



## Use of *Trichogramma* spp. In different agricultural crops

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*Trichogramma* spp. are tiny parasitic wasps that play a significant role in biological control of pest insects, particularly in agricultural crops. These wasps are used as biological control agents to manage the populations of various pest species.

Order: Hymenoptera

Sub family: Trichogrammatidae

Higher classification: Trichogrammatidae

Kingdom: Animalia

Phylum: Arthropoda

Here are some ways in which *Trichogramma* spp. are utilized in different agricultural crops:

### 1. Pest Control in Field Crops:

- *Trichogramma* spp. is commonly used to control pest insects that lay their eggs on or inside crop plants, such as moths and butterflies.
- The wasps parasitize the eggs of these pests, preventing them from hatching and reducing the population of the damaging insects.

### 2. Control in Horticultural Crops:

- *Trichogramma* spp. is employed in horticultural crops like fruits and vegetables to combat specific pests, such as caterpillars and borers.
- Generally *Trichogramma* spp. are particularly effective against pests

like corn borers, tomato hornworms, and cabbage loopers.

### 3. Integrated Pest Management (IPM):

- *Trichogramma* spp. is an integral part of integrated pest management programs, where multiple strategies are employed to control pests sustainably.
- By incorporating *Trichogramma* spp. into IPM, farmers can reduce reliance on chemical pesticides, promoting environmentally friendly and sustainable pest control practices. This approach aligns with the growing emphasis on environmentally conscious agricultural practices, providing an effective alternative to chemical-intensive pest control methods.



### 4. Greenhouse and Controlled Environment Agriculture:

- *Trichogramma* spp. is used in controlled environments like greenhouses to manage pests that can affect crops grown in these conditions.

- This is particularly important in organic farming, where the use of synthetic pesticides is restricted.

### 5. Compatibility with Other Control Methods:

- *Trichogramma* spp. can be used in combination with other biological control methods, such as predatory



insects and insect-pathogenic fungi, to enhance overall pest control efficacy.

- By combining *Trichogramma* spp. with these diverse control methods, farmers can develop integrated pest management (IPM) programs that are resilient, environmentally sustainable, and tailored to the specific needs of different agricultural crops. This integrated approach contributes to effective and sustainable pest control in agricultural systems.

#### 7. **Timing and Release Strategies:**

- Timing is crucial when releasing *Trichogramma* spp. They are typically released when pest populations are in the egg stage.
- Various release strategies are employed, including the use of dispensers, cards, or other devices to disperse *Trichogramma* spp. in the target area.

#### 8. **Economic Benefits:**

- The use of *Trichogramma* spp. can lead to economic benefits by reducing crop losses and the need for chemical pesticides.
- The economic benefits of using *Trichogramma* spp. in agriculture are multifaceted, encompassing increased yields, cost savings, market access, and the promotion of sustainable farming practices. The integration of these parasitic wasps into pest management strategies represents a valuable investment for farmers seeking both short-term and long-term economic gains.

#### 9. **Biological Control in Organic Farming:**

- *Trichogramma* spp. is widely used in organic farming systems as a

natural and environmentally friendly method of pest control.

- *Trichogramma* spp. serve as valuable allies in organic farming, providing an eco-friendly and sustainable solution for pest management. Their integration into organic production systems aligns with the principles of environmental stewardship and biodiversity conservation.
- It is important to note that the effectiveness of *Trichogramma* spp. can vary depending on factors such as the specific pest species, environmental conditions, and the crop type. Integrated pest management approaches that combine multiple strategies tend to be the most successful in achieving sustainable pest control in agriculture. The integration of *Trichogramma* spp. into agricultural practices holds great promise for sustainable and environmentally friendly pest management. Continued research, development, and implementation of this biological control method will contribute to the advancement of agricultural practices that are both productive and ecologically responsible.

#### **References**

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