FARMERS PERCEPTION OF FARMING CUCUMBER IN GREENHOUSE FOR INCREASED PRODUCTIVITY IN NOUN FARMS, KADUNA, NIGERIA: AN EXTENSION APPROACH.

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ABSTRACT
The study investigated farmers perception of farming cucumber in greenhouse for increased productivity in NOUN farms, Kaduna, Nigeria using an extension approach. The objectives were to, determine the socio-economic characteristics of the farm workers, ascertain the difference in income between cucumber crop grown in the different environment, examine the farmers' perception of growing cucumber in greenhouse, examine the perceived effects of greenhouse on cucumber production and determine the role of extension agents in extension service delivery. These were analyzed using descriptive statistics, while the hypotheses were tested with Binary Logistics regression (hypothesis one) and Binomial test (hypothesis two). Results revealed that the average age, household size, farming experience, farm size and work experience were 36.52 years, 6 persons, 8.36 years, 1.74ha. and 4.73 years respectively. The difference in farm income between cucumber grown in greenhouse and open farm land was N339,393.94 in favour of farming in the greenhouse. Majority (57.58%) of the farmers had an average level of perception in growing cucumber in greenhouse. Early maturing, pest and disease resistant, improving the quality of crops, reduction of labour and cost of production and making it possible to grow the crop throughout the year were identified as some of the effects of growing cucumber in greenhouse. Results also showed that training of farmers on farming activities (57.58%), providing the necessary farm information (87.88%), advisory role (93.94%) and demonstrating on input use (93.94%) were some of the significant regular roles of the extension agents servicing the farmers. Majority (87.88%) of the farmers indicated that they were satisfied with extension service delivery and this led to the adoption of the alternative hypothesis of hypothesis two. Based on findings the study recommended the need for farmers to be encouraged by being provided with farm inputs even if it would be at subsidized rate.
Key words: evaluation, cucumber, crops, agro-chemical, greenhouse, income, production, cultivars, agricultural extension,

INTRODUCTION
Cucumber (*Cucumissativus L.*) is an important annual monoecious crop which grows by either climbing or trailing (Wehner and Guner, 2004). The authors noted that cucumber is a vegetable crop and as well described it as one of the oldest cultivated vegetable crop as it has been known to be cultivated over 3000 years ago. Wehner and Guner (2004) also acknowledged that cucumber grows rapidly than most other crops from time of planting to harvesting. Cucumber is grown for its immature fruits and eaten either raw as salad or blanched (Ene, *et al.,* 2018). The importance of eating cucumber cannot be overemphasized. Health Line on Nutrition Report identified the eating of cucumber to be associated with seven benefits which includes the fact that it is highly nutritious, low in calories but high in important vitamins, it contains antioxidants, promotes hydration, aid in weight loss, lower blood sugar, promote regularity and easy to add to one's diet.

Cucumber is grown in different parts of the world and its adaptability (though with varying levels of performance in yield) to different regions is likely not unconnected to different cultivars which exist with their distinctive characteristics that enable them to thrive in different environmental conditions (Ojiefo, *et al.*, 2008). Umeh (2018) supported that cucumber as a vegetable crop is mostly constraint by use of low yielding varieties in addition to other factors like use of varieties unsuited for specific zones, disease caused due to low struggle to biotic and abiotic stresses and lack of appropriate cultural practices. In an attempt to reduce if not eliminate the stresses causing low yield, planting the crop in greenhouse has been advocated.

Cucumber is either cultivated in the fields or in greenhouse. In the field, it is cultivated in the spring summer while it is cultivated in all seasons under the greenhouse condition. Wikipedia Report (2018) described the greenhouse as a structure with walls and roof made mainly with transparent material such as transparent glass or plastic material. The structures are different in size and thus range from small sheds to industrial sized buildings. The greenhouse has the tendency of producing the greenhouse gas and the gas absorbs and emits radiation energy with thermal infrared range. Wikipedia Report (2018) also stated that the greenhouse gas causes the greenhouse effects. The primary greenhouse gases in earth's atmosphere are water vapour, CO_2, methane, nitrous oxide and ozone. Also advanced by Wikipedia Report (2018) was the fact that the variations in these gases are responsible for climate change.

The Greenhouse Gardening Guide pointed out the lofty purposes of greenhouse and they include; the

shielding of crops from excess cold or heat and unwanted pests and diseases, to grow certain types of crops year round, and fruits, tobacco plants, vegetables and flowers. Despite these lofty importance of greenhouse to agricultural development and food security, Barbara *et al.,* (2006) reiterated that most of our local farmers don't have what it takes to adapt to changed circumstances and adopt better strategies due to limited access to resources, they as well have little access to new knowledge and opportunities for learning improved skills. Revamping this ugly trend, Barrette *et al.* (2004) submitted that in order to increase harvest, improve farming and hasten efforts in adoption and fashioning climate change and variability, there is need for frequent education and awareness knowledge of the farmers which can be impacted on them in the groups they belong, and that these should become critical components in improving farmers understanding.

These responsibilities are largely that of agricultural extension agents. Ekong (2003) cleared that agricultural extension plays a crucial role in ensuring the boosting of agricultural productivity, increasing food security, improving rural livelihoods and promoting agriculture as an engine to improving economic growth. The study therefore seeks to investigate if the cucumber crop farmers have been producing to its full potentials using appropriate farming environment, and if the farmers have been adequately served by the extension agents. In a bid to realize the above, the following objectives were analyzed:

Objectives
    i. Determine the socio-economic characteristics of the farm workers in National Open University of Nigeria (NOUN) farms, Kaduna.
    ii. Ascertain the difference in income between cucumber grown in greenhouse and that grown in
    andequivalent open farm land in NOUN farms, Kaduna.
    iii. Examine the farmers' perception of growing cucumber in greenhouse.
    iv. Examine the perceived effects of greenhouse on cucumber production in the study area.
    v. Determine the role of extension agents in extension service delivery in cucumber greenhouse
    farming in the study area.

Hypotheses
Ho₁: Farm services rendered by extension agents' have no significant relationship with
Productivityof cucumber grown in greenhouse.
Ho₂: There is no significant relationship between cucumber farmers that are satisfied and those that are not satisfied with the extension service delivery in the study area.

METHODOLOGY
Area of Study
The study was carried out in Kaduna State. The state is one of the Northern States of Nigeria and it occupies almost the entire mid portion of the northern parts of Nigeria, and its area includes the traditional emirate of Zaria and Jamaa town. Kaduna State Government Report stated that the state came into being on the 27th May, 1967 and its coordinates are $10^020'$ and $7^045'$. Kaduna State Government Report also had it that the state has 23 Local Government Areas (LGAs) with its capital city at Kaduna. Kaduna State Wikipedia (2016) stated that Kaduna State has a land area of $46,053km^2$ and ranks the 4th largest (in terms of land area) amongst the 36 states of the nation and the 9th largest state amongst other states in terms of number of LGAs.

The 2018 projected population of Kaduna State is 8,252,400, thus ranking 3rd in population size in Nigeria (National Population Commission, 2018). It has agriculture as its main stay and having about 80% of the people actively engaged in farming (Kaduna State Wikipedia, 2016). The report stressed that the crops grown include cotton, yam, maize, millet, ginger, rice, cassava, groundnut, beans, tobacco and guinea corn. The most spoken language of the people is Hausa while the official language is English (Kaduna State Wikipedia, the free Encyclopedia).

Geographically, the state has three agricultural zones which are Kaduna North, Kaduna Central and Kaduna South (Report on Kaduna Climate Data, 2016). The report also advanced that the state belongs to the tropical region with an average annual temperature and precipitation falls of 25.2^0C and 1211mm respectively and that this climatic condition makes it possible for the state to grow wide range variety of crops.

Population and analytical techniques of the study
The National Open University of Nigeria farm in Kaduna was used for the study. All the farm workers (numbering thirty five (35)) were used as respondents of the study. They were all purposively used because of their small number. The question instruments were questionnaires (for the literates) and interview schedule (for the illiterates). Face content method and test-re-test method were respectively used to test the validity and reliability of the instruments. The former method involved the use of experts in the field of Agricultural Extension to validate the instruments while the later method involved administering the instruments to the respondents in a pilot study. The administration of the instruments was done twice with a month in between. Different scores were obtained and they were further subjected to analysis. A Correlation Coefficient ('r') value of 0.69 was obtained, thus indicating that the instrument was reliable. The reliability of the instrument tends to be stronger as the value of "r" moves closer to one (1)

Descriptive and inferential statistics were used to analyze the data obtained. Descriptive statistics were used to analyze the socio-economic characteristics of the respondents, difference in income between cucumber grown in greenhouse and that grown in and equivalent open farm land and farmers' perception of growing cucumber in greenhouse. Descriptive statistics was also used to analyze the perceived effects of greenhouse on cucumber production and the role of extension agents in extension service delivery in cucumber greenhouse.

Inferential statistics involved the use of Binary logistics regression and Binomial test. Hypothesis one was analyzed using Binary logistic regression. It is used to describe data and explain relationship between dependent and independent variables (Logistics regression, 2015).

The variables in the model were specified as;

The implicit form of the equation is: $\ln P/(1 - P) = B_o + B_i X_i + e$;

Where:

P = Probability of occurrence; 1 – P = Probability of non-occurrence

B_o = The coefficient of the constant term

B_i = The coefficient of the independent variable

X_i = The independent variables

The explicit form of the equation is:

P = Productivity of cucumber (measured in kilogrammes)

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3, \ldots, + b_n X_n + e$$

Y = Productivity of cucumber (measured in kilogrammes)

a = Constant

b_i [1 – n or 7] = Coefficients

$X_1 - X_7$ = Independent variable

e = Error term

The variable in the equation are defined below

The variables in the model were specified as;

Y = Productivity of cucumber (measured in Kilogrammes)

X_1 = Advisory role of extension agents (Advised = 1; Not advised = 0)

X_2 = Input distribution (Received input = 1; did not receive input = 0)

X_3 = Farmers training (Received training = 1; did not receive training = 0)

X_4 = Demonstration on input use (Received demonstration = 1; did not receive demonstration = 0)

X_5 = Providing farm knowledge and information (Received knowledge and information = 1; did not receive knowledge and information = 0)

X_6 = Improving farming skills (Received farming skills = 1; did not receive farming skills = 0)

X_7 = Farmers contact with extension agent (Farmers contact = 1; No contact = 0)

Binomial test was used to determine if there was any significant difference between the proportion of farmers that were satisfied and those not satisfied with the extension agents serving their farming needs (hypothesis 2). The formula for binomial distribution is given as follows:

$b(x;n,p) = {_n}C_x * p^x * (1-p)^{n-x}$

Where b = binomial probability

x = total number of successes (satisfied or not satisfied)

p = probability of success on an individual trial

n = number of trials

In making a decision, the possible values of the test statistics are divided into two ranges. The critical region of the sample distribution is the area or areas of the sampling distribution of a statistics that will lead to the rejection of the hypothesis tested when that hypothesis is true (Wikipedia, 2015)

RESULTS AND DISCUSSION
Respondents' socio-economic characteristics

Cucumber farming in the National Open University of Nigeria, Kaduna campus farm was dominated by males (57.58%), most (54.55%) of whom were within the age brackets of 30 – 39 years and with post-secondary education experience (45.46%). Most (75.76%) of the respondents were married, of Muslim religion affiliation (60.61%) and dominated (54.55%) by household size of between 4 – 6 persons. Additionally, most (36.36%) of the farmers had farming experience of between 10 – 14 years, most (75.76%) of whom do farm less than 2 ha. of farm-land and having a work experience between 3 – 5 years (42.42%). The average work experience was 4.73 years indicating that they had barely spent much time in the job.

The dominance of males in the University farm may not be unconnected to the fact that the Muslim religious affiliation which most of the respondents belong does not mostly allow women into public, social and farm works. Again, the dominance of married farmers in the farm work was an indication that they are matured and are endowed with family respondents. Similar result regarding dominance of male in the farm work in a Muslim dominated area and the dominance of married farmers in the business of farming was reported by Audu*et al.*, (2019) and so therefore in line with this study.

The average age of the farmers was 36.52 years. This implies that the farmers are strong, and within their active are group. The respondents' education level revealed that they are educated and this helps to improve their capacity to apply farm technologies in the most appropriate manner, therefore resulting to improved yield. Participation of the active age group of farmers in cucumber production and their literacy disposition was reported by Okwuokenye (2018).

The average household size was 6 persons. Implying that the farmers had a household size that indicates that they have people to cater for who may in return support the farmers with family labour. Audu*et al.,* (2019) results found a dominance of household size of 6 – 10 persons and so in conformity with this finding. The average farm experience and farm size of the farmers was 8.36 years and 1.74ha. respectively. The results simply implied that the farmers are experienced in having such number of years in farming and they are categorized as small-scale farmers since they farm on land that is less than 2 ha. The result was supported by that of Okwuokenye and Okoh (2018). The authors indicated that most of our farmers are small-scale farmers, farming less than 2 ha. and are most times experienced in their farming business.

Table 1: Socio-economic characteristics of the respondents of the study. N = 33

Socio-economic variables	Categories	Frequency	Percentage	Mean
Sex	Male	19	57.58	
	Female	14	42.42	
Age range (years)	< 30	5	15.15	
	30 – 39	18	54.55	
	40 – 49	10	30.30	36.52
Educational status	Primary	11	33.33	
	Secondary	7	21.21	
	Post-secondary	15	45.46	
Marital status	Single	4	12.12	
	Married	25	75.76	
	Divorced	2	6.06	
	Widowed	2	6.06	
Religious affiliation	Christianity	10	30.30	
	Muslim	20	60.61	
	Traditional	3	9.09	
Household size (years)	1 – 3	6	18.18	
	4 – 6	18	54.55	
	7 – 9	7	21.21	
	10 – 12	1	3.03	
	≥ 13	1	3.03	5.55 = 6
Farming experience (years)	< 5	10	30.30	
	5 – 9	8	24.24	
	10 – 14	12	36.36	
	15 – 19	2	6.06	
	≥ 20	1	3.03	8.36
Farm size (ha.)	< 2	25	75.76	
	2 – 4	8	24.24	1.74
Work experience (years)	< 3	6	18.18	
	3 - 5	14	42.42	
	6 – 8	12	36.36	
	9 – 11	1	3.03	4.73

Source: Field survey, 2019

Difference in annual farm income realized from greenhouse and open farm land in cucumber production.
Table 2 shows the annual income levels realized from cucumber grown in greenhouse and that realized from an equivalent open farm land. From the result, majority (45.46%) of the respondents indicated that annual income realized from cucumber grown in greenhouse was between ₦600,000 – ₦699,999. On the other hand, majority (54.55%) of the respondents declared that the annual farm income from an equivalent open farm land was less than ₦300,000. Going further, the two different environments respectively produced an average income of ₦643,939.39 and ₦304,545.45. The difference was ₦339,393.94 and it was in favour of cucumber crops produced in greenhouse. The difference could be said to have been possible due to the suitable environment provided by the greenhouse and the year-round possibility of producing the crop. Report of Greenhouse Gardening Guide (2018) supported this finding and it stated that the use of greenhouse makes it possible to grow certain types of crops (cucumber inclusive) all year round, shield them from unwanted pests and ensure good performance.

Table 2: Annual farm income realized from cucumber production per year

Farm income (₦'000)	From Greenhouse Farming			From Open Farm Land		
	Frequency	%	Mean	Frequency	%	Mean
< 300,000	-	-		18	54.55	
300,000 – 399,999	-	-		12	36.36	
400,000 – 499,999	2	6.06		3	9.09	
500,000 – 599,999	7	21.21		-	-	
600,000 – 699,999	15	45.46		-	-	
≥ 700,000	9	27.27		-	-	
Total	33	100.00	643,939.39	33	100.00	304,545.45

Difference in income = ₦643,939.39 - ₦304,545.45 = ₦339,393.94
Source: Field survey, 2019

Farmers' perception level of growing cucumber crop in greenhouse

The farmers level of perception of growing cucumber in greenhouse is shown in Table 3. It revealed that most (57.58%) of the farmers had an average level of perception. Following this was about 21.21% and 36.36% of farmers whose perception level was respectively above and below average level. The result implies that there is high compliance or level of perception of growing cucumber in greenhouse. This may be attributed to the sensitive nature (in terms of the crop's high rate of productivity, perishability and proneness to diseases attack) of the crop which could be brought under control in greenhouse environment. This assertion was confirmed by Report of Greenhouse Gardening Guide when it stated that growing crops in greenhouse helps to improve productivity, prevents it from pests and diseases attack and as well provides the environment that makes it possible to grow the crop all year round

Table 3: Perception level of farmers' in growing cucumber in greenhouse

Perception level	Frequency	Percentage
High	7	21.21
Average	19	57.58
Low	5	15.15
Poor	2	6.06

Source: Field survey, 2019

Perceived effects of greenhouse on cucumber production

Table 4 reveals the farmers perceived effects of greenhouse on cucumber production. The result revealed that all (100%) the respondents indicated that planting in the greenhouse helps to increase yield of the crop. in addition, majority (96.97%) of the farmers were of the view that greenhouse also promotes early maturation of the cucumber crop. Most (72.73%) of the farmers further indicated that planting cucumber crop in greenhouse helps to improve quality of the crop and as well reduce farm labour (56.58%). Other perceived effects according to most (66.67%) of the farmers include the fact that growing cucumber crop in greenhouse goes a long way in reducing production cost along line with making it possible, according to majority (93.94%) to produce the crop throughout the year. Furthermore, a larger fraction (60.61%) agreed that planting cucumber crop in greenhouse helps to make the crop to be resistant to pest and diseases. Also agreed by most (54.55%) was the fact that the operation or practice of planting in greenhouse does not increase cost of production.

In concurring with this result, Reports of Greenhouse (2018) and Benefits of Greenhouse revealed that yield of crop from greenhouse is higher, that the crops are protected from many field pests and diseases as well as the fact that such environment (greenhouse) makes it possible to grow certain types of crops (including cucumber) throughout the year. The reports further acknowledged that greenhouse farming does not increase cost of production especially when superior materials are used in constructing the greenhouse and possibly carrying out production over a long period of time.

Table 4: Perceived effects of greenhouse on cucumber production

Perceived effects	Yes		No	
	Frequency	Percentage	Frequency	Percentage
-Early maturing	32	96.97	1	3.03
-Increase yield	33	100.00	-	-
-Pest and disease resistant	20	60.61	13	39.39
-Improve quality of crop	24	72.73	9	27.27
-Reduce labour	19	57.58	14	42.42
-Increase production cost	15	45.46	18	54.55
-Reduce production cost	22	66.67	11	33.33
-Makes it possible to produce throughout the year	31	93.94	2	6.06

Source: Field survey, 2019

Roles of Extension agents in extension service delivery in cucumber production

The extension agents' role in the extension service delivery in the farming of cucumber crop in greenhouse is shown in Table 5. The result revealed that most of the roles (in the order of magnitude) performed or carried out by the extension agents include advisory role (93.94%), demonstration on input use (93.94%), providing necessary farm information (87.88%) and training of farmers on farming activities (57.58%). Results of Okwuokenye and Okoedo-Okojie (2014) are in consonance with this finding. The authors found advisory role, farmers training on input use and demonstrating on input use as major roles carried out by extension agents on farmers in agricultural programmes.

Table 5: Roles of Extension agents in extension service delivery in cucumber production

Roles of Extension agents	Yes		No	
	Frequency	Percentage	Frequency	Percentage
-Provision / supply of farm inputs	10	30.33	23	67.70
-Training of farmers on farming activities	19	57.58	14	42.42
-Providing necessary farm information	29	87.88	4	12.12
-Arranging for selling or evacuation of farm produce	7	21.21	26	78.79
-Advisory role	31	93.94	2	6.06
-Demonstrating on input use	31	93.94	2	6.06

Multiple responses
Source: Field survey, 2019

Relationship between services rendered by Extension Agents and productivity of cucumber crop in greenhouse

The relationship between services rendered by extension agents and productivity of cucumber crop in greenhouse (hypothesis 2) was analyzed with the use of Binary Logistic regression and this is shown in Table 6. The services of the extension agents that were analyzed include; provision or supply of farm inputs, training of farmers on farm activities, provision of necessary farm information, advisory role, demonstration on input use and farmers contact with extension agents. These variables accounted for 68.1% variation of the services rendered on the productivity of cucumber in greenhouse. All the variables or services rendered except provision or supply of farm inputs had significant relationship at various levels with productivity of cucumber in greenhouse.

Training of farmers on farming activities had a Beta coefficient of 6.814 and t-value of 1.490. The relationship was positively signed and significant at the 1% level. The implication of the result is that the more training received by the farmers, the more their capacity would be and this will translate to increased productivity of the crop in greenhouse. In addition, demonstrating on input use by the extension agent had a Beta coefficient of 6.107 which was positively signed, had a t-value of 0.241 and the relationship was direct and significant at the 5% level. So, the more the extension agents demonstrate on input use, the more skill the farmers would have which they will plough into farm operations, thereby resulting to increased productivity of the crop in greenhouse. These findings on training of farmers and demonstrating on input use are supported by results of Okwuokenye and Okoedo-Okojie (2014). They stated that farmer training on input use and demonstrating on input use were identified as some of the regular roles carried out by extension agents on farmers in Agricultural Loans and Inputs Supply Programme in Delta State.

Providing necessary farm information (B = 15.706; t = 1.308) was positively signed and significant at the 5% level to productivity of cucumber in greenhouse. The result simply implies that the more necessary information given by the extension agents, the more level of productivity of the crop from greenhouse.

This result supports the findings of Jasmin*et al.,* (2013) which stated that extension agents are responsible for providing knowledge and information that will enable the farmers to understand and make a decision about particular innovations and communicate such to the farmer.

Advisory role rendered by the extension agents had a Beta coefficient and t-value of 9.003 and 2.467 respectively. The relationship was positive and significant at the 1% level. By implication, the more farm advice rendered by the extension agents, the much possibility of having an increased productivity of the crop produced in greenhouse. Swanson (2008) confirmed this finding when he explained that extension agents help in advising farmers in order to educate and build farmers capacity. Farmers contact

with extension agents had a direct and positive significant relationship at the 5% level with productivity of cucumber in greenhouse. The Beta coefficient and t-value was 8.201 and 0.026 respectively. This implies that the more contact the farmers established with the extension agents, the more their capacity building would be and more likely would their cucumber productivity be from the greenhouse. This finding on contact with extension agent was at variance with results of Alakpa and Onemolease (2014) who found farmers contact with extension agents as not been significant to adoption of improved technology. This was however adduced to low contact of farmers with extension agents in the study area.

Table 6: Relationship of services rendered by extension agents and productivity of cucumber crop in greenhouse

Variables	Beta Coefficient	Standard Error	T t- value	Significant
Constant	21.863	4.791	5.503	0.000
- Provision / supply of farm inputs	10.418	5.286	2.150	4.001
-Training of farmers on farming activities	6.814**	0.228	1.490	0.174
-Providing necessary farm Information	15.706*	6.251	1.308	0.194
- Advisory role	9.003**	1.223	2.467	0.042
- Demonstrating on input use	6.107*	2.136	0.241	0.109
-Farmers contact with Extension agents	8.201*	3.262	0.026	0.218

Adjusted R^2 = 0.681; F = 12.75
*Significant at 5% level; **Significant at 1% level

Test of difference in cucumber farmers' level of satisfaction with extension service delivery

The relationship of cucumber farmers and their level of satisfaction with extension service delivery is shown in Table 8, and this was analyzed using binomial test. The results revealed that a larger proportion (87.88%) and few (12.12%) of the respondents were respectively satisfied and not satisfied with the extension agents' extension service delivery.

On a statistical note, the result was significant at the 1% level of probability. For this reason, the alternative hypothesis (there is a significant relationship between cucumber farmers that are satisfied and those that are not satisfied with the extension service delivery in the study area) was accepted. The result thus suggested that cucumber

farmers in the area of study are highly satisfied with the extension agents in their extension service delivery. This is adduced from the high proportion of respondents that fell under this category. The result therefore implies that the extension agents servicing the farmers with extension packages or information have been meeting up with farmers expectations, hence their high level of satisfaction. Such level of satisfaction would go a long way in encouraging, improving farmers' willingness and their sustainability in cucumber production in particular and food security in general. This result is in agreement with findings of Ajayi and Okunlola (2006) which noted that the use of improved varieties of crops, modern technologies and other agricultural services delivered by their extension agents significantly influence crop produced by farmers.

Table 8: Relationship of cucumber farmers and their level of satisfaction with Extension Service Delivery

Level of perception	Frequency	Proportions	Probability level
Satisfied	29	87.88 (0.87%)	0.001
Not Satisfied	4	12.12 (0.12%)	
Total	33	100.00 (1.00%)	

Source: Field survey, 2019

CONCLUSION AND RECOMMENDATIONS
The study found that most (57.58%) of the farmers had an average level of perception of growing cucumber in greenhouse. They as well show a good level of satisfaction with the extension agent servicing them with agricultural information and improved technologies. This was however translated in the level of yield which produced farm income of₦643,939.39 against ₦304,545.45 produced in open farm land. The difference (₦339,393.94) in the farm income was adduced to the positive effects of greenhouse on the crop which were generally manifested in the form of increased yield, early maturation, crop resistance to pests and diseases, increase in quality of crop, reduction of cost of production (in the long term) and the possibility of producing the crop throughout the year.

The study thus makes the following recommendations based on findings:

i. The issue of cost of production was a threat to the farmer in going into the venture of using greenhouse in crop production. This can however be brought under control by simply organizing the farmers into a mini-cooperative so that they can pull their merger resources (both human and capital) together and create a support for them on how they can get their greenhouse done for them and begin to reap the associated benefits.

ii. There is need for the extension agents to let farmers know the benefits or effects of growing crops in the greenhouse and use this as a platform to train and re-train the farmers attached to them on the need to grow their crops in the greenhouses and enjoy huge productivity from it, and

iii. The farmers still need to be encouraged by being provided with farm inputs even if it would be at subsidized rate. This will go a long way in making them be in line with the training of the extension agents.

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