



REVIEW ARTICLE

Emerging Insect Pests of Vegetable Crops under Changing Climate Scenario

Pratap A. Divekar^{*}, Jaydeep Halder, Kuldeep Srivastava and V. Sridhar[†]

Abstract

Crop losses in vegetables vary greatly depending on plant variety, cropping season, geographical location, and pest damage potential. Vegetable crops are heavily impacted by insect pests and diseases due to their softness, fragility and short duration in comparison to other crops. An emerging insect pest is one that has been observed in a specific crop-infested area and has progressively increased in population over time. Emerging insect pests have the potential to cause economic harm. In other words, an emerging insect pest is a pest insect whose position has shifted from minor to major or secondary to primary pest. The number of existing minor pests is increasing, as is the arrival of new ones, such as mealybugs, fruit flies, stem borers, diamondback moths among phytophagous insects and red spider mites among acarine. Recent infestations, such as South American tomato pinworm and chili black flower thrips, have caused serious damage to tomato and chili harvests. This review envisages on the variables that contribute to the establishment of new invasive pests, the persistence of main pests, general pest management practices, and integrated pest management to achieve sustainable vegetable production.

Keywords: Vegetables, emerging insects, invasive pests, integrated management.

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Introduction

Indian vegetables are recognized for their broad range of colors, shapes, and sizes. Globally, around 1097 different vegetables are grown for human consumption. These veggies are low-cost sources of vitamins and nutrients that provide farmers with both on- and off-farm revenue. Vegetables high in fibre enhance digestion, lower cholesterol, and reduce the risk factors for heart disease, diabetes, and obesity. Although India was second in vegetable output after China, the yield of numerous vegetables is still considerably below the global average. One of the primary factors for reaching this goal is biotic stresses like insect and acarine pests, diseases, nematodes and weeds. Insect pests alone cause crop losses on an average 25 to 30% yield loss in vegetables (Rai et al. 2014a). Apart from direct losses many of them also serve as many plant diseases which aggravate the problem further (Kodandaram et al., 2017b). The yield losses due to insect pest in different vegetables are listed as follows:

Sustainable vegetable production can be achieved through the management of insect pests in an eco-friendly way. The eco-friendly and sustainable pest management options like Cultural control (Halder et al., 2023), host plant resistance (HPR) (Divekar et al. 2019), plant secondary metabolites (Divekar et al. 2022), bio-control agents (Divekar P. 2023; Dukare et al. 2021), defense proteins (Divekar et al. 2022) and finally the chemical control (Kodandaram et

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