

# Enhancing Knowledge on the Influence of Some Beneficial Insects on Vegetable Production at Odogbolu Nigeria

Akinboye Olufunso Emmanuel<sup>1</sup>, Oyekale Kehinde Oluwaseun<sup>1, \*</sup>,  
Afodu Osagie John<sup>1</sup>, Shobo Bolatito Adenike<sup>1</sup>, Chioma Gibson Ogbonna<sup>1</sup>,  
Adewumi Grace Aderiike<sup>2</sup>

<sup>1</sup>Department of Agriculture and Industrial Technology, School of Science and Technology, Babcock University, Ilishan-Remo, Nigeria

<sup>2</sup>Department of Basic Sciences, School of Science and Technology, Babcock University, Ilishan-Remo, Nigeria

## Abstract

Insect pests have made significant negative contribution to crop production in both qualitative and quantitative terms. However, there are some insects with positive influence on crop yield; and are therefore beneficial to farmers (pollination, weed killing, soil building or being natural enemies to pests). Farmers were found to have no knowledge or little knowledge of the existence of these beneficial insects and were said to indiscriminately use insecticides which harm both non beneficial and beneficial insects. The aim of this study is therefore to assess the impact of an educational intervention in increasing the knowledge of farmers on beneficial insects. Thirty-one (31) farmers were enrolled for this study, and a self-developed questionnaire was used in assessing their knowledge both pre- and post-test. An educational intervention was carried out. Data collected were analysed using SPSS version 21. Findings showed that there was significant increase in the knowledge of farmers on beneficial insects ( $df = 60$ ;  $F = 7.612$ ;  $P < 0.05$ ). This however did not translate into the farmers' willingness to stop killing insects and their perception about insects generally being a problem on farmland. Findings also suggest that despite an increase in knowledge, farmers were less likely to reduce indiscriminate use of insecticides which puts beneficial insect at risk.

## Keywords

Beneficial Insects, Insect Pest, Insecticide, Knowledge, Vegetable Farmers

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## 1. Introduction

Vegetables are essential piece of the world agriculture and its production is among the most critical in nourishment creation, and has additionally been viewed as vital supplementary foundation of food and nutrition which fill in as one of the significant sources of money for little to profoundly business farmers [16, 15]. Regardless of that vegetable generation is quick changing from the customary household plant creation to a more serious frameworks particularly in regions with supplementary water system [12], low yield has been a noteworthy challenge in crop production

for vegetable farmers who plant on a little scale with a noteworthy contributing component being attack by insect pest, a challenge recognized by farmers and adding to over 90% harvest misfortune [10, 14].

Pests cause both monetary and medical issues for vegetable farmers, these farmers have created indigenous understanding to take care of pest irritation issues of vegetables [2] enjoying distinctive vermin control process, with the most well-known being the utilization of pesticide, which has been found to be utilized aimlessly without controlled method [4]. Its established that biological pest control and crop pollination benefit food production [3].

\* Corresponding author

E-mail address: [oyekalek@babcock.edu.ng](mailto:oyekalek@babcock.edu.ng) (O. K. Oluwaseun)

There are however insects that are not a threat but are beneficial to the crops the farmers plant in different ways, majorly in regulating ecosystem services to agriculture such as Pollination and the natural regulation of plant pests [8].

While some crops depend entirely on insect pollinator visits to set fruit, many others are only partly dependent on animal pollination and can produce more than 90% of the maximum seed or fruit yield without pollinators [11].

It is however important that farmers are knowledgeable about these beneficial insects as access to agricultural knowledge is important in transforming livelihoods of those relying on agriculture for a living and in enhancing food security [13]. These acquired knowledge is key in the activities of farmers in agricultural practices on farmlands, lack of this knowledge has been documented to be a major challenge in developing countries, Nigeria inclusive [6].

A study carried out by [1] showed that only few farmers can identify beneficial insects. Further study also revealed that more than half of farmers based their decision of application of insecticides on the presence of the pest in the crop and with farmers inability to identify beneficial insects [7], both the harmful and beneficial insects, this might disturb the natural course of crop production. [8] also suggested that *“training and program should be run for the awareness among the farmers about the beneficial insects and activities likely to harm them”*. It is in light of this that this study’s objective was to enhance the knowledge of vegetable farmers on beneficial insects as factor to enhance crop production with an educational intervention.

## 2. Materials and Methods

The study area is Odogbolu; which is a small town located within Ikenne Local government of Ogun state, Nigeria. The town is prominent for its high farming activities both on large scale and small scale levels. There were thirty-one (31) vegetable farmers recruited from this area of Ogun State for this study.

A structured questionnaire was used to assess respondents’ demographic characteristics and their level of knowledge of beneficial insects as factor to crop production. This questionnaire was translated into Yoruba language as this was the native language of communication among indigenes of Odogbolu and it is easily understandable by the selected farmers, the questionnaire was administered with the help of two (2) research assistants adopting the interview-administered method. Data was collected and recorded by research assistants. An educational intervention was carried out with content of the training being on importance of beneficial insects on crop production, identification and

control. After the intervention, the same questionnaire was administered once again to participants and data was collected and recorded.

Data collected were analysed using the statistical package of SPSS (version 21). Analysis of Variance was carried out to test the significance of the study on the subjects. T-test was used to test for significant differences in the level of knowledge of respondents before and after the exercise.

## 3. Results and Discussion

There were thirty-one (31) vegetable farmers for this study, predominantly of Christian religious background (87.1%) and just four (4) farmers of Islamic religious background. This may be attributed to the strong Christian beliefs of indigenes in Odogbolu. It was also found that more than half (61.3%) of selected farmer were female while twelve (38.77%) were males. Mean age was given at  $38 \pm 1.53$  with most respondents of age 37 years old (Table 1).

**Table 1.** Demographic characteristics of respondents.

		Frequency (N = 31)	Percentage (100%)
Gender	Male	12	38.7
	Female	19	61.3
Religion	Christianity	27	87.1
	Islam	4	12.9
Age	35	1	3.2
	36	1	3.2
	37	14	45.2
	38	4	12.9
	39	6	19.4
	40	3	9.7
	41	1	3.2
	42	1	3.2

Table 2 illustrates the knowledge of respondents on the influence of insects on crop production, it was found that while all farmers believe insects have influence on crop production, knowledge of farmers on the negative influence of insects was found to have no significant difference ( $df = 60$ ;  $F = 0.131$ ;  $P = 0.719$ ) after the educational intervention with farmers having a strong opinion of insects’ destructive nature of crop plants this might be attributable to the crop losses due to insect pests in the developing countries of Africa which was estimated at about 20% [5]. Farmers, from experience are therefore likely to generalize all insects as pest. From a study conducted by [15] it was found that majority of the farmers rated insect pest as the most serious pest infesting fruit vegetables, the insect pests were grasshopper (Orthoptera), beetles (Coleoptera) and caterpillar (Lepidoptera), hence the strong belief of the negative influence of insects on crop production. However, prior to the educational intervention, farmers had a moderate level of knowledge on the positive influence of insects on crop production at 61.3%, there was an increase by 28.6% to a

level of knowledge of 86%, this indicates that the intervention provided a significant increase ( $df = 60; F = 7.612; P < 0.05$ ) in the level of knowledge.

**Table 2.** Level of knowledge on insects’ influence on crop production.

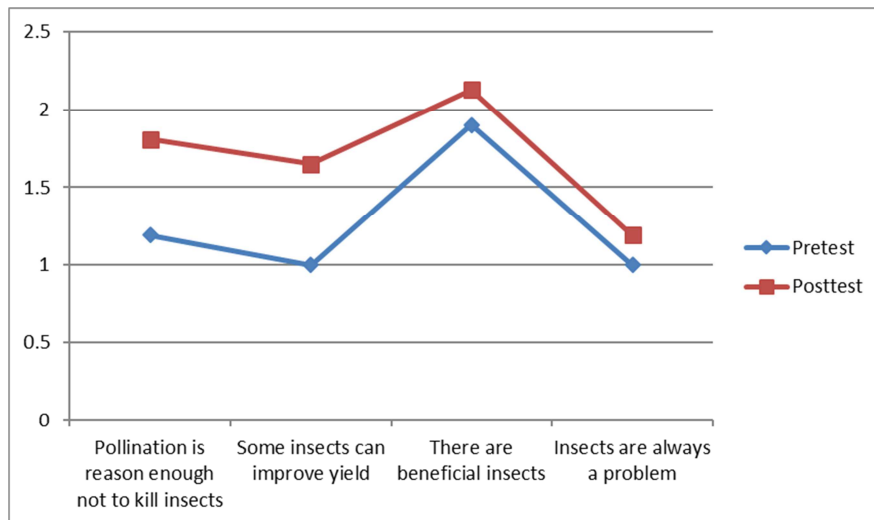
		Insect have positive influence					MEAN	Sig.
		SD	D	NS	A	SA		
GROUP	PRETEST	2	2	4	14	9	1.84	0.008
	POSTTEST	0	0	0	13	18	2.58	

		Insect have negative influence					MEAN	Sig.
		SD	D	NS	A	SA		
GROUP	PRETEST	5	1	8	12	5	1.29	0.719
	POSTTEST	5	0	6	10	10	1.61	

Figure 1 illustrates the mean scores of farmers’ knowledge on insects’ influence on crop production pre and post the educational intervention. Data showed that there were increase in the mean scores of respondents on their level of knowledge on pollination by insects, insects being factors to improved crop yield, presence of beneficial insects in farmland and insects always being a problem by 34.25%,

39.39%, 10.8% and 15.7% respectively. However, statistical analysis showed there were no significant differences in the level of knowledge of farmers on pollination ( $df = 60; F = 0.996; P = 0.322$ ), insects improving crop yield ( $df = 60; F = 4.661; P = 0.035$ ), presence of beneficial insects ( $df = 60; F = 2.486; P = 0.120$ ) and insects always being a problem ( $df = 60; F = 0.090; P = 0.765$ ).



**Figure 1.** Comparison of mean score of farmers’ knowledge.

## 4. Conclusion

This study has shown lack of awareness among the farmers on insects and their benefits. They use different management practices to kill them; and along the line with the insect-pests that may be useful to farmers are also killed. There was a significant increase in the level of knowledge on beneficial insects. However, there was no significant increase in the need to indiscriminately use insecticides despite knowledge of the insects’ pollination, insects’ benefit to crop yield and their perception of importance of insect. This is attributable to the years of experience of farmers; and despite acknowledging the existence of beneficial insects, there was no conviction on its benefits on crop yield increase which precedes use different management practices to kill beneficial insects along with the insect-pests. A farmer’s ultimate goal

is crop sale, and with the majority of the farmers estimating estimated up to 65.4% loss due to insect pest of fruit vegetables. This makes farmers see every insect as a threat and without any significant perceived increase in crop yield and inability to differentiate or identify beneficial insects and insect-pests, there is likelihood of this increase in knowledge not translated into practice, ultimately contributing to indiscriminate use of insecticides.

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