

## Developing IPM Techniques Against Invasive Pests

Raju Raj Pandey<sup>1</sup> and Indra Raj Pandey<sup>2</sup>

<sup>1</sup>Citrus Research Board, California, USA,

<sup>2</sup>Nepal Horticulture Promotion Center, Lalitpur Nepal

### Abstract

Increased international trade and travel has led to increased risk of introduction of invasive pests. Invasion of tomato leaf miner (*Tuta absoluta*) and fall armyworm (*Spodoptera frugiperda*) in Nepal are most obvious examples of how much economic destruction can they bring to agricultural development in the country. *Phthorimaea operculella*, *Plasmodiophora brassica*, *Mikania micrantha*, *Parthenium hysterophorus* and *Eichhornia crassipes* are other examples. When these pests invade a new geographical region, they usually leave behind their natural enemies from their original sites leading to their population outbreak unchecked.

Lack of effective external as well as internal quarantine system in the country has made it easy for an invasive pest to quickly spread and establish in a larger geographical region. Once the pest is spread to larger regions, developing integrating pest management. Use of chemicals appears to be a short-term solution, but search for natural enemies locally as well as from the site of pest origin is the most sustainable tool for the management of invasive pests.

Generalist predators and parasites may adapt to newly arrived organism. Surveying for determining extent of pest population suppression by resident biological control agents may provide some options for pest management, but importation of more specialist predators, parasites, pathogens from the source of pest origin may help to stabilize the pest population. Eventually, determination of economic threshold and identification of effective pesticides application frequency in association with cultural methods, available host plant resistance, and utilization of natural enemies needs to be developed.