AgroScience Today

Popular Article

e-ISSN: 2583-0147

Volume 7 Issue 1
Page: 1205 - 1210

Coriander Seed Wasp - A Hidden Enemy in Seed Production

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Published on: February 28, 2026

ABSTRACT

Coriander (*Coriandrum sativum* L.) is an economically important spice crop cultivated worldwide for its aromatic seeds, which are extensively used in culinary, medicinal, and industrial applications. The production of high-quality coriander seed is often constrained by several insect pests, among which the coriander seed wasp (*Systole* sp.) is considered one of the most destructive. Adult females oviposit inside developing seeds, and the emerging larvae feed internally on seed tissues, leading to hollow and damaged seeds. Such infestation results in reduced seed weight, poor germination, and considerable

losses in seed yield and quality. The impact of this pest is particularly severe in seed production systems where high seed viability and genetic purity are critical. Therefore, a clear understanding of the biology, damage symptoms, and management strategies of the coriander seed wasp is essential for safeguarding coriander crops and ensuring the production of high-quality seeds for the spice and seed industries.

INTRODUCTION

Coriander (*Coriandrum sativum* L.) is one of the most widely cultivated spice crops and is valued for its aromatic seeds, which are used extensively in culinary preparations, traditional medicine, and various industrial products. India is among the leading producers of coriander, and the demand for high-quality seeds for both consumption and planting purposes continues to increase. However, coriander production is frequently challenged by several insect pests that attack the crop during its vegetative growth and reproductive stages.

Among these pests, the coriander seed wasp (*Hymenoptera: Eurytomidae*), particularly *Systole coriandri* and *Systole albipennis*, is considered a serious threat to coriander seed production. Despite its small size and inconspicuous nature, this insect can cause substantial reductions in seed yield, seed weight, and germination capacity. Consequently, it poses a significant constraint in quality seed production programmes. Furthermore, the presence of immature stages of the seed wasp within coriander seeds is considered a quarantine concern in international trade, potentially affecting export opportunities (Bhalla et al., 2009).

Why the Systole Seed Wasp Matters

- **Direct seed damage:** Larvae feed inside developing seeds.
- **Hidden infestation:** Damage often detected only after harvest.
- **Reduced germination:** Infested seeds fail to sprout.
- **Economic losses:** Lower yield and poor seed quality affect farmers and seed producers.

PEST AT A GLANCE

The coriander seed wasp belongs to the family Eurytomidae and is recognized as one of the most destructive pests affecting coriander seeds. Infestation primarily occurs in the field and may persist in harvested seeds during storage. The adult insect is a small black wasp measuring approximately 2–3 mm in length, characterized by a slender body and transparent wings. The larva is creamy white, legless, and develops entirely within the seed.

Female wasps possess a well-developed ovipositor that enables them to deposit eggs inside developing coriander seeds during the flowering and early seed formation stages. After hatching, the larvae feed on the internal seed tissues, completing their entire developmental cycle within the seed. Pupation also occurs within the seed, and the adult subsequently emerges by creating a small circular exit hole on the seed surface. Under favourable environmental

conditions, the pest generally completes one generation during the crop season; however, the extent of damage can be considerable when infestation levels are high.

Previous studies have reported significant levels of seed damage caused by *Systole albipennis* in several umbelliferous crops. The extent of damage has been reported to reach up to 40% in fennel (*Foeniculum vulgare* Mill.), followed by 35% in carrot (*Daucus carota* L.), 30% in coriander (*Coriandrum sativum* L.), 27% in dill (*Anethum graveolens* L.), 20% in cumin (*Cuminum cyminum* L.), and 10% in ajwain (*Trachyspermum ammi* Sprague) (Mittal and Butani, 1984).

NATURE OF DAMAGE

Emergence hole

- The larva feeds internally on coriander seeds, which directly affects seed formation. Small round exit holes on seeds are observed through which the adult wasp emerges. The seeds become shrivelled and often becomes hollow seeds thereby reduction in seed weight.

- Since the embryo is lost, seeds mostly do not germinate and even if it germinates, it leads to poor seedling vigour. Since the larvae remain inside the seed, the damage often goes unnoticed until the seeds are harvested or processed.

ECONOMIC SIGNIFICANCE IN SEED PRODUCTION

Yield Loss: Feeding by larvae destroys the seed contents, reducing the number of viable seeds produced. Though the weight loss is low but qualitative loss is heavy because of non-

acceptability by consumers. The pest significantly reduces the market value of coriander seed and is one of the major constraints in quality seed production.

Poor seed germination: Damaged seeds lose their embryo and cannot germinate properly, affecting seed certification standards.

Reduced market value: Infested seeds are lightweight and shrivelled, reducing their quality in spice markets.

Impact on seed industry: Seed production fields require high germination percentages and seed purity. Infestation by seed wasps can make seed lots unsuitable for commercial seed distribution.

FARMER TIPS: HOW TO REDUCE SEED WASP DAMAGE

Timely Sowing

Early sowing can help the crop escape peak pest activity.

Field Monitoring

Regularly inspect umbels during flowering and seed formation stages.

Remove Infested Plant Parts

Destroy damaged umbels to prevent pest multiplication.

Maintain Field Sanitation

Remove crop residues after harvest to break the pest life cycle.

Judicious Insecticide Use

Apply recommended insecticides at the early seed formation stage, taking care to protect pollinators.

CONCLUSION

The coriander seed wasp may be small, but its impact on coriander seed production is significant. Weather parameters play an important role in the management of population of *Systole* along with the other management practices. By attacking developing seeds, it reduces seed yield, germination, and overall quality. Early detection and integrated pest management practices are essential to protect coriander crops and ensure the production of high-quality seeds for farmers and the spice industry.

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