



Global Climate Change and its Impact on Integrated Pest Management

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ABSTRACT

Climate change is a reality and affects the poor in developing countries in many ways such as yield potential. This chapter presents a detailed analysis of crop-climate relationships. An overview of the state of the knowledge of possible effect of the climate variability and change on scenario of pest and its management strategies due to increase in mean temperatures, CO₂ increase. In this chapter there is a detailed study on the impact of the global climate change on the pest population, spread, distribution and seasonal dynamics of insect pests, insect resistance expression, natural enemies, effectiveness and activity of bio-pesticides and synthetic insecticides and also the Diversification of current pest management strategies to mitigate the effects of global climate change.

Keywords: Climate change, Insect pest, Pest management

Insect pests cause an estimated annual loss of 13.6% globally, and the extent of losses in India has been estimated to be 17.5% (Dhaliwal *et al.* 2010). The pest associated losses likely to increase as a result of changes in crop diversity and climate change, and changes in the cropping patterns and the cropping intensity. Pest associated losses increased from an average of 7.2% during the pre-green revolution period to 23.3% during the post green revolution period in different crops in India. Climate change and climate variability will have major implication for water availability forest cover, biodiversity, crop production, and food security. Rainfall pattern changes are of supreme importance for agriculture than the annual temperature variations, especially in those areas where lack of rainfall is a warning factor for crop production. Distribution of tropical and subtropical pests across the globe will spread along with modifications in the ranges of cultivation of their host plants, while distribution and relative

richness of some insect species susceptible to high temperatures in the temperate regions may decline. High movement of the pest and speedy population growth will rise the extent of losses due to insect pests. Current estimates of changes in climate indicate an increase in global mean annual temperatures of 1°C by 2025, and 3°C by the end of the next century, and the date at which an equivalent doubling of CO₂ will be attained is estimated to be between 2025 and 2070, depending on the level of emission of greenhouse gasses (Crowley, 2000). Mean annual temperature changes between 3 and 6°C are estimated to occur across Europe, with greatest increases occurring at high latitudes.

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