



Praying Mantises as the Best Pest Biocontrol

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Introduction

Praying mantises are large fascinating and formidable predatory insects whose scientific name is *Mantis religiosa* and it is classified in Kingdom Animalia, phylum Arthropoda and Class insect. They are in fact named for the typical 'prayer-like' stance, they are approximately 2000 mantis species worldwide. Majority are found in Asia. About 20 species are native to the USA.

Therefore, this project will help to solve the problem of pest and insect invasions in crop farms and gardens without using much costs to the farmers and gardeners among crop farming societies such as and Sukuma people, Chaga people and ensure quality production of crops and vegetables as the raw materials for processing and manufacturing industries in Tanzania as well as to ensure enough availability of quality food and sustainable crop and vegetable farming



Method

In this project, the methods used to investigate, assess and analyze the effectiveness of the praying mantises as the best bio-control of pests and bothersome insects in crop farm and gardens is observation method.

Materials used to construct gardens include woods, garden vegetable seeds, water sprayers, insects such as praying mantises, beetles, *Tuta absoluta*, butterflies, grasshoppers and aphid species, soil and shade netting.

Procedure

In our project, two gardens known as control garden A and experimental garden B were constructed in semi-constructed environmental conditions with the temperature range of 20-32 °C and relative humidity of 80-89 % under control light.

- The two gardens constructed covered a little space about 5ft x 5 ft and it was constructed near the school compound for easy operation and observation.
- The two gardens, garden A and B contained the same vegetables called spinach, Chinese and Amaranthus.
- The garden A was regarded as the control experiment and garden B was termed as experimental garden.
- Both garden A and B were added with the pests and insects such as 20 beetles, 20 moths, 20 grasshoppers, 20 aphid species and *Tuta absoluta*.
- In garden A there were no praying mantises and garden B had praying mantises and it was surrounded by netting material to prevent escape of insects and pests as well as praying mantises.
- The investigative and experimental study was conducted for five days and the experimental results were analyzed for both garden A and garden B



Figure 02: Photos showing the materials and pest samples.

Results

By investigating and analyzing, the effectiveness of the praying mantises as the best biocontrol in farms and gardens for five days. The number of pests and insects in garden A in which there were no praying mantises the number of 20 beetles, 20 moths, 20 grasshoppers and 20 aphid species remained constant in number, but in garden B which contained 10 praying mantises, the number of pests and insects decreased from 20 beetles, 20 moths, 20 grasshoppers and 20 aphid species to 10 each beetles, 6 moths, 4 grasshoppers and 2 aphid species within 5 days of the investigative experiment, hence the effectiveness of the praying mantises as the best biocontrol for pests and insects in farms and gardens was analyzed as in the table of results shown.

From the results and graphs above show that; the number of pests in garden A which had no praying mantises remained constant before and application in the garden and caused serious damage of vegetables called Amaranthus and Chinese in the garden A.

In garden B which had praying mantises the number of pests decreased from 20 beetles, grasshoppers, caterpillars, moths and aphid species showing that they were fed by praying mantises and there was no any vegetable damage. Hence praying mantises are the best and efficient biocontrol of pests and insects in farms and gardens for sustainable crop farming and gardening to farmers.

Therefore ; the praying mantises show more effectiveness in bio-controlling pests and insects in farms and gardens within short period of time in vegetable garden B compared to vegetable garden A for the same number (20) of insects and pests.

Conclusions

The findings and results from the garden A and garden B show that, praying mantises are the best biocontrol of various pests and insects such as moths, cockroaches, mosquitoes, *Tuta absoluta* and beetles in farms and gardens since praying mantises are more effective in killing pests and insects, environmentally friend, kills many targeted species of insects and pests in gardens and farms, and they balance ecosystem compared to chemical pesticides. So people should use them in promoting sustainable crop farming and vegetable gardening in Tanzania so that they produce high quality and quantity of crops and vegetables, it also enables the crop farmers and vegetable gardeners to send their crops and vegetables to the markets with high economic sense and praying mantises enable the producers to have self-employment and economic gain when selling it to crop farmers and gardeners.

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TABLE OF RESULTS

Table of results in garden A without praying mantises showing the number of pest/insects

Name of pests/insects	Original number of pests/insects before application in the garden A	Number of pests/insects after application in the garden A from day 1-5
Beetles	20	20
Moths	20	20
Grasshoppers	20	20
Aphid species	20	20

A GRAPH OF NUMBER OF INSECTS/PESTS IN GARDEN A AGAINST NUMBER OF OBSERVATION DAYS

