ENTREPRENEURSHIP SKILLS REQUIRED BY SECONDARY SCHOOL GRADUATES IN PEPPER FRUIT (*Dennettia tripetala*) PRODUCTION ENTERPRISES IN KOGI EAST AGRICULTURAL ZONE OF KOGI STATE NIGERIA

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ABSTRACT

The aim of this research was to identify entrepreneurship skills secondary school graduates required in pepper fruit production enterprises. The research mainly explored three aspects: planning skills, planting skills, and marketing skills. The dimensions of the skills were developed through descriptive analysis of data and the use of one-way ANOVA on responses from 82 respondents. The results showed 11 entrepreneurship skills for planning pepper fruit production, 23 entrepreneurship skills for propagating and field establishment of pepper fruit, and 11 entrepreneurship skills for marketing pepper fruit. There was a better convergent validity and reliability of the identified skills as there was no statistically significant difference ($p>0.05$) between the mean responses of the respondents on the planning, planting, and marketing skills for pepper fruit production enterprises. Based on the findings, the study recommends that all the identified skills should be incorporated into the secondary school curriculum so that students upon graduation can be engaged in pepper fruit production enterprises.
Keywords: entrepreneurship skills, field establishment, marketing, pepper fruit, propagation

INTRODUCTION

Dennettia tripetala, called pepper fruit in English, Imako in Urhobo, Mmimi in Igbo, Opipi in Idoma, Nkaika in Ibibio, Ata Igbere in Yoruba, and Ako in Edo languages of Nigeria, is a tropical crop in the family Annonaceae (Muhammed et al., 2021; Egharevba et al., 2015; Iseghohi, 2015). The spicy tropical plant has important parts such as the fruits, leaves, seeds, barks, and woods that hold great benefits to man. The fruits and leaves are spices or seasoning for food, including stew, soup, vegetables, meat, and sausage (Muhammed et al., 2021; Khadijah, 2015). The bark of the tree possesses a very strong characteristic scent that can be added to food to create different taste and flavors. The wood is used as fuel while the matured fruits are chewed when it is fresh green, fresh ripened red, black dry or dry seed due to its spicy taste. The plant usually produces fruit between the months of March and May that are used for

entertaining guests in combination with cola nuts, garden egg, and palm-wine (Muhammed et al., 2021; Iseghohi, 2015). Essentially, the fruits are important during coronation in Igbo land, the new yam festival, and marriage ceremonies.

Medicinally, the leaves and seeds from this spicy crop are good sources for treating asthma, catarrh, toothache, fever, cough, diarrhea, rheumatism and are also used to improve appetite, check excess saliva, relieve coated tongues, stop nausea and clear throats (Oyemitan et al., 2006; Ejechi et al., 2005; Ukeh et al., 2012). The seeds are important ingredients in the diet of women before and after birth, as it is believed to aid contraction of the uterus (Aiyeloja et al., 2006). The phytochemical properties of *Dennettia tripetala* include saponins, flavonoids, terpenoids, cardiac glycosides, tannins, alkaloids, steroids, balsams (resin) and phenol to stimulate antimicrobial, insecticidal, analgesic, and anti-inflammatory properties (Egharevba et al., 2015; Iseghohi, 2015; Khadijah, 2015).

The nutrient composition of *Dennettia tripetala* consist crude protein (15.31%), carbohydrate (62%), crude fibres (9.84%), crude lipids (3.47%) and moisture (8.0%). It has a calorific value of 480.24 g cal·100 g–1 in fresh fruit with mineral content of calcium (1.80%), phosphorus (0.33%), potassium (2.50%) and magnesium (0.42%) (Okwu & Morah, 2004; Okaka et al., 2001). The fruits also contain glucose, sucrose, fructose, hemicellulose and pectin. The water-soluble vitamins such as ascorbic acid, thiamine, riboflavin and niacin are high in pepper fruits, the reason for its effectiveness in the treatment of the common cold and the control of other diseases such as prostate cancer (Okogun, 2002). The fruits have high amount of iron (17.75 %) which is the essential component of heme-moieties of haemoglobin that improves oxygen transportation and metabolism in humans (Muhammed et al., 2021).

Pharmacologically, the oil extracted from the fruits is used in the manufacture of breath freshener and mouth sprays. According to Onefeli and Akinyele (2014), extracts *Dennettia tripetala* are active antifungal agents against *Candida sp., Crytococeus sp., Geotrichum sp., Rhizopus stolonifer, Aspergillus sp., Fusarium sp*. and the extracted oil is an effective preservative for stored grains such as cowpea and maize without negatively affecting their viability. Hence, the pepper fruit tree is considered among the vital spicy crop plants grown due to its popularity, nutritional values, adaptability to existing cropping systems and their potential for economic empowerment. The distinctive aroma and tastes of this spicy crop in Kogi State enhances its acceptability in the market across seasons. Consequently, it attracts high income due to high pricing in both local and urban markets. The distinctive aroma, taste, and nutrients *Dennettia tripetala* carries, make it cherished by men, expectant mothers, and traditional herbalists for enhancing health conditions (Muhammed et al., 2021).

Growers of pepper fruit in Kogi east employ such agricultural practices as soil tillage, selection of viable seeds, planting, nurturing and harvesting. Entrepreneurship is crucial to success in this pepper fruit production. Victor et al. (2020) see entrepreneurship as a process involving recognizing opportunities in the environment and mobilizing resources to take advantage of such opportunities in order to provide improved goods and services for consumers. Hence, entrepreneurship is all about environmental business opportunities that are waiting to be tapped. Kuhan (2012) asserts that entrepreneurship is all about learning skills required to assume the risk of establishing a business and developing the winning strategies and executing them with vigour, persistence, and passion needed to succeed. Therefore, there is need for entrepreneurs to learn

new skills if they are to achieve significant performance. This means entrepreneurship is a dynamic process of creating wealth for the well-being of both entrepreneurs and individuals in the society. Therefore, successful entrepreneurship requires that the entrepreneur possess certain managerial skills.

This in effect means that effective management in pepper fruit production requires some skills in tillage, propagation practices, field establishment practices, pests and disease control, marketing practices, among others. This demands the acquisition of necessary entrepreneurship skills in all of these areas. According to Kuhan (2012), entrepreneurship skills are ideas and management abilities necessary for self-reliance in any promising business environment. Therefore, in this context, entrepreneurship skills embrace management and production skills in pepper fruit production with an understanding of sourcing for inputs, marketing, and basic financial accounting and record keeping. This is necessary because there is high demands for pepper fruit that generate high-income for various actors in its production processes. However, Ekele et al. (2020) observed that graduates of vocational agriculture who would have taken part in this enticing enterprise find it difficult to raise nurseries for crops and are ineffective in crop production management. Hence, graduates of secondary schools cannot venture into the businesses of pepper fruit production because they lack skills required in planning, propagating and planting, and marketing (Ugwuoke et al., 2014; Ekele et al., 2020).

Previous studies determined the nutrient composition, medicinal values, phytochemical and pharmacological properties of pepper fruit (Khadijah, 2015; Onefeli et al., 2014; Ukeh et al., 2012). However, the studies did not factor entrepreneurship skills graduates of secondary school require for pepper fruit production enterprises. Even as the competencies to carry out successful pepper fruit production enterprises are lacking in graduates of secondary schools. Therefore, the idea and focus of identifying entrepreneurship skills for pepper fruit production enterprises among graduates of secondary schools become imminent to address this entry to practice gap. The development of such entrepreneurship skills would contribute to the discourse concerning training and development of graduates in pepper fruit production enterprises.

The purpose of this study therefore, is to identify entrepreneurship skills needed by Secondary School graduates for success in pepper fruit production enterprises in Kogi east agricultural zones. The study specifically, sought to identify entrepreneurship skills required by secondary school graduates in planning for, propagating and field establishment and marketing of pepper fruit. The study is guided by the following hypotheses:

Ho_1: There is no significant difference in the mean ratings of the responses of pepper fruit farmers and teachers of agriculture on entrepreneurship skills required by secondary school graduates in planning for pepper fruit production enterprise.

Ho_2: There is no significant difference in the mean ratings of the responses of pepper fruit farmers and teachers of agriculture on entrepreneurship skills required by secondary school graduates for propagating and establishing pepper fruit in permanent field.

Ho_3: There is no significant difference in the mean ratings of the responses of pepper fruit marketers and teachers of agriculture on entrepreneurship skills required by secondary school graduates for marketing pepper fruit.

METHODOLOGY

The study adopted a descriptive research design. A descriptive research design was considered suitable since the study sought information from teachers of agriculture and farmers of pepper fruit using a structured questionnaire. The study was conducted in Kogi-east agricultural zones that comprising Ankpa, Bassa, Dekina, Ibaji, Idah, Igala-mela, Ofu, Olamaboro, and Omala Local Government Areas (LGAs). The choice of these local governments was based on the fact that they are naturally endowed with good agricultural environment favourable for pepper fruit production. In addition, farmers in these areas have keen interest in pepper fruit production as means of generating income for their livelihood.

The study surveyed 82 respondents made up of 54 agricultural science teachers and 28 pepper fruit farmers drawn from the study areas. A structured questionnaire consisting 45 items on entrepreneurship skills for pepper fruit production enterprises was used to collect information from the respondents. The instrument was on a five-point Likert rating scale with response options: Very Highly Required, Highly Required, Somewhat Required, and Not Required with corresponding values of 5, 4, 3, 2, and 1 respectively.

Three experts validated the instrument. One expert was drawn from the Department of Crop Science, and another from Department of Agricultural Extension of Prince Abubakar Audu University, Ayingba. The third expert was drawn the Department of Agricultural Education, Kogi State College of Education, Ankpa. The comments and suggestions of these experts were used to modify the final instrument. The Cronbach alpha statistical tool was used to test the internal reliability of the instrument with a threshold of .70. The scale yielded a of 0.86 for planning for pepper fruit production, 0.92 for propagating and planting, and 0.86 for pepper fruit marketing respectively. Data collected from the respondents on the three research questions were analyzed using Mean and standard deviation. Entrepreneurship skill statements that had Mean score of 3.0 and above were upheld as required while rejection was any rating below 3.0. One-way ANOVA was used to test the formulated hypotheses at 0.05 level of significance.

RESULT AND INTERPRETATION

3.1 *Research Question 1:* What are the entrepreneurship skills required by secondary school graduates for planning for pepper fruit production enterprise?

Table 1: Mean responses of pepper fruit farmers and teachers of agriculture on entrepreneurship skills required by secondary school graduates in planning for pepper fruit production enterprise (n = 82)

S/N	**Planning for pepper fruit production enterprise**	*X*	*SD*	*Remarks*
A1.	Arrange for pepper fruit growing enterprise	3.16	.80	Required
A2.	Formulate specific objectives for growing pepper fruit enterprise	3.01	.81	Required
A3.	Review objectives for steady production of pepper fruit periodically	3.80	.44	Required
A4.	Draw programme on land preparation and field management of pepper fruit	3.74	.55	Required
A5.	Decide on the type of farming practice to adopt	3.50	.75	Required
A6.	Budget for all the management practices until the crop is established	3.34	.85	Required
A7.	Identify sources of finance for growing pepper fruit	3.64	.62	Required
A8.	Procure relevant inputs such as seeds, fertilizer and herbicides	3.22	.82	Required
A9.	Draw up a season' availability of products calendar	3.11	.71	Required
A10	Create procedure and rules for workers involved in producing pepper fruit	3.90	.23	Required
A11	Provide time-table for workers involved in growing Pepper fruit	3.61	.60	Required
Overall grand mean		**3.45**	**.65**	

X = Mean, SD = Standard Deviation
Source:

Table 1 reveals that entrepreneurship skills for planning for pepper fruit production enterprise had their mean ranged from 3.01 – 3.90. Each mean score was above 3.00 with the overall grand mean of 3.45. This means that graduates of secondary schools in Kogi east agricultural zones required all the items from A1 – A11on entrepreneurship skills for planning for pepper fruit production. The entrepreneurship skills had their standard deviations ranged from .23 - .80. This showed that respondents were close to one another in their views and were also not too far away from the mean.

3.2 *Research Question 2*: what are the entrepreneurship skills secondary school graduates required for propagating and establishing pepper fruit in permanent field?

Table 2: Mean responses of pepper fruit farmers and teachers of agriculture on entrepreneurship skills secondary school graduates required for propagating and establishing pepper fruit in permanent field (n = 82)

S/N	Propagating and establishing pepper fruit in permanent field	*X*	*SD*	*Remarks*
B12.	Identify a suitable site for field establishment of pepper fruit crop	3.83	.42	Required
B13.	Plan for clearing the site	3.66	.71	Required
B14.	Arrange for the burning and packing of grasses on the cleared land	3.51	.61	Required
B15.	Use vegetative cut juvenile stems and apply 2000 ppm indole butyric acid (IBA) to sprout	3.64	.67	Required
B16.	Select viable seeds from certified vendors	3.60	.68	Required
B17.	Employ the use of implements to make deep grooves on the field and drill propagated materials carefully	3.81	.42	Required
B18.	Use single node cuttings for mass propagation	3.60	.55	Required
B19.	Use upper nodal position of juvenile materials cut	3.41	.65	Required
B20.	Much the base of grooves with dry grass	3.40	.72	Required
B21.	Use high humidity propagator and watered twice a day	3.55	.64	Required
B22	Observe the seed for germination	3.99	.82	Required
B23.	Employ means of weeding as necessary	3.83	.42	Required
B24.	Observe when to reduce the frequency of watering	3.81	.42	Required
B25.	Plan for means of incorporating manure on the grooves	3.51	.61	Required
B26.	Identify ungerminated seedlings and replace	3.57	.59	Required
B27.	Employ manual weeding 10-25 days after transplanting	3.81	.42	Required
B28.	Provide and wear protective clothing when applying fertilizer or any other chemicals	3.25	.70	Required
B29.	Read manufacturers' instructions and follow them when using any agro-chemical on the farm	3.60	.55	Required
B30.	Spray pesticides to control pests	3.56	.64	Required
B31.	Observe the color of fruits from green to red	3.41	.65	Required
B32.	Plan for the harvesting of matured fruits by picking	3.28	.84	Required
B33.	Arrange for packing of fruits in a well aerated baskets	3.57	.59	Required
Overall grand mean		**3.60**	**.59**	

X = Mean, SD = Standard Deviation

Table 2 showed that entrepreneurship skills for propagating and establishing pepper fruit in permanent field had their mean score ranged from 3.25 – 3.99 with an overall grand mean score of 3.60. Each item mean score was above 3.00. This implies that graduates of secondary school in Kogi east agricultural zones required all the items on entrepreneurship skills for propagating and establishing pepper fruit in permanent field from B12 – B33. The entrepreneurship skills had their standard deviations ranged from .42 - .84, indicating that the respondents were close to one another in their opinions.

3.3 *Research Question 3*: What are the entrepreneurship skills secondary school graduates required in marketing of pepper fruit?

Table 3: Mean responses of pepper fruit farmers and teachers of agriculture on entrepreneurship skills secondary school graduates required for marketing pepper fruit (n = 82)

S/N	Marketing of pepper fruit	*X*	*SD*	*Remarks*
C34.	Advertise for pepper fruit	3.84	.41	Required
C35.	Search for market for Pepper fruit	3.51	.64	Required
C36.	Determine prices based on color and size	3.68	.80	Required
C37.	Determine when to sell pepper fruit for profit	3.58	.63	Required
C38.	Identify consumers of pepper fruit	3.67	.59	Required
C39.	Supply pepper fruit to the consumers	3.72	.51	Required
C40.	Keep record of pepper fruit purchased from the wholesaler	3.48	.70	Required
C41.	Keep record of pepper fruit sales	3.52	.61	Required
C42.	Evaluate services to consumers	3.99	.82	Required
C43.	Record all income and expenses	3.47	.75	Required
C44.	Determine the profit margin in pepper fruit marketing	3.01	.81	Required
Overall grand mean		**3.58**	**0.66**	

X = Mean, SD = Standard Deviation

Table 3 reveals that the entrepreneurship skills in marketing pepper fruit had their means ranged from 3.01 – 3.99 with an overall ground mean score of 3.58. Each item mean score was above 3.00. This implies that graduates of secondary school in the study area require all the items from C34 – C44 in marketing pepper fruit. The entrepreneurship skills had their standard deviations ranged from .41 - .82, which indicates that the respondents were close to one another in their views.

Table 4: Summary of Analysis of variance (ANOVA) of respondents' ratings of entrepreneurship skills required by secondary school graduates in planning, planting, and marketing of pepper fruit

Responses	Sum of Squares	Df	Mean squares	F	Sig.	Decision
Between Groups	859.667	1	859.667	2.852	.095	Accept
Within Groups	24114.577	80	301.432			

Table 4 shows the ANOVA statistical analysis of the responses on entrepreneurship skills required by secondary school graduates in planning, propagating and establishing pepper fruit in permanent field, and marketing of pepper fruit. The Table shows that there was no statistically significant difference in the responses of the respondents on entrepreneurship skills required by secondary school graduates in pepper fruit production enterprise. Therefore, the null hypotheses were upheld as *p*-value of .095 is greater than the significance level of .05. Therefore, pepper fruit farmers and agricultural science teachers do not differ significantly in their ratings of entrepreneurship skills secondary school graduates required in planning, propagating and establishing pepper fruit in permanent field, and marketing of pepper fruit.

DISCUSSION OF FINDINGS

Table 1 showed that graduates of secondary schools require all the 11 entrepreneurship skills identified, if they must be successful in pepper fruit production. These include planning for pepper fruit growing enterprise, formulate specific objectives for growing pepper fruit enterprise,

review the objectives for steady production of pepper fruit periodically, draw programme on land preparation and field management of pepper fruit, decide on type of farming practice to adopt, budget for all management practices until crop is established, among others. These findings align with the view of Olaitan and Mama (2001) that planning activities for any project include formulation of specific objectives, revising the objectives periodically, deciding on farming operations to adopt, and planning for procurement of farm inputs among others. The findings also agreed with the submission of Mohammed (2007) steps in planning an enterprise include identification of sources of credit, keeping records of sales and expenditure together with ascertaining the profit margin of the enterprise.

To be successful in propagation and field establishment of pepper fruit, Table 2 showed that graduates of secondary schools required all 23 entrepreneurship skills identified. These include identifying a suitable site for field establishment of pepper fruit crop, planning for site clearing, arranging for burning and packing of grasses on the cleared land, using vegetative cut juvenile stems and applying 2000 ppm indole butyric acid (IBA) to sprout, select viable seeds from certified vendors, using single node cuttings for mass propagation, using upper nodal position of juvenile materials cut, much the base of grooves with dry grass, use high humidity propagator and watered twice a day, observing seeds for germination, employing means of weeding as necessary, and observing when to reduce frequency of watering. These findings conform to the views of Emone (2003) that site selection for planting crops should be followed with land clearing, stumping and tillage operation.

The findings also cohere with the opinion of Onefeli et al. (2014) that propagation through cuttings from juvenile plants should be treated with high concentration of hormones to produce clones of large quantity from the onset for conservation purposes; adding that the use of right nodal position largely determines the rooting ability of plant cutting after been treated with 2000 ppm indole butyric acid (IBA). This is done to stimulate sprouting and good survival rate among seedlings. The findings on the aspect of management practices after planting pepper fruit corroborates the observation of Castin and Moody (1989) that post-planting management practices required of farmers include weeding, fertilizer application, irrigation, pests and disease control, and harvesting. While findings on harvesting were in agreement with the view of Onefeli et al. (2014) that pepper fruit harvesting is usually determined by the fruit colour among others.

On skills required for success in marketing of pepper fruits, Table 3 showed that all 11 entrepreneurship skills identified were needed by graduates of secondary school. These include advertising and searching and locating buyer of pepper fruit, determining price of fruits based on colour and size, determining when to sell pepper fruit for profit, identifying consumers of pepper fruit, supplying pepper fruit to consumers, keeping records of sales, evaluating service to consumers, and among others. The findings conform to the view of Arene (1998) that searching for markets, grading and standardizing, distributing and transporting product, recording financial transactions, and fixing prices are marketing skills entrepreneurs need to possess. The findings are in congruence with the view of Mizelle (2004) that marketing must be responsive to consumers' demands that for quality, freshness and reasonable prices, as well as their tastes and preferences.

CONCLUSION AND RECOMMENDATIONS

The study focused on determining the entrepreneurial skills required by graduates of secondary schools for the production, propagation and field management as well as marketing of pepper fruits. The statistical analyses conducted, reveals pertinent entrepreneurial skills required by graduates of secondary schools for success in pepper fruit business. The study concludes that entrepreneurship skills are crucial to success in pepper fruit production enterprise because it provides necessary skills secondary schools graduates need for gainful engagement. The acquisition of entrepreneurship skills will enhance greater involvement in the production of pepper fruit for higher economic returns. Based on the findings of the study and the conclusion reached, the study recommends as follows:

i) Curriculum developers at the State Ministry of Education should incorporate the identified skills into programmes of agricultural education with necessary equipment and facilities and integrate them into the state skill acquisition centres for training unemployed secondary school graduates to acquire needed skills in pepper fruit production for self-reliance.

ii) Unemployed youths should be informed of the identified skills by all stakeholders through mass media to enable them identify areas of pepper fruit production enterprises in which they are interested and could be trained for successes that could enable them make a living.

iii) Pepper fruit farmers, processors, and marketers should utilize the revealed entrepreneurship skills in hiring qualified personnel that can improve their level of production for more income generation and business growth.

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