour/capital amongst others. These factors may be responsible for school graduates especially secondary school graduates for not showing interest in cucumber production.

Secondary school graduates in this study are youths who have completed their six years of secondary school education who offered Agricultural Science as a vocational subject at senior secondary school level but cannot be admitted into tertiary institutions or be employed in other occupations. The graduates seem not to possess entrepreneurial skills in cucumber production as they only possess the knowledge of cucumber production. This is due to the fact that cucumber has been considered in Nigeria as a crop that can only strive in the northern part. This insinuation probably makes students lack the entrepreneurial skills needed for cucumber production which could have helped them in securing employment or become self-employed in order to alleviate poverty in Enugu and Benin Cities in Nigeria.

Entrepreneurial skills have been defined by Olaitan, Dumbiri and Uko (2010) as the ability of an individual to manipulate input resources efficiently within a particular enterprise to achieve production goal. Amusa and Dumbiri (2010) posited that entrepreneurial skills are needed capacities to perceive business opportunities, take advantage of the scarce resources, control and coordinate the available human resources in any production enterprise. Okeke, Ochuu and Agbulu (2016) described entrepreneurial skills as the abilities of youths to combine personal characteristics, money and other resources and take the risk in production for making profits. Entrepreneurial skills in this study means the abilities of youths to manipulate input resources efficiently combined with their personal characteristics and money to start up cucumber production for profit making as well as helping to achieve food security.

Food security has been defined during World Food Summit in the year 2018 by Food Agricultural Organization (2008) as attaining or reaching a point when all people at all times have physical and economic access to sufficient, safe and nutritious food which will meet their dietary needs and food preferences for an active healthy life. FAO (2008) in summary declared that food security is the availability of food in terms of production, processing, marketing, distribution and consumption. WHO further emphasized that food security is based on three pillars which are having sufficient quantity of food consistently, having sufficient resources to purchase food that is appropriate with required nutrients and having knowledge of basic nutrition and cure, as well as adequate water and sanitation. If individuals must have access to quality food in the country, it is therefore necessary to identify

the skills needed to educate senior secondary school graduates with, in order for them to successfully carry out cucumber production upon graduation from the school to attain food security.

In Nigeria, there is a general belief that cucumber, cabbage and carrot/onion can only be grown in the northern part of the country, precisely in Jos area. For this reason, farmers in the South-South and other parts of the Nigeria are not encouraged to plant these valuable vegetable crops. School Graduates lack the entrepreneurial skills for effective cucumber production upon graduation. This problem is as a result of graduates in schools not receiving adequate training on cucumber production while in school during the curse of training. This problem the researchers say has made many young graduates roam the streets in search of white-collar jobs upon graduation which are pretty difficult these days. This situation has led to increase in crime rate by the young people. Hence, the study is conducted to identify the entrepreneurial skills required by secondary school graduates in Cucumber farming in Enugu and Benin Cities for food security in Nigeria by identifying the cultural practices required by secondary school graduates for its production.

Purpose of the Study

The general purpose of this study was to identify entrepreneurial skills required by secondary school graduates in cucumber *(Cucumis sativus)* farming in Enugu and Benin Cities for food security in Nigeria. Specifically, the study sought to identify:

1. Entrepreneurial skills required by secondary school graduates in pre-planting and planting operations for cucumber production.
2. Entrepreneurial skills required by secondary school graduates in post-planting operations for cucumber production.
3. Entrepreneurial skills required by secondary school graduates in harvesting/handling and marketing operations for cucumber production.

Research Questions

The following research questions were formulated and answered in this study:

1. What are the entrepreneurial skills required by secondary school graduates in Pre-planting and planting operations for cucumber production in Enugu and Benin Cities?
2. What are the entrepreneurial skills required by secondary school graduates in post-planting operations for cucumber production in Enugu and Benin Cities?
3. What are the entrepreneurial skills required by secondary school graduates in harvesting/handling and marketing operations for cucumber production in Enugu and Benin Cities?

Methodology

The design of the study was a descriptive research design. The study was carried out in Enugu and Benin Cities. The reason for these cities is due to the fact that they are both located in the Southern Nigeria, where it is believed that cucumber cannot be grown due to the climate. Enugu is the capital city of Enugu State in Nigeria. It is located in southeastern part of Nigeria. The city had a population of 820,000 according to the last Nigerian census. The name *Enugu* is derived from the two Igbo words *Énú Ụ́gwụ́*, meaning "hill top", denoting the city's hilly geography. The location of present-day Enugu has been inhabited by the Enugwu-Ngwo and Nike, subgroup of the Igbo people. The discovery of coal by the colonists led to the creation of what was then known as the Enugu Coal Camp, named after the nearby village of Enugu Ngwo, under which coal was first found. It is made up of three Local Government Areas which are Enugu South, Enugu East and Enugu North. Benin City comprised three Local Government councils which are Oredo, Egor and Ikpoba Okha Loal Government Areas with their headquarters at Benin City, Uselu and Idogbo respectively. A simple random sampling technique was used to obtain a sample size of 120 respondents consisting of 80 Agricultural Science Teachers and 40 Agricultural Extension Officers drawn from both Enugu and Benin Cities. 40 Agricultural Science Teachers and 20 Agricultural Extension Officers were randomly selected from both Enugu and Benin Cities. The instrument for collection of data was a structured questionnaire titled “Cucumber Production Questionnaire (CPQ)”. The questionnaire had four sections (A-D) with a four-point rating scale of Strongly Required (SR), Moderately Required (MR), Required (R), and Not Required (NR) with corresponding values such as 4, 3, 2, and 1 respectively. The instrument was validated by three experts, one from University of Nigeria, Nsukka and two from University of Benin, Benin City. The reliability index of 0.80 was obtained using Cronbach Alpha method to determine the internal consistency of the questionnaire. One hundred and twenty copies of the instrument were administered to

the respondents by the researchers. The researchers retrieved the questionnaire immediately after the completion. Data collected were statistically analyzed using mean and standard deviation to answer the research questions. In taking decision, any item whose mean value was 2.50 or above an average on 4-point scales was considered as Required while any item whose mean value was below 2.50 was considered as Not Required. The researchers made use of Statistical Package for the Social Science (SPSS).

Results

The results of the descriptive analyses were presented in Tables as follows:

Research Question 1

What are the entrepreneurial skills required by secondary school graduates in pre-planting and planting operations for cucumber production in Enugu and Benin Cities?

Table 1

Mean Ratings of Agricultural Science Teachers and Extension Officers on skills needed in Pre-planting and Planting Operations for Cucumber production in Enugu and Benin Cities (N=120)

	Ability to:	X	SD	Decision
1.	Select site with moderate water holding capacity	3.62	0.49	Required
2.	Clear the land of existing vegetation	3.85	0.48	Required
3.	Pack or burn trashes	2.33	0.57	Not Required
4.	Plough the land/ make ridges/beds	3.50	0.75	Required
5.	Purchase and select viable seeds for sowing	2.63	0.66	Required
6.	Treat cucumber seeds appropriately before sowing	3.02	0.62	Required
7.	Add manure to the soil or add fertilizer before sowing	2.68	0.67	Required
8.	Determine the planting date (season) for cucumber	2.98	0.74	Required
9.	Open the soil with appropriate tool of 1cm depth	3.08	0.72	Required
10.	Sow cucumber at the rate of 2-3 seeds per hole	3.40	0.64	Required
11.	Space the seeds at 80cm by 30cm	3.48	0.67	Required
12.	Water the farm immediately after sowing if it is dry season	3.73	0.51	Required
13.	Plant early to overcome falling off of pre-mature flowers	3.70	0.53	Required

Key: X= Mean, SD= Standard Deviation, R= Required, NR= Not Required and N= Number of Respondents.

The data presented in Table 1 showed that entrepreneurial skill items had their mean values ranging from 2.33 to 3.95, indicating that their mean values were above the cut-off point of 2.50 except one item. The implication of this is that 12 out of the 13 items are required by secondary school graduates in pre-planting and planting operations for cucumber production in Enugu and Benin Cities. The standard deviation values ranged from 0.22 to 0.75 indicating that the respondents were not too far from the mean as they were close to one another in their responses.

Research Question 2: What are the entrepreneurial skills required by secondary school graduates in post-planting operations for cucumber production in Enugu and Benin Cities?

Table 2: Mean Ratings of Agricultural Science Teachers and Extension Officers on skills needed in Post-planting Operations for Cucumber production in Enugu and Benin Cities (N=120)

	Ability to:	X	SD	Decision
1.	Water regularly during dry season	3.73	0.55	Required
2.	Apply manure or fertilizer to the soil	3.21	0.78	Required
3.	Weed regularly after planting	3.42	0.72	Required
4.	Apply recommended pesticides to control disease and pest attack	2.88	0.66	Required
5.	Spray recommended insecticides to reduce insect vector during pre-flowering stage	3.08	0.69	Required
6.	Stake the stems with rope and poles	3.43	0.67	Required
7.	Guide the stems of the plant to climb the ropes and the poles	3.57	0.69	Required

	Ability to:	X	SD	Decision
8.	Water regularly during dry season	3.73	0.55	Required
9.	Apply manure or fertilizer to the soil	3.21	0.78	Required
10.	Weed regularly after planting	3.42	0.72	Required
11.	Apply recommended pesticides to control disease and pest attack	2.88	0.66	Required
12.	Spray recommended insecticides to reduce insect vector during pre-flowering stage	3.08	0.69	Required
13.	Stake the stems with rope and poles	3.43	0.67	Required
14.	Guide the stems of the plant to climb the ropes and the poles	3.57	0.69	Required

	Ability to:	X	SD	Decision
15.	Water regularly during dry season	3.73	0.55	Required
16.	Apply manure or fertilizer to the soil	3.21	0.78	Required
17.	Weed regularly after planting	3.42	0.72	Required
18.	Apply recommended pesticides to control disease and pest attack	2.88	0.66	Required
19.	Spray recommended insecticides to reduce insect vector during pre-flowering stage	3.08	0.69	Required
20.	Stake the stems with rope and poles	3.43	0.67	Required
21.	Guide the stems of the plant to climb the ropes and the poles	3.57	0.69	Required
	Ability to:	**X**	**SD**	**Decision**
22.	Water regularly during dry season	3.73	0.55	Required
23.	Apply manure or fertilizer to the soil	3.21	0.78	Required
24.	Weed regularly after planting	3.42	0.72	Required
25.	Apply recommended pesticides to control disease and pest attack	2.88	0.66	Required

26. Spray recommended insecticides to reduce insect vector during pre-flowering stage	3.08	0.69	Required
27. Stake the stems with rope and poles	3.43	0.67	Required
28. Guide the stems of the plant to climb the ropes and the poles	3.57	0.69	Required
Ability to:	**X**	**SD**	**Decision**
29. Water regularly during dry season	3.73	0.55	Required
30. Apply manure or fertilizer to the soil	3.21	0.78	Required
31. Weed regularly after planting	3.42	0.72	Required
32. Apply recommended pesticides to control disease and pest attack	2.88	0.66	Required
33. Spray recommended insecticides to reduce insect vector during pre-flowering stage	3.08	0.69	Required
34. Stake the stems with rope and poles	3.43	0.67	Required
35. Guide the stems of the plant to climb the ropes and the poles	3.57	0.69	Required
Ability to:	**X**	**SD**	**Decision**
36. Water regularly during dry season	3.73	0.55	Required
37. Apply manure or fertilizer to the soil	3.21	0.78	Required
38. Weed regularly after planting	3.42	0.72	Required
39. Apply recommended pesticides to control disease and pest attack	2.88	0.66	Required
40. Spray recommended insecticides to reduce insect vector during pre-flowering stage	3.08	0.69	Required
41. Stake the stems with rope and poles	3.43	0.67	Required
42. Guide the stems of the plant to climb the ropes and the poles	3.57	0.69	Required

Key: X= Mean, SD= Standard Deviation, R= Required, NR= Not Required and N= Number of Respondents.

Data presented in Table 2 revealed that all the 7 entrepreneurial skill items had their mean values ranging from 2.88 to 3. 73 above the cut-off point of 2.50. This indicated that the 7 items are required by secondary school graduated in post-planting operations for cucumber production in Enugu and Benin Cities. The standard deviation values ranged from 0.55 to 0.78. This indicated that the respondents were not too far from the mean and close to one another in their responses.

Research Question 3: What are the entrepreneurial skills required by secondary school graduates in harvesting/handling and marketing operations for cucumber production in Enugu and Benin Cities?

Table 3: Mean Ratings of Agricultural Science Teachers and Extension Officers on skills needed in Harvesting/Handling and Marketing Operations for Cucumber production in Enugu and Benin Cities (N=120)

Ability to:	X	SD	Decision
1. Observe cucumber plant for maturity 80-90 days after planting	3.78	0.49	Required
2.Sprinkle water to harvested vegetables to maintain high relative humidity	3.62	0.55	Required
3. Harvest fruits that turn full green	3.93	3.97	Required
4. Keep relative humidity of fruits high after harvest	3.15	0.77	Required
5. Carry out market survey to determine the price of cucumber fruits	2.93	0.71	Required
6. Arrange in crates or bags for transportation	2.98	0.72	Required
7. Do market survey on where to supply cucumber fruits for sales	2.98	0.70	Required
8. Advertise cucumber fruits for sales	2.88	0.76	Required
9.Supply cucumber fruits to wholesalers, retailers and consumers	3.08	0.67	Required
10.Grade or sort the fruits according to their sizes	3.07	0.73	Required
11.Fix prices for the different sizes	3.21	0.61	Required
12. Keep financial records of production cost	3.18	0.72	Required
13. Keep financial records of sales of cucumber fruits	3.45	0.83	Required
14. Reconcile records to ascertain profits or losses	3.40	0.64	Required

Key: X= Mean, SD= Standard Deviation, R= Required, NR= Not Required and N= Number of Respondents.

The data presented in Table 3 showed that all the 14 entrepreneurial skill items had their mean values ranging from 2.88 to 3.93 above the cut-off point of 2.50. This indicated that the 14 items are required by secondary school graduates in harvesting/handling and marketing operations for cucumber production in Enugu and Benin Cities. The standard deviation values ranged from 0.49 to 3.97. This indicated that the respondents were not too far from the mean and close to one another in their responses except for one item.

Discussion of Results

The result of the study in Table 1 showed that secondary school graduates require skills in 13 pre-planting and planting operations. The skills required include ability: to select site with moderate water holding capacity, survey for suitable land for cucumber production, clear the land of existing vegetation, plough the land/ make ridges/beds, purchase and select viable seeds for sowing, treat cucumber seeds appropriately before sowing, add manure to the soil or add fertilizer before sowing, determine the planting date (season) for cucumber, open the soil with appropriate tool of 1cm depth, sow cucumber at the rate of 2-3 seeds per hole, space the seeds at 80cm by 30cm, water the farm immediately after sowing if it is dry season and plant early to overcome falling off of pre-mature flowers. The findings are in consonant with the findings of Ugwuoke and Ejiofor (2010) in a study which was conducted on skills required by secondary school graduates for success in pineapple production enterprise in Nsukka agricultural zone of Enugu State, where it was found out by the researchers that 8 skills for pre-planting and planting operations were required by secondary school graduates for the production of pineapple.

The result in Table 2 revealed that secondary school graduates require 8 entrepreneurial skills in post-planting operations for cucumber production. The skills identified by this study include ability to: water crops regularly during dry season, apply manure or fertilizer to the soil, weed regularly after planting, apply recommended pesticides to control disease and pest attack, spray recommended insecticides to reduce insect vector during pre-flowering stage, stake the stems with rope and poles, guide the stems of the plant to climb the ropes and poles and sprinkle water to harvested vegetables to maintain high relative humidity. The findings of this study are in conformity with the findings of Amoyedo (2007) where it was reported that 11 post-planting skills were required in cocoa production enterprise for employment of secondary school graduate in Ondo State.

The result of the study in Table 3 showed that secondary school graduates require skills in 14 harvesting/handling and marketing operations for cucumber production. The skills required include ability to : observe cucumber plant for maturity 80-90 days after planting, pick up fruits that turn full green, keep relative humidity of fruits high after harvest, carry out market survey to determine the price of cucumber fruits, arrange in crates or bags for transportation, do market survey on where to supply cucumber fruits for sales, advertise cucumber fruits for sales, supply cucumber fruits to wholesalers, retailers and consumers, grade or

sort the fruits according to their sizes, fix prices for the different sizesof cucumber fruits, farm gate marketing should be practiced, keep financial records of production cost, keep financial records of sales of cucumber fruits and reconcile records to ascertain profits or losses. The findings of this study on the skills required in marketing operations concurred with the views of Rearddon, Timmer, Barrett and Berdegue (2003) where it was found out that agricultural marketing involves distribution of farm produce such as cucumber fruits from the farm to the final consumers who are the end users of such product.

Conclusions

From the findings of this study, all the items identified except one were above the cut-off mark of 2.50. This indicated that secondary school graduates in Enugu and Benin City required the identified entrepreneurial skills for cucumber production in alleviating poverty and attaining food security. This can help the graduates to reduce the effects of dependency on their parents as well as making them to be self-reliant. The integration of entrepreneurship and skill acquisition on cucumber production in secondary school curriculum will give the students ample opportunity to learn how to grow cucumber as an enterprise and will also motivate them to set up cucumber farm on graduation.

Recommendations

It is therefore recommended that:

1. The identified skills in cucumber production should be integrated into the curriculum of Agricultural Science for secondary schools for the purpose of adequate skill acquisition upon graduation.
2. The skills identified by the study in cucumber production should be used by secondary school teachers to train students on cucumber production.
3. The skills identified by the study in cucumber production should be used by extension officers to train farmers on cucumber production as a profitable venture in Agriculture.
4. Farm visits days, workshops and seminars should be organized to train unemployed graduates and others who are interested in cucumber production as an enterprise.

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