

Capacity Building Needs of Secondary School Graduates for Citrus Production in Benue State, Nigeria.

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Abstract

The study identified capacity building needs of secondary school graduates for citrus production in Benue State, Nigeria. Three research questions were answered and three hypotheses tested were used for the study. Survey research design was employed for the study. The study was carried out in Benue State, Nigeria. The population for the study was 287. The entire population was used for the study. A-35 item questionnaire titled: Capacity Building Needs of Secondary School Graduates for Citrus Production Questionnaire (CBCPQ) was used for data Collection. The instrument was face validated by three experts. The questionnaire were analyzed using weighted \bar{x} (Mean) and Capacity Building Needed Index (CBNI). Cronbach Alpha reliability coefficient was used to determine internal consistency of the instrument which yielded reliability coefficient of 0.88. Findings from the study revealed that secondary school graduates in Benue State needed capacity building in nursery operation, pre-planting operation and planting operation for citrus production. It was recommended amongst others that identified capacity building skill needs should be used by Agricultural extension officers to build the capacity of crop farmers and secondary school graduate for citrus production in Benue State.

Keywords: Capacity Building, Secondary School Graduates and Citrus Production.

Introduction

Citrus occupies an important place in the diet of man, this is because of the high nutritive value of its fruit. According to Calabrese (2002), citrus fruits belong to the family *Rutaceae*, sub-family *Aurantiodae* and Tribe *Citreae*. The tree is an evergreen, dicotyledonous perennial with spines. Leaves are simple, ovate with wings at the petiole region. Flowers are single or in clusters, white and fragrant. Fruit is a hesperidium carpels or segments filled with juicy arils and seeds. Seeds are white show polyembryony except *Citrus grandis* which vary in size and number in different species (Biojode, 2001). Citrus is one of the most important fruit crop grown all over the world. Citrus fruits are rich in folic acid as well as a good source of fiber. They are fat free, sodium free and cholesterol free. They contain potassium, calcium, thiamin, niacin, vitamin B6 (Pyridoxine), phosphorus, magnesium and copper, citrus species are grown for the juice of their fruits. Citrus is a plant with large shrubs or small tree reaching 5-15m tall, with spiny shoots and alternatively arranged every green leaves with an entire margin. The flowers are solitary, each flower is 2-4cm diameter with five (rarely four) white petals and numerous stamens, they are often, very strongly scented. Citrus is a cash crop. Opeke (2005) observed that citrus grows best in a well drained, fertile and deep soils and well drained clay soil with PH>5.8. According to the author citrus produces its first fruit in 36 months from germination, taking about 3years to develop.

Nutritionally, Opeke (2005) maintained that citrus fruits are well known as an important source of Vitamin 'C' which guards against scurvy (disease condition of blood caused by eating much salt, meat and not eating enough fresh vegetables and fruits). While the processed citrus fruit known as juice are preserved in form of squash, cordials or juice concentrates, some citrus can be prickled or used for flavoring. Various products are obtained from the plant, the leaves of the orange are studded with vesicles containing volatile oil, and have a bitter aromatic taste, and when rubbed between the finger are very redolent. The flowers have a delicious fragrance which is imparted to the surrounding atmosphere, but which is lost by drying. They owe their aroma to an essential oil which may be obtained by distillation; it is termed *oil of nerolis*, and is much used in perfumery (Merkle, 2005). Orange flower water is prepared in Italy and France which is quite pale, has a rich odour of flowers, and a bitter aromatic taste, it is also employed for the purpose of perfumery, although reputed to possess antispasmodic virtues {medicines used to treat symptoms such as pains and spasm in Irritable Bowel Syndrome (IBS)} The peculiar fragrance of the flower may be preserved for longtime by beating them into a pulp with one-fourth their weight of common salt. Citrus are excellent sources of minerals, vitamins and enzymes, they are easily digested and bring about a cleansing effect on the blood and the digestive tract. Hence, the ailments usually caused by the consumption of unnatural foods can easily be treated with citrus fruits. Apart from being a good source of food, fruits are also good medicine.

Secondary school graduates as explained by the National Policy of Education (2004) are those individuals that have completed six years of secondary school education and who expected to have acquired technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic development. Capacity building is the process of developing and strengthening the skills, instincts, abilities, process and resources that individuals need for them to serve, adapt and thrive in the fast changing world of technology (Ann, 1996). It is the process of improving the level of knowledge, skills and attitudes possessed by an individual for proficiency in a given task or job (Groot and Moolen, 2005). Capacity building in this study refers to the process of improving the knowledge, skills, attitudes and instincts of secondary school graduates in citrus production in Benue State.

Production as explained by Ekele (2015) is the rational combination of various input resource in order to create a stipulated output. It is the process of creating output and making it get to the final consumers. Iwena (2008) referred to production as all economic activities which result in the creation of goods and services to certify human wants. Anyamouocha (2001) asserted that production is only said to be completed when the product gets to the final consumers. Therefore, citrus production is the combination of resource inputs for the purpose of obtaining citrus fruits as outputs and making them available to the final consumers. Ereboh (1995) categorized activities in crop production into pre-planting, planting, post-planting and harvesting operations. The activities in citrus production are grouped into nursery, pre-planting and planting operation. Production in the context of this work refer to all the activities involved in citrus production.

Statement of the Problem

In Benue State citrus production is a lucrative business. It has high market value as many customers come from neighboring states and countries to patronize the farmers. However, it was observed by the researcher that the quantity supplied by the citrus farmers in the state fall below the quantity demanded by the consumers and marketers, despite all the effort of the Agricultural extension officers to help citrus farmers boost their output and supply to the market the problem of low-supply and poor preservation of citrus products could be as result of the low level of education of the farmers and age. In any case, the Government of the country expected that secondary school graduates should be able to replace their parents in crop production such as citrus. This is why the Nigerian Education Research and Development Council (NERDC) included crop production in the curriculum of secondary schools which is handed over to the teachers for implementation.

Teachers on their part teach and evaluate secondary school students for competence in different areas of agriculture including citrus production before they are allowed to graduate. Meanwhile, the researcher observed that most of the secondary school graduate abandon agriculture and migrate to urban cities such as Makurdi, Kano, Lagos, Onitsha, Port-Harcourt and Abuja in search of white collar jobs which are not easy to come by these days. In most cases they resort to armed robbery, human trafficking, prostitution, thuggery in order to earn a living, instead of picking up jobs in agriculture such as citrus production. It is on this bases that the researcher deemed it necessary to conduct this study on capacity building needs of secondary school graduates for citrus production in Benue State.

Purpose of the study

The major purpose of the study was to identify capacity building needs of secondary school graduates for citrus production in Benue State, Specifically; the study determines capacity building needs of secondary school graduates in

1. Nursery operation.
2. Pre-planting operation.
3. Planting operation.

Research questions

1. What are the capacity building needs of secondary school graduates in nursery operation for citrus production in Benue State?
2. What are the capacity building needs of secondary school graduates in pre-planting operation for citrus production Benue State?
3. What are the capacity building needs of secondary school graduates in planting operation for citrus production in Benue State?

Methodology



Three research questions guided this study. Survey research design was adopted for this study, According to Emaiku (2002); it is a valuable tool for assessing opinions from representative group of population being investigated. The area of the study was Benue State. The population for the study was 287 made up of 210 Agricultural Science Teachers (Benue State Teaching Service Board (TSB 2015) and 77 Agricultural Extension officers (Benue Agricultural and Rural Development Authority (BNARDA), 2015). The entire population was used for the study because the size was small and manageable. Hence, there was no sampling. The instrument for data collection was a 35-item questionnaire titled: Capacity Building Needs of Secondary School Graduates for Citrus Production Questionnaire (CBCPQ). The questionnaire was developed from literature reviewed. The instrument was divided into two (2) categories of needed and performance. The needed category had 3- point response scale anchored on a continuum of Highly Needed, (HN), Lowly Needed (LN), and Not Needed (NN) while the Performance category also had a 3-point rating scale anchored on a continuum of High Performance (HP), Low performance (LP), and No performance (NP) with corresponding Values of 3, 2 and 1 for the groups of rating scale respectively. The instrument was face validated by three (3) experts: one from Agricultural Education Department, one from Crop Production Department and one from test and measurement, all from the University of Agriculture Makurdi, Benue State. There corrections and suggestions were effected to improve the initial copies of the questionnaire. The CBCPQ was administered to 30 similar characterized respondents in Nassarawa State to test the internal consistency of the items. This gave 0.88, meaning that the questionnaire items are highly reliable. As a result, the CBCPQ was to collect data from the respondents by the researcher with the help of three research assistants who were conversant with the area of study. Two hundred and eighty-seven copies of the questionnaire were administered to the respondents, but two hundred and seventy-seven copies were returned and analyzed.

To determine the capacity building needs of secondary school graduates, the following steps were taken: the mean (\bar{X}_n) of the needed category was determined for each item, the mean (\bar{X}_p) of the performance category was also determined for each item, the performance gap (PG) was also determined by finding the difference between \bar{X}_n and \bar{X}_p for each item i.e.

$PG = \bar{X}_n - \bar{X}_p$. Inference drawn from the calculation is given as:

Key: CBN = Capacity Building Needs

\bar{X}_n = Mean needed, \bar{X}_p = Mean performance.

PG = Performance Gap

N = Number of respondents

- i. Where the value of PG was positive (+) for each item, it indicates that the youths needed requisite skill due to the fact that the level at which the youths where performing is lower than what is needed. In order words, the level at which the skill item was needed was higher than the level at which secondary school graduates could perform the skill items.
- ii. Where the performance (PG) was negative (-) for each item, it shows the skill is not needed by youths. This is because the level at which the youths where performing is

lower than what is needed. In other words, the level at which the requisite skill item was needed was lower than the level at which secondary school graduates could perform the skill item.

- iii. Where the performance (PG) is (0) for each item, it indicates that the youths needed no skill, because the level at which the youths were performing the operations of items is equal to the level that was needed (the level at which the requisite skill item was needed was equal to the level at which secondary school graduates could perform the skills).

Research Question1 What are the capacity building needs of secondary school graduates in nursery operation for citrus production in Benue State?

Table1:Performance gap analysis of the Responses of Agricultural Science Teachers and Agricultural Extension officers on Capacity building needs by Secondary School graduates in citrus nursery operation. (n=287)

N/S	Capacity building in nursery operation	\bar{X}_n	\bar{X}_p	$\bar{X}_n - \bar{X}_p$ (PG)	Remarks
1.	Select a good site for the citrus nursery	2.88	1.88	0.99	CBN
2.	Clear and remove vegetation from the site	3.00	1.90	1.09	CBN
3.	Mark out the site in rows leaving a space of 3cm-6cm in between them.	2.88	1.80	1.09	CBN
4.	Provide material inputs such as rough Lemon seeds, basket, polybags, wooden, Tray, river sand, sawdust, water, organic manure, hoe or Shovel.	3.00	1.88	1.11	CBN
5.	Mix top soil, river sand and organic material in the ratio of 3:2:1 thoroughly with shovel.	3.00	1.90	1.09	CBN
6.	Fill the available container(basket,polybag or wooden tray) with the mixture.	2.78	1.90	0.87	CBN
7.	Arrange the filled container along 4 rows or More lines with 40 x 45cm square spacing.	2.88	1.88	1.00	CBN
8.	Water the container with its content daily to Make the mixture wet.	2.88	1.88	1.00	CBN
9.	Select seeds of exotic varieties such as mayer-lemon and melogold.	2.77	1.90	1.08	CBN
10.	Shrub the seeds slightly in a bucket with river-Sand to remove the gelatinous covering for quick germination.	2.98	1.90	1.08	CBN
11.	Mix the riversand, dust, moist free sand With water to separate good seeds from bad ones.	2.88	1.90	0.97	CBN
12.	Remove bad seeds which float on water in the bucket.	2.98	1.81	1.17	CBN
13.	Drain water from the bucket to remove the good seeds.	2.88	1.90	0.97	CBN

14.	Spread out the good seeds in the shade to Air –dry them.	2.68	1.99	0.68	CBN
15.	Sow the seeds in the container (basket, Polybag or wooden ray) earlier prepared	2.78	1.88	0.90	CBN
16.	Water the container with its content every other day.	2.90	1.88	1.02	CBN
17.	Observe seeds for germination after weeks of planting.	2.72	1.87	0.84	CBN
18.	Remove shade if provided with palm to” harden” the seedling.	2.78	1.90	0.87	CBN
19.	Transplant citrus seedling after about 1 year of planting to the farm or market	2.84	1.90	0.94	CBN

Key: CBN=capacity building needed, \bar{X}_n =mean of needed, \bar{X}_p =mean of performance gap, PG=performance gap, N=number of respondents

The result in Table 1 revealed that the performance gap values of all the items range from 0.68 to 1.17 and they were positive. The performance gap value further showed that capacity building is needed by secondary school graduates in citrus nursery operation.

Research Question 2

What are the capacity building needs of secondary school graduates in pre-planting operation for citrus production in Benue State?

Table 2:

Performance gap analysis of mean rating of the Responses of Agricultural Science Teachers and Agricultural Extension officers on capacity building needs by secondary school graduates in citrus pre-planting operation. (N=287)

N/S	Capacity building in pre-planting operation	\bar{X}_n	\bar{X}_p	$\bar{X}_n - \bar{X}_p$ (PG)	Remarks
1.	Select citrus orchard site of well drained soil (preferably clay)	2.73	2.00	0.73	CBN
2.	Survey the land for proper demarcation	2.87	1.90	0.99	CBN
3.	Clear the vegetation and remove the debris and dumps.	2.87	2.00	0.87	CBN
4.	Treat soil to obtain a PH of > 5.8	2.90	1.88	1.02	CBN
5.	Plough and harrow the to pulverize the Soil for easy root development	2.78	1.88	0.90	CBN
6.	Mark the site in rows using pegs and leaving a space of 60cm after planting 10 rows to allow for movement of equipment.	2.88	1.90	0.97	CBN

Key: CBN=capacity building needed, \bar{X}_n =mean of needed, \bar{X}_p =mean of performance, PG=performance gap, N=number of respondents

The result in Table 2 showed that the performance gap values of all 6 items ranged from 0.73 to 1.02. This revealed that the values are positive and hence capacity building is needed by secondary school graduates in citrus pre-planting operations.

Research Question 3

What are the capacity building needs of secondary school graduates in planting operation for citrus production in Benue State?

Table 3: Performance gap of mean rating of the Responses of Agricultural Science Teachers and Agricultural Extension officer on capacity building needs by secondary school graduates in citrus planting operation. (N=287)

N/S Capacity building in planting operation		\bar{X}_n	\bar{X}_p	$\bar{X}_n - \bar{X}_p$ (PG)	Remarks
1.	Transplant 1 seedling per hole	2.90	1.90	0.99	CBN
2.	Remove the polybag from the hole and it with garden soil.	2.68	1.90	0.77	CBN
3.	Affirm/consolidate the at the base of seedling ensuring that they are in upright position.	2.77	1.90	0.86	CBN
4.	Water the orchard if rains have not stabilized.	2.98	1.88	1.10	CBN
5.	the mixture of NKP 15:15:15 in the ratio 3:2 after planting (based on soil test).	2.98	2.00	0.98	CBN
6.	fertilizer application in September is during the long rains	2.98	1.88	1.10	CBN
7.	Weed the orchard manually with hoe or or chemically using herbicides Fermate or Arisan	2.96	1.90	1.05	CBN
8.	Apply 3 liters of water per plant twice a week for new seedling	2.98	1.88	1.10	CBN
9.	Space at about 5m-9m apart	2.98	1.88	1.10	CBN
10.	Interplant citrus with early maturing Plants like Okra, leafy vegetables, melon sweet potato or sweet com.	2.98	1.88	1.10	CBN

Key: CBN=capacity building needed, \bar{X}_n =mean of needed, \bar{X}_p =mean of performance, PG=performance gap, N=number of respondents

Result in Table 3 revealed that the performance gap values of the 9 items ranged from 0.77 to 1.10 and were positive. This showed that capacity building is needed for secondary school graduates in citrus planting operation.

Discussion of Results

The result of this study in Table 1 revealed that secondary school graduates needed 19 capacity building skills in citrus nursery operation. The capacity building skills are: select a good site for the citrus nursery clear and remove vegetation from the site, mark out the site in rows leaving a space of 3cm -6cm in between them , provide material inputs such as roughlemon seeds, baskets, polybags, wooden trays, riversand, water, organic manure, hoe or Shovel and so on. This result is corroborated by the findings of Asogwa, Uko and Umeh (2010) in a study on quality assurance of teacher teaching oil production to senior secondary school in Enugu State, where the teachers were judged to possess average quality assurance in 16 nursery operations to teach oil palm production to senior secondary school students in Enugu State. Examples of the nursery operations include: select site for the oil palm nursery mark out the land with pegs, provide polythene bags and perforate the polythene bags at the bottom to drain out water among others.

The result of this study in Table 2 revealed that secondary school graduates needed 6 capacity building skills in pre-planting operation. The capacity building skills are : select citrus orchard site of well drained soil (preferably clay), Survey the land for proper demarcation, clear the vegetation and remove the debris and stumps, treat soil to obtain a PH of >5.8 among others. These findings are in consonance with the work of Ekele and Wombo (2013) in a study on meeting capacity building needs of small scale farmers in rice production for sustainable development in Kaduna State, where small scale rice farmers were judges to need capacity building skills in 10 land and seed preparation (pre-planting operation) for sustainable development in Kaduna State. Examples of land and seed preparation include: clear the land and burn the bush used disk harrow for fin filth, raise seeds from nursery and so on.

The result of the study Table 3 revealed that secondary school graduates needed 10 capacity building skills in citrus planting, the identified capacity building skills are: Transplant 1 seedling per hole, remove the poly bag from the hole and cover it with garden soil, Affirm/Consolidate the soil at the base of the seedling ensuring that they are in upright position, water the orchard if rain has not stabilized among others. The result of the study is not surprising to the researchers because the instrument was developed from current literature on citrus production. Besides, the instrument was validated by experts who are competent in citrus production and have been teaching crop production to students in universities for more than ten years.

Conclusion

The study established that capacity building is needed by secondary school graduates for successful citrus production in Benue State. The Skills determined are nineteen (19) skills in nursery operation, seven (7) Skills in pre-planting operation and (10) Skills in planting operation.

Recommendations



1. Secondary school graduates should be trained on citrus production using the identified competencies in citrus production.
2. Skills identified in the study should be integrated into the curricula of primary, secondary and tertiary institutions for students to acquire skills in citrus production
3. The identified capacity building needs should be used by Agricultural Extension officers in ministry of agriculture to build the capacity of farmers and secondary school graduates in citrus production in Benue State.

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