

Pea Leaf Miner (*Chromatomyia horticola*): Identification and Integrated Management

Sandhya Thakur¹, *Asha Thakur², Tarun Guleria² and Ronika¹

¹Department of Entomology, College of Agriculture, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur-176062, India

²Department of Fruit Science, College of Horticulture and Forestry, Neri, Hamirpur, Himachal Pradesh-177001, India

*Corresponding Author's email: ashathakur671@gmail.com

Garden pea (*Pisum sativum* L.) is one of the most important leguminous vegetable crops in temperate climate. The crop is cultivated for its tender and immature pods for use as vegetable and mature dry pods for pulse. The productivity of pea is low because of numerous biotic and abiotic stresses. Among the biotic constraints, the losses caused by different insect pests such as pea stem fly (*Melanagromyza phaseoli* Tryon), pea leaf miner (*Chromatomyia horticola* Goureaux), pea aphid (*Acyrtosiphon pisum* Harris), pod borer complex (*Helicoverpa armigera* Hub, *Lampides boeticus* L., *Etiella zinckenella* Tr.) and thrips (*Caliothrips indicus* Bagnall) often cause substantial loss to the crop (Yadav and Patel, 2015). Pea leaf miner is an important insect pest of pea crop throughout the pea growing areas. It is a polyphagous pest infesting many crops (Yadav *et al.* 2016). Severe infestation of *Chromatomyia horticola* can cause significant yield reduction in pea, and studies report that more than 40% leaf damage leads to considerable loss in green pod yield (Kumar *et al.* 2008). The pea leaf miner (*Chromatomyia horticola*) infestation in Kangra district of Himachal Pradesh during Rabi season of 2022–23 caused up to 60.38% leaf damage, with an average population of about 65 larvae and pupae per plant, and the peak infestation occurred in March (Thakur *et al.* 2024). This pest is difficult to manage because the larvae are protected inside the leaf tissues. Therefore, proper identification, early detection and integrated management strategies are essential for effective control of pea leaf miner populations.



Damage Symptoms

The larvae construct mines inside the leaves and feed on the leaf tissues. In case of severe attack entire leaf is filled with mines. This damages the chlorophyll-containing tissues, which disrupts photosynthetic activity (Fathi, 2011). As a result, the leaves dry and fall prematurely, ultimately reduces growth and yield of the affected plants.



Fig:1 Damage caused by pea leaf miner, *Chromatomyia horticola*

Identification

Eggs: Eggs are laid inside the leaf tissue and are therefore not easily visible to the naked eye.

Larva: Small, white-to-yellowish maggots that feed between the upper and lower epidermis and causes the maximum damage to the plant.

Pupae: Occurs inside the mines (often near the leaf margin) appearing as small, dark brown, or yellowish-brown puparia.

Adult: Small (2–3 mm), greyish-black flies with a yellow or orange frons (forehead). Female flies make small punctures on the leaf surface to lay eggs.



Fig:2 Different developmental stages of pea leaf miner, *Chromatomyia horticola*

Management of Pea Leaf Miner

Effective management requires integrated pest management (IPM) practices combining cultural, mechanical, biological and chemical methods.

1. Cultural Methods: Cultural practices help to reduce pest incidence and prevent heavy infestation.

- **Crop rotation:** Do not grow pea or other host crops in the same field every year. Changing crops helps to reduce the pest population.
- **Field sanitation:** Regularly remove and destroy infested leaves. This helps to kill the larvae and pupae present in the leaves.
- **Early sowing:** Early sowing of crop reduces pest attack because the infestation is usually higher at later season.
- **Balanced fertilization:** Apply recommended dose of fertilizers. Avoid excessive use of nitrogen fertilizers, as it promotes rapid multiplication of this pest.

2. Mechanical and Physical Methods: These methods help to reduce the pest population at an early stage.

- **Removal of infested leaves:** Regularly check the crop and remove leaves that show leaf miner tunnels (mines).
- **Yellow sticky traps:** Place about **10–15 yellow sticky traps per hectare** in the field to monitor and reduce the population of adult flies.

3. Biological Control Methods

Several natural enemies help to suppress the leaf miner populations. Important parasitoids are *Diglyphus isaea*, *Opius* spp. and *Diglyphus horticola*. These parasitoids attack the larval stage inside the leaf mines and significantly reduce pest populations. Therefore, unnecessary insecticide sprays should be avoided to conserve these beneficial insects.

4. Chemical Control Methods: When infestation becomes severe, insecticides may be applied. Commonly recommended insecticides are as below:

- **Spinosad 45% EC** (0.3 ml/L water)
- **Abamectin 01.90% EC** (0.9 ml/L water)
- **Lambda cyhalothrin 05% EC** (0.8ml/L water)

Spray should be applied **at the early larval stage when mines first appear** for better control.

Conclusion

Pea leaf miner (*Chromatomyia horticola*) is an important pest that significantly reduces the yield and quality of pea crops. Early identification of damage symptoms and regular monitoring of the crop are essential for effective management. Adoption of integrated pest management practices such as removal of infested leaves, conservation of natural enemies, use of traps and need-based application of selective insecticides can help reduce pest infestation. Sustainable and timely management practices will help to protect pea crops and improve productivity for farmers.

References

1. Fathi, S.A. (2011). Tritrophic interactions of nineteen canola cultivars, *Chromatomyia horticola* and parasitoids in Ardabil region. *Munis Entomology & Zoology*, **6**(1): 449-455.
2. Kumar, S. and Kashyap, N.P. (2008). Assessment of yield losses in pea due to leaf miner, *Chromatomyia horticola* (Goureau). *Journal of Entomological Research*, **32**(2): 161-164.
3. Thakur, S., Sharma, S.D. and Sharma, P.C. (2024). Seasonal abundance and population fluctuation of pea leaf miner, *Chromatomyia horticola* (Goureau) infesting pea. *Himachal Journal of Agricultural Research*, **50**(1): 128-132.
4. Yadav, S.K. and Patel, S. (2015). Insect-pest complex on *Pisum sativum* L. and their natural enemies at Pantnagar. *Journal of Plant Development Sciences*, **7**: 839-841.
5. Yadav, S.K., Agnihotri, M. and Bisht, R.S. (2016). Efficacy of insecticides against pea leaf miner *Chromatomyia horticola* (Goureau) and its parasitoids. *Indian Journal of Entomology*, **78**: 373-391.