



Research Article

Study of protected v/s open field conditions on insect-pest incidence to minimize insecticide application for quality production of high value horticultural crops

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ABSTRACT

An experiment comprised of three crops like tomato (Naveen variety), capsicum (Bharat variety) and strawberry (Chandler variety) on insect-pest incidence under open field and polyhouse conditions, was conducted at Centre for Protected Cultivation Technology (CPCT), IARI, New Delhi, during 2006-2010 (four seasons). The result revealed that the minimum incidence of insect-pest, plant mortality from affected insect vectors and spraying of insecticide were observed under polyhouse condition as compared to open field condition. However, unmarketable (insect affected) fruits were almost nil under polyhouse condition as compared to open field condition. The marketable fruits (free from insect-pest) production (kg/plant) and net income (Rs./plant) were found maximum under polyhouse as compared to open field condition in all crops during all the seasons. The reduction in yield and economic loss were found very high under open field crops in comparison of polyhouse cultivation in all seasons. It was concluded that cultivation of highly insect-pest susceptible vegetable and fruits crops inside polyhouse is beneficial. Cultivation under polyhouse was thus observed to be a better technique of IPM.

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INTRODUCTION

Integrated pest management (IPM) approach, is the best combination of various pest control options such as cultural practices, biological control agents, and use of chemical spray. Integrated pest management through conventional techniques has often been found to be difficult under intensive and exploitative practices of vegetable production. This system was developed out of the need for the sustainable crop production strategy against the background of increasing pesticide use and deleterious effect of residues on the environment.

Greenhouse (polyhouse) is a framed or inflated structure covered with a transparent or translucent materials, in which crop could be grown under the condition of at least partially controlled environment and which is large enough to permit a person to carry out cultural operations. Polyhouses protect the growing crops against the insect- pest and diseases (biotic

stress) and thus improve the fruit quality and increase the production and productivity per unit area/unit time. Thus, polyhouses could be considered to fit into the role of IPM, which provides an acceptable and affordable basis for pest control.

In the case of open field cultivation, more often, farmers apply insecticides after the devastation by the pest, thus losing the crop yield as well as money spent on insecticide application. Therefore, timely application of insecticides is essential with appropriate selection of chemicals, especially when resistance to insecticide is low. Insecticide application should be done only when population of the insect has reached the threshold level, which may cause economic loss. In contrast, polyhouse cultivation is inherently free from these problems.

Vegetable cultivation plays an important role fitting into the traditional cropping system to make it more remunerative.