

Competency Needs of Senior Secondary School Agricultural Science Teachers in Cucumber (*Cucumis Sativus L.*) Production in Abia State, Nigeria

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Abstract

The study assessed the Competency needs of senior secondary school Agricultural Science teachers in Cucumber (*Cucumis sativus L.*) production in Abia State, Nigeria. The study addressed practical issues in Agricultural Education; the gap between the theoretical teaching and practical competencies in crop production. Focusing on cucumber production is timely, given its growing commercial importance in Nigeria. The study was guided by four objectives, research questions and corresponding hypotheses which are well aligned. This study adopted a descriptive survey research design with a population of 326 Agricultural Science teachers in the 250 public secondary schools in the three educational zones in Abia state. The sample of the study was 163 teachers of Agricultural Science obtained through random sampling techniques based on the educational zones in Abia State. Cucumber production competencies questionnaire was used for data collection, validated by experts and reliability of the instrument was established through Cronbach alpha method and it yielded an overall internal consistency of 0.82. Data for the study was collected by the researchers and three research assistants. The researchers collected the questionnaire from the respondents in a week interval and obtained a 100% return rate. The data collected were analyzed using mean, standard deviation and t-test. It was revealed that 8 competencies in pre-planting, 7 competencies in planting, 7 competencies in post-planting, 6 competencies in harvesting and 9 competencies in marketing were needed for cucumber production. It was recommended that the identified competencies be used by the Agricultural Science teachers in teaching cucumber production among others.

Keywords: Competency, Needs, Agricultural Science, Cucumber production.

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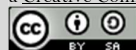
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INTRODUCTION

Cucumber production is very popular in many African countries including Nigeria and other parts of the world. Rolnik and Olas (2020) opined that Cucumber (*Cucumis Sativus L.*) is a monoecious annual horticultural crop that belongs to the Cucurbitaceae family and it is cultivated across different agro-ecological zones in Africa. Cucumber is said to have spread from India to other parts of the world including West Africa (Okpani, Orji, & Umekwe 2023). 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. Cucumbers are vegetables that can thrive in most parts of Nigeria making them a good crop, although it is mainly grown in the northern parts of the country (Nwoye, Orusha, Nze, & Ihugba, 2025). In Nigeria, it is regarded as one of the most commercially viable vegetables and very profitable as a venture if propagated. The most important varieties of cucumber are slicing, pickling and burp-less. Cucumbers come in three distinct types which are seedless cucumber, seeded, and mini cucumber. It is believed to have been cultivated by man for over 3,000 years (Adinde, Uche, Anieke, Odom, Igwe & Akor, 2021).

Cucumber belongs to the family of cucurbitaceae with four genera which include *cucumis*, *citrullus*, *cucurbita* and *lufta*. According to Hochmuth in Nnodim and Somoni (2019) affirmed that cucumber is a warm season crop that requires plenty of sunlight for minimum temperature of 15.60°C and a maximum temperature of 32.20°C. Cucumber is a creeping vine that roots in the ground and grows up trellises or other supporting frames, wrapping around supports with thin, spiraling tendrils. The plant has large leaves that form a canopy over the fruit. The fruit of the cucumber is roughly cylindrical, elongated with tapered ends, and as large as 60 centimeters (24 in) long and 10 centimeters (3.9 in) in diameter. In recent times, Cucumbers production has become a lucrative activity for most people because of its high demand by all classes of people. In submission of Asogwa, Odo and Obetta (2015) Cucumbers are adapted to a wide variety of soil types which have good drainage and adequate water holding capacity and do not perform well on acid soil but thrives well under slight acidity. Adebayo (2020) reported that cucumber is a popular vegetable used for salads and also processed into other useful food products. 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.

Nutritionally, Stern (2018) pointed out that cucumber has the advantage of being relatively low in calories and high in nutrients and an excellent source of fibre needed for a healthy digestive system. In supporting this, Uthpala, Marapana, Lakmini, and We-imuny (2020) reported that cucumbers possess other biological properties that make them outstanding such as anti-oxidant, anticarcinogenic, anti-microbial, anti-hyperglycemic, and anti-inflammatory effects. Okonkwo-Emegha (2025) opined that cucumbers are long, cylindrical green fruits that contain about 95% water and are for this reason often recommended as natural diuretics and helpful for body building. According to Adinde, Uche, Anieke, Odom, Igwe and Akor (2021) it helps in healing diseases of urinary bladder and kidney, digestive problems like heart burn, acidity, gastritis and ulcer. Eaten cucumber helps in weight reduction and ensures a steady supply of glucose and high level of energy all day. In Abia State, cucumber is eaten raw with fried groundnut or used in the preparation of salads with other vegetables. In recent times, Cucumbers production in Abia State has become a lucrative activity for most people because of its high demand by all classes of people. For this reason cucumber has high level of market value that ranges from 25,000 naira to 40,000 naira for a 50kg bag and this could motivate senior secondary school students in going into its production.

Production has been defined as the process of combining some inputs to produce or manufacture tangible goods for human consumption or for other uses for man's benefit. Cucumber production has the potential to improve agricultural productivity, promote economic empowerment, and enhance food security (Okafor & Yaduma, 2021). Cucumber production is an important agricultural activity in eastern Nigeria, particularly in Abia State. In the context of the study, Cucumber production is the economic process of converting cucumber seed input into cucumber fruit or vegetable as output in order to certify human want. The practices involved in the cultivation process include pre-planting operations, planting operations, and post-planting operations, such as weeding, fertilizer application, harvesting, and processing of the fruits for consumption and other uses. Therefore, the success of cucumber production to meet human wants depends on the pre planting operations, planting operations, post planting operations, harvesting and marketing which the teacher needs to be competent to teach. An attempt to improve its production through the application of required relevant competencies is needful.

Competencies is the ability to do something well, measured against a standard, especially ability acquired through training or experience. Chukwone and Obichili (2019) stated that

competency is the required knowledge, skills and attitude needed by someone to perform an established task. Moreover, in the submission of Onah, Ojomu, Alilo and Eneji (2025) competency is the standard knowledge, skills, and attitude required for successful task execution. Professional competence involves more than just knowledge, skills, attitudes, and motivational variables but also contribute to the mastery of teaching and learning (Akinbode & Abati, 2019). In this study, competency needs refer to equipping secondary school students with practical skills for cucumber production, which are often lacking due to a theoretical curriculum. Agricultural science teachers provide general knowledge, but students may graduate without hands-on competencies for profitable farming. In the context of this study competency refers to the knowledge, skills and attitude which the teacher of agriculture needs for effective teaching of Agricultural science.

Agriculture according to Obue (2019) is the vehicle for national development. Agriculture involves the processing and marketing of the products of animals and crops like cucumber (Omeje & Asogwa, 2013). Agricultural science is one of the subjects taught to students in secondary schools. Agricultural science according to Tibi in Onipede, Lawal, and Samuel (2020) is a subject designed to increase students' cognitive and physical talents in the field of agriculture, thereby enhancing their knowledge, skills, and outlook on self-improvement and national development. Given the increasing importance of agriculture in Nigeria, the competency development of teachers is paramount for improving educational standards and student engagement in Agricultural Science. Teachers, in this context, refer to individuals who are trained in agriculture with the duty of imparting knowledge and skill in cucumber production to students in senior secondary schools. Such individuals are popularly called teachers of agriculture. Furthermore, Babayo and Kesiki (2019) stated that those who teach agriculture are those trained in the pedagogical and technical areas of agriculture and charged with the responsibility of imparting knowledge and skills in agriculture to students. These mean that a teacher of agricultural science could be a male or female who has undergone a teacher preparatory programme in the area of agriculture. Being a teacher is a responsibility and task, and the teacher of agriculture is a main figure in implementing any agricultural programme at any level of education, especially at the secondary school levels where the students are still young who is zealous and passionate to learn. Teachers of agriculture that teaches senior secondary students made up of male and female teachers in Abia State.

In Abia State, it has been observed by the researcher that teachers of agricultural science depend mostly on text books and lecture method in teaching the students. The implication of these practices is that the senior secondary school students graduate from school without acquiring the basic competencies that will enable them to fix themselves into crop production such as cucumber production to make a living. Effective teaching at senior secondary school level can help close the skills gap if teachers possess the relevant technical and pedagogical competencies. Teachers in the twenty-first century need pedagogical skills to compete in the new digital world (Casillas, Cabezas, & Garca, 2019). These skills will help the teachers in effective teaching of cucumber production and general crop production in agricultural science. Cucumber plants can require a lot of water and nutrients, so agricultural teachers must plan carefully before and during planting. To ensure the most successful growth, Agricultural teachers should use seeds that are adapted to the environment and of high quality (Kong, Llewellyn & Zheng, 2018). Therefore, for the secondary agricultural science students to be self-reliant in cucumber production they are required to acquire the competencies in pre-planting, planting and field management operations.

In this study, pre-planting operations are all the activities carried out before the actual planting of seeds which include site selection, clearing of the land, stumping of the roots, tilling the soil with appropriate tools among others. This is followed by planting operations. The Agricultural Science teacher needs to carry out the actual planting which involves the actual process of placing planting materials into the soil. Such operations include opening the soil with appropriate tool for direct seed sowing, seed rate, spacing among others. The Agricultural Science teacher needs marketing competency in marketing of cucumber pods to increase income for their economic and emotional securities. Marketing involves all the activities relating to the flow of goods and services from the producer to the final consumer. Marketing, with reference to this study, involves all the activities that should be engaged in by the Agricultural Science teacher to move mature cucumber pods from the farm to the wholesalers or final consumers for the purpose of making profit. Such activities range from harvesting, cleaning, storing, and grading to transportation of pods safely to the potential buyers either at the farm gate or market. It is the belief of the researchers that if the Agricultural Science teachers acquire appropriate competencies in cucumber production, it will enable them to invest little money to expand their source of income and enhance their economic and emotional securities in the state. Hence the need for this study.

Statement of the Problem

The core problem facing agricultural education in Abia State, Nigeria, is the potential gap between the agricultural science teachers' existing competencies and the specific, up-to-date knowledge and practical skills required for effective teaching in modern cucumber production. Agricultural science is a vocational subject intended to equip students with the necessary skills for self-reliance and potential employment in the agricultural sector. This objective is often hindered by a persistent reliance on theoretical instruction and a lack of practical exposure and application of classroom instruction in real-world scenarios. The inability of many teachers to effectively impart knowledge to students is partly due to deficiencies of practical skills in teachers' competencies. There is need to identify the competency needs of Agricultural Science teachers in their subject area, in order to trace their area of needs and weaknesses and to suggest ways of meeting up their needs for effective teaching of students. However, if the teachers' competency needs are left unidentified, it will undermine the students' skills development and will hinder the objectives of Agricultural science as a vocational subject.

The researchers observed that most of the senior secondary school students could not embark on cucumber production even when they have passed through agricultural science classes. This is skill deficiencies problem on cucumber production. If these competencies (pre planting operations, planting operations, post planting operations, harvesting and marketing) needed in cucumber production were identified and used in teaching the senior secondary agricultural science students while in school, there is the tendency that they could take jobs in cucumber production after graduation. This will help to improve their living, limit rural urban migration, increase cucumber availability in the market and improve the overall economy of Nigeria. Production of cucumber in Abia State is beginning to gain attention and the researchers reasoned that cucumber production is a viable lucrative venture that requires adequate competencies in the operation. Hence the need to identify the competency needs of senior secondary school Agricultural Science teachers in cucumber production in the study area.

Purpose of the Study

The general purpose of this study was to identify the competency needs of senior secondary school Agricultural Science teachers in Cucumber (*Cucumis sativus* L.) production in Abia State, Nigeria. Specially, the study sought to identify the:

1. pre-planting operational competencies needed by agriculture teachers for effective teaching of cucumber production;
2. planting operational competencies needed by agriculture teachers for effective teaching of cucumber production;
3. post-planting operational competencies needed by agriculture teachers for effective teaching of cucumber production;
4. harvesting operational and marketing competencies needed by agriculture teachers for effective teaching of cucumber production; and

Research Questions

1. What are the pre-planting operational competencies needed by agriculture teachers for effective teaching of cucumber production?
2. What are the planting operational competencies needed by agriculture teachers for effective teaching of cucumber production?
3. What are the post-planting operational competencies needed by agriculture teachers for effective teaching of cucumber production?
4. What are the harvesting operational and marketing competencies needed by agriculture teachers for effective teaching of cucumber production?

Hypotheses

The following null hypothesis were tested at 0 .05 level of significance in line with purpose of the study.

HO₁: There is no significant difference between the mean ratings of the male and female responses of senior secondary school agricultural science teachers on pre-planting operational competencies needed for cucumber production.

HO₂: There is no significant difference between the mean ratings of the male and female responses of senior secondary school agricultural science teachers on planting operational competencies needed for cucumber production.

HO₃: There is no significant difference between the mean ratings of the male and female responses of senior secondary school agricultural science teachers on post-planting operational competencies needed for cucumber production.

HO₄: There is no significant difference between the mean ratings of the male and female responses of senior secondary school agricultural science teachers harvesting operational and marketing competencies needed by agriculture teachers for effective teaching of cucumber production.

METHODOLOGY

This study adopted a descriptive survey research design. This design according to Uzoagulu in Ugwuode, Aneke and Ozougwu (2023) is a design in which generalisation are made over the entire population from an ample of a sample population. This design was

considered appropriate because the views of a representative of the respondents were assessed using questionnaire and the findings were generalized on the entire population. The population of the study was 326 Agricultural Science teachers in the 250 public secondary schools in the three educational zones in Abia state. The distribution of the population according to the zones were Aba zone 101 public secondary schools, 140 Agricultural Science teachers, Umuahia zone 58 public secondary schools, 76 Agricultural Science teachers and Ohafia zone 91 public secondary schools, 110 Agricultural Science teachers. The sample of the study was 163 teachers of Agricultural Science obtained through random sampling techniques based on the educational zones in Abia State. In Aba education zone 70, Umuahia education zone 38 and Ohafia education zone 55. Making it total of 163 respondents that corresponds to a 50% sample size. This is in agreement with the statement of Boll, Boll and Gall in Asogwa, Onu and Egbo (2013) which stated that when a defined population is less than one thousand, 50% could be used to minimize sample error. Cucumber Production Competencies Questionnaire (CPCQ) was used for data collection based on four-point response options such as Highly needed (HN), Averagely needed (AN), Slightly needed (SN) and Not needed (NN) with 4, 3, 2 and 1 as their weighting value respectively and validated by experts. Reliability of the instrument was established through Cronbach alpha method and it yielded an overall internal consistency of 0.82. Data for the study was collected by the researchers and three research assistants. One hundred six three copies of questionnaire was administered to the respondents by the researcher with the help of research assistant from each zone. The researchers collected the questionnaire from the respondents in a week interval and obtained a 100% return rate of the filled questionnaires. The data collected were analyzed using mean, standard deviation and t-test to test the null hypothesis at 0.05 level of significance. Tables were clearly presented and any item with a mean range less than 2.50 was interpreted as not needed. The standard deviation was used to analyse the disparity in response patterns of the respondents; a lower value means closely related responses among respondents while a higher value means different opinion (response) on the same item. The null hypothesis was upheld when the probability value was greater than or equal to 0.05 level of significance ($p \geq \alpha$) indicating that there was no significant (NS) difference in the compared means, but not upheld when the probability value is less than 0.05 level of significance ($p < \alpha$) indicating that there was significant difference (S) in the compared means and data were presented on tables.

RESULTS

The results of the study were obtained from the research questions answered and hypotheses tested in Tables 1 to 4.

Table 1: Mean rating and t-test analysis responses of male and female agricultural science teachers on pre-planting operational competencies needed by for effective teaching of cucumber production

S/N	Pre-Planting Operation	$\bar{X}_M$	SD_M	$\bar{X}_F$	SD_F	T.cal	REMARK
1.	Acquire an area of land with a well-drained and fertile soil	3.80	1.58	3.30	1.52	.39	N,NS
2.	Demarcate the boundaries of the land	3.10	1.26	2.90	1.22	1.43	N,NS
3.	Survey the area of the land	3.60	1.45	3.40	1.30	.17	N,NS
4.	Clear the land of existing vegetation	3.20	1.67	3.17	1.55	.21	N,NS
5.	Remove the stumps of trees on the land gather debris and burn	3.40	1.45	3.25	1.25	1.07	N,NS
6.	Spread manure on the area of land for cucumber production	3.14	1.90	3.08	1.85	.45	N,NS

7.	Till the ground to specification (ridge or bed)	3.08	1.31	2.99	1.21	.64	N,NS
8.	Fumigate the soil in order to control weeds and soil borne diseases of cucumber.	2.99	1.30	2.86	1.24	.93	N,NS
Grand mean		3.29	1.49	3.12	1.45	.66	Needed

$\bar{x}_M$ =Mean of Male teachers, SD_M =standard deviation of Male teachers, $\bar{x}_F$ =Mean of Female teachers, SD_F =standard deviation of female teachers T-cal = T- calculated, T-table=1.65, N=Needed, NS=Not Significance

The data in Table 1 revealed the mean of 8 items ranged from 2.90 to 3.80. This indicated that each and all the items had a mean value above the cut-off point of 2.50 which is accepted. The t-calculated of the items ranges from 0.17 to 1.43 are less than the t-table 1.65. This is an indication that there is no significant difference in the mean rating of male and female agricultural teachers on the pre-planting competency needed for cucumber production. Therefore the null hypothesis was accepted.

Table 2: Mean rating and t-test analysis responses of male and female agricultural science teachers on planting operational competencies needed for effective teaching of cucumber production

S/N	Planting Operation	$\bar{x}_M$	SD_M	$\bar{x}_F$	SD_F	T.cal	REMARK
1.	Determine the correct time for planting of cucumber.	3.21	1.84	3.14	1.78	.35	N,NS
2.	Select only healthy cucumber seeds for planting	3.40	1.70	3.25	1.67	.75	N,NS
3.	Carry out viability test for the cucumber seed.	2.90	1.84	2.80	1.61	.51	N,NS
4.	Dry selected cucumber seeds before planting	2.60	0.52	2.50	0.47	.71	N,NS
5.	Measure out 90cm-120cm between rows and 23-30cm within rows.	2.80	0.68	2.77	0.51	.21	N,NS
6.	Measure out 2.5cm-4cm deep for planting cucumber seeds.	3.90	1.58	3.78	1.54	.60	N,NS
7.	Put 4-5 seeds of cucumber in each hole.	2.55	0.66	2.53	0.44	1.23	N,NS
Grand mean		3.05	1.26	2.97	1.15	.63	Needed

$\bar{x}_M$ =Mean of Male teachers, SD_M =standard deviation of Male teachers, $\bar{x}_F$ =Mean of Female teachers, SD_F =standard deviation of female teachers T-cal= T- calculated, T-table=1.65, N=Needed, NS=Not Significance

Table 2 revealed the mean of 7 items ranged from 2.50 to 3.90. This showed that each and all the items had a mean value above the cut-off point of 2.50 which indicated that the entire planting operational competency are needed for effective teaching of cucumber production. The result of the test of hypothesis in table 2 indicated that the t-calculated of all the items ranges from 0.21 to 1.23 are lower than the t-table value of 1.65. This revealed that there was no significant difference in the mean rating of male and female agricultural teachers on the planting operational competency for cucumber production. Therefore the null hypothesis was accepted.

Table 3: Mean rating and t-test analysis responses of male and female agricultural science teachers on post-planting operational competencies needed by agriculture teachers for effective teaching of cucumber production

S/N	Post-planting operation	$\bar{X}_M$	SD _M	$\bar{X}_F$	SD _F	T.cal	REMARK
1.	Mulch the land to conserve moisture in the soil.	3.48	.81	3.12	.74	.30	N,NS
2.	Supply cucumber seed where necessary.	3.44	.76	3.36	.67	.67	N,NS
3.	Thin the seedlings of cucumber to required number of stands.	3.63	.79	3.55	.74	.57	N,NS
4.	Train the cucumber vines on trellises.	3.86	.95	3.16	.88	.50	N,NS
5.	Apply irrigation for adequate moisture.	3.10	.90	2.98	.81	.86	N,NS
6.	Weed the farm regularly.	3.19	.65	3.15	.52	.29	N,NS
7.	Apply manure to the soil to increase nutrient for the cucumber.	2.98	.57	2.76	.38	1.57	N,NS
8.	Control pest and diseases of cucumber.	2.77	1.03	2.72	.98	.36	N,NS
	Grand mean	3.31	.73	3.10	.72	.64	Needed

$\bar{X}_M$ =Mean of Male teachers, SD_M=standard deviation of Male teachers, $\bar{X}_F$ =Mean of Female teachers, SD_F=standard deviation of female teachers T-cal= T- calculated, T-table=1.65, N=Needed, NS=Not Significance

The data presented in Table 3 showed the mean of 8 items ranged from 2.72 to 3.86. This indicated that the mean of each of the items is above the cut-off point of 2.50 which showed that all the post-planting operation is needed by agricultural teachers for effective teaching of cucumber production. The t-test in table 3 shows that the t-calculated of the items ranges from 0.29 to 1.57 are lower than the t-table of 1.65 indicate that there is no significant difference in the mean rating of male and female Agricultural Science teachers in the post-planting competency needed for cucumber production. Therefore the null hypothesis was accepted.

Table 4: Mean rating and t-test analysis responses of male and female agricultural science teachers on harvesting operational and marketing competencies needed by agriculture for effective teaching of cucumber production

S/N	Harvesting Operation	$\bar{X}_M$	SD _M	$\bar{X}_F$	SD _F	T.cal	REMARK
1.	Move round the farm to identify mature cucumber using colour change from light green to deep green	3.36	.90	3.12	.81	1.20	N,NS
2.	Harvest cucumber at 45-55days after planting.	3.61	.77	3.48	.64	.93	N,NS
3.	Harvest at 2-4 days interval	3.55	.57	3.44	.52	.79	N,NS
4.	Harvest mature cucumber by hand picking.	3.48	1.22	3.34	1.03	1.00	N,NS
5.	Bring cucumber fruit down carefully to avoid wound.	2.78	1.04	2.72	.96	.43	N,NS
6.	Keep cucumber fruit on dry surface in a cool and ventilated shed room.	3.92	1.51	3.70	1.23	1.10	N,NS
	Grand mean	3.45	1.00	3.3	.86	.91	
	Marketing Operation						

7	Survey the market for information on supply and demand of cucumber fruits and seedlings.	3.76	1.14	3.68	1.04	.58	N,NS
8	Grade cucumber fruits and seedlings based on quality and quantity.	3.90	.66	3.70	.60	1.43	N,NS
9	Fix price on cucumber fruits and seedlings based on quality and quantity.	3.82	.98	3.64	.94	1.29	N,NS
10	Advertise cucumber fruit or seedlings locally or through media to attrite buyers.	2.94	1.43	2.52	1.23	.60	N,NS
11	Sell to buyers at farm or in the market.	3.62	1.01	3.60	.97	.64	N,NS
12	Transport the cucumber fruits or seedlings to the market in a suitable container.	3.02	.83	2.94	.80	.57	N,NS
13	Sell cucumber fruits or seedlings to consumers through middle men.	2.74	.83	2.62	.79	.86	N,NS
14	Keep record of sold or unsold cucumber fruits or seedlings.	2.90	.77	2.84	.66	.43	N,NS
15	Keep appropriate records of sales for expansions and sustainability.	3.70	1.51	3.50	1.32	0.78	N,NS
16	Keep record of production cost and sales to identity profit and loss.	3.20	1.81	2.98	1.63	1.1	N,NS
Grand mean		3.36	1.09	3.20	.99	.83	Needed

$\bar{x}_M$ =Mean of Male teachers, SD_M =standard deviation of Male teachers, $\bar{x}_F$ =Mean of Female teachers, SD_F =standard deviation of female teachers T-cal= T- calculated, T-table=1.65, N=Needed, NS=Not Significance

Data on table 4 above indicated that male and female agricultural teachers agreed that all the 6 items are harvesting operational competency needed for effective teaching of cucumber production. This is because the mean score of each and all the items are above the cut-off point of 2.50 which is accepted. The tested hypothesis shows that the t-calculated of the items are less than 1.6. This is an indication that there is no significance in the mean rating of male and female agricultural teachers on the harvesting operation for effective teaching of cucumber production. Therefore the null hypothesis was accepted. The data presented revealed that the mean of 10 items ranges from 2.52- 3.70 is above the cut-off point of 2.50 which is accepted. The tested hypothesis showed that the t-calculated of the items ranges from 0.43 to 1.29 are lower than the T- table of 1.65. This is an indication that there is no significance in the mean rating of male and female teachers on the marketing operation. The null hypothesis was therefore accepted.

Discussion of Findings

In Table 1, the results of the data analysis showed that agricultural science teachers needed 8 competencies in pre-planting operations for cucumber production. The competencies identified according to the study are acquire an area of land with a well-drained and fertile soil, demarcate the boundaries of the land, survey the area of the land, clear the land of existing vegetation, remove the stumps of trees on the land gather debris and burn, spread manure on the area of land for cucumber production, till the ground to specification (ridge or bed), fumigate the soil in order to control weeds and soil borne diseases of cucumber. The results of this study is in

consonance with the findings of Onah *et al.*(2025) in a study carried out on Essential Competencies for Secondary School Graduates in Sweet Melon Production for Sustainable Agriculture in Ovia North East, Edo State, Nigeria, where it was found out that Sweet Melon farmers needed capacity building in 10 competencies in pre-planting operations. The results of this study is in consonance with the findings of Omeje and Asogwa (2013) in a study carried out on competencies needed and possessed by rice farmers in Abia State, where it was found out that rice farmers needed capacity building in 10 competencies in pre-planting operations. Chukwone and Obichili (2019) identified that pre-planting operations for cucumber production include land clearing, remove the stumps of trees on the land gather debris and burn, spread manure on the area of land for cucumber production, till the ground as bed, fumigate the soil in order to control weeds among others. The findings of this study showed that the senior secondary agricultural science teachers required all the 7 skills in planting operations for cucumber production.

Findings on competency items in planting operations in Table 2 indicated that agricultural science teachers need 7 competencies in cucumber production which include determine the correct time for planting of cucumber, select only healthy cucumber seeds for planting, carry out viability test for the cucumber seed, dry selected cucumber seeds before planting, measure out 90cm-120cm between rows and 23-30cm within rows, measure out 2.5cm-4cm deep for planting cucumber seeds and put 4-5 seeds of cucumber in each hole. These findings are in consonance with Chukwone and Obichili (2019) who reported that planting operation of any crop involves the sowing or planting of crops and the progression from young plants, test for the viability of the seeds before sowing, plant or sow seeds at recommended depth and so on. The findings of this study are in conformity with the findings of Onipede, Lawal & Samuel (2020) where it was reported that 11 planting skills were required on Competency Training Needs of Agricultural Science Teachers.

From Table 3, the result of the data analyzed revealed that agricultural science teachers need 8 competencies for post-planting operations in cucumber production. The competencies needed according to the findings are mulch the land to conserve moisture in the soil, supply cucumber seed where necessary, thin the seedlings of cucumber to required number of stands, train the cucumber vines on trellises, apply irrigation for adequate moisture, weed the farm regularly, apply manure to the soil to increase nutrient for the cucumber and control pest and diseases of cucumber. In line with the findings of this study also, this agrees with the report of Okonkwo-Emegha, (2025) that the skills include ability to: water crops regularly during dry season, apply manure or fertilizer to the soil, and weed regularly after planting, among others. The findings of this study are in agreement with the findings of Akinbode and Abati (2019) where it was reported that 11 post-planting skills were required in cocoa production enterprise for employment of secondary school graduates in Ondo State.

From Table 4, the result of the data analysis revealed that agricultural science teachers need 6 competencies for harvesting and 10 competencies in marketing for effective teaching of cucumber production. The competencies needed according to the findings are move round the farm to identify mature cucumber using colour change from light green to deep green, harvest cucumber at 45-55days after planting, harvest at 2-4 days interval, harvest mature cucumber by hand picking, bring cucumber fruit down carefully to avoid wound and keep cucumber fruit on dry surface in a cool and ventilated shed room. On marketing, Survey the market for information on supply and demand of cucumber fruits and seedlings, Grade cucumber fruits and seedlings based on quality and quantity and Sell to buyers at farm or in the market among others. The findings of this study on the skills required in marketing operations concurred with the views of Reardon cited in Onah *et al.*(2025) 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. The finding also is supported by Okafor and Yaduma (2021) that 7 skills are needed in marketing of Cucumber pods. These results were in agreement with the work of Adebayo, (2020) who noted that cucumber is a profitable marketing venture. The finding and observation of the authors cited above helped to add validity to the findings of this study.

CONCLUSION

This study underscores the necessity of supporting Agricultural Science teachers in Abia State with relevant training. In Abia State, the researchers observed that there is high demand of cucumber than it supply, this is because of its nutritive and medical value. This study identified the competency needs of senior secondary school Agricultural Science teachers in Cucumber (*Cucumis sativus L.*) production in Abia State, Nigeria. The findings highlight the need for competencies in pre-planting, planting, post-planting, harvesting and marketing operations. If Agricultural Science teachers acquire these competencies, it will ultimately lead to increase in cucumber production.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made:

1. The identified competencies of cucumber production should be included in the curriculum of agricultural education.
2. Book writers should use the identified competencies to write books on pre planting operations, planting operations, post planting operations, harvesting and marketing of cucumber.
3. The study of cucumber production should be included in the curriculum of agricultural science in senior secondary school to enable the students engage in cucumber production after graduation.
4. Teachers of agriculture in secondary schools should use the identified competencies to teach their students step-by-step process of cucumber production.

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