

## Seasonal incidence and management of pea leaf miner *Phytomyza horticola* Goureau infesting pea

HARENDRA SINGH AND L. SARAVANAN

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See end of the article for authors' affiliations

Correspondence to:

**L. SARAVANAN**

Department of Plant Protection, Allahabad Agricultural Institute (Deemed University), ALLAHABAD (U.P.) INDIA

### ABSTRACT

Studies on the seasonal incidence and management of pea leaf miner *Phytomyza horticola* Goureau (Agromyzidae:Diptera) infesting pea (*Pisum sativum*. L.) were carried out during December 2005- April 2006 at Agricultural Research farm at Allahabad Agricultural Institute-Deemed University Allahabad. The pea Leaf miner commenced from 2<sup>nd</sup> week of February with an average population of 7.3 leaf miner per plant Leaf miner population gradually increased and reached its peak level of 9.25 leaf miner per plant during 4<sup>th</sup> week of February (9<sup>th</sup> Standard week). It was found that pea leaf miner increased with increasing maximum temperature, slight rainfall and morning relative humidity and decreased with increasing minimum temperature, evening relative humidity, wind velocity and sunshine hours. Among the insecticides treated, imidacloprid gave 100 per cent population reduction at five days after spraying. All other treatments viz., acetamiprid (99.11%) acephate (98.97%), profenophos (98.93%) thiomethoxam (97.35%), NSKE (97.35%), endosulfan (96.95%) alphamethrin (96.77%), and neem oil (91.41%) were found to be statistically at par with each other in managing this pest.

**Key words :** Pea leaf miner, *Phytomyza horticola*, Seasonal incidence, Management.

**P**ea (*Pisum sativum* L.) is an important grain legume crop in India and mostly cultivated during *rabi* season. In India, it is cultivated on 0.73 million ha with annual production of 0.72 million tonnes and with an average productivity of 906 kg/ha. The leaf miner, *Phytomyza horticola* is an important insect pest of pea throughout the pea growing areas. It is often severe in the states of Bihar, Delhi, Madhya Pradesh, Orissa, Punjab, Uttar Pradesh, West Bengal and Himachal Pradesh (Jha and Singh, 1994; Sharma *et al.*, 1994).

The larvae are more injurious which feed on leaf tissue and form galleries leaving intact the epidermal layer. In case of severe attack entire leaf is filled with the mines and 86-93 per cent of the leaves are found affected (Atwal *et al.*, 1969). The destruction of the chlorophyll containing tissue interferes with the photosynthetic activity of the plant as a result of which the growth and yield of the infested plant is adversely affected (Vishwanath and Agrawal, 1982). Bijjur and Verma (1995) observed that the population of leaf miner pupa per plant in the 1991-92 and 1992-93 continued to build up with decrease in temperature and attained a peak of 19.88 and 19.14 pupae per plant at flowering stage during last week of December in both years, respectively. Later on with rise in temperature along with the maturity of the crop, population showed decreasing trend. The studies on the effects of various insecticides have been undertaken by Singh *et al.* (1986), Pandey *et al.* (1993) and Sharma *et al.* (2003).

However, very little information is available on seasonal incidence and management of pea leaf miner in this region.

### MATERIALS AND METHODS

Studies on the "Seasonal incidence and management of pea leaf miner, *Phytomyza horticola* Goureau infesting pea (*Pisum sativum*. L)" was carried out during December 2005 to April 2006 at Agricultural Research Farm at Allahabad Agricultural Institute-Deemed University, Allahabad, Uttar Pradesh. This investigation was carried out on "Arpana" a pea variety. All the recommended agronomic practices were followed to raise the crop except plant protection measures, which enable the build up of insect pests and their natural enemies in a pesticides free environment.

#### *Studies on the seasonal incidence of pea leaf miner:*

The observations on the population build up of pea leaf miner, *P. horticola* were recorded from 15 days after sowing till harvest. For recording pest population total number of larvae and pupae of the insect were counted on five leaves from each of the five random selected plants per plot and average population per five leaves per plant was worked out.

The data on maximum and minimum temperature, relative humidity, rainfall sunshine hours and wind velocity were collected from the University meteorological observatory located close to the experimental site. They