

Lepidopterous Egg Parasitoid: Trichogramma Spp.

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ABSTRACT

Trichogramma species parasitize insect eggs, as especially the eggs of lepidopterous pests and are mostly whole till date, many species of *Trichogramma* have utilized in biological control programme in agricultural crops and forest tree and recorded across the world. Inundative releases of *Trichogramma* spp. for the management of lepidoptera pests of major crops including maize corn borer, diamondback moth, cotton bollworms, rice striped stem borer, rice yellow stem borer and leaf folder etc., have been reported worldwide.

INTRODUCTION

T*richogramma* spp. are small wasps that are endoparasites of lepidopteran eggs. These wasps primarily use moth and butterfly (Lepidoptera) eggs as hosts, but also those of beetles (Coleoptera), flies (Diptera), true bugs (Hemiptera), grasshoppers and crickets (Orthoptera), dragonflies (Odonata), other wasps (Hymenoptera), lacewings (Neuroptera) and thrips

(Thysanoptera). Many hosts that *Trichogramma* wasps attacks are economically important plant pests, making this group of wasps a valuable biological control agent. *Trichogramma* wasps are considered among the most important parasitoid natural enemies of insect pests. However, naturally-occurring *Trichogramma* populations in cropping

systems are often not adequate to reduce pest populations below damaging levels. Therefore, field populations of *Trichogramma* are often augmented with insectary-cultured individuals, which can be purchased commercially. *Trichogramma* wasps have been released to control various economic pests of agronomic and fruit crops since the late 1970s (Hassan, 1993).

Life cycle:

Trichogramma spp. undergo complete metamorphosis, which includes four life stages: egg, larva, pupa, and adult. *Trichogramma* wasps are endoparasitoids, meaning that they complete their development inside their host. An adult female wasp will deposit an egg within a viable egg of another insect, the egg will hatch into a larva, and the larva will consume the host egg from within. After pupating within the egg, a newly developed adult *Trichogramma* wasp will emerge from the host's empty egg case and fly away to parasitize (deposit more eggs) in host eggs (Knutson, 1998).



Adults of *Trichogramma*

Host range:

Begum and Anis (2014) recognized 31 genera and 151 species of Trichogrammatidae from India. About 250 species of genus *Trichogramma* have been recorded across the world. As a whole till date, twenty eight species of *Trichogramma* have been recorded from India which is mentioned Table 1

(Yousuf *et al.*, 2015). Among them, six species of Trichogrammatids including *T. chilonis*, *T. pretiosum*, *T. brassicae*, *T. raoi*, *T. japonicum* and *T. ostriniae* are popular for Lepidoptera pest management in India.

Table 1: Different *Trichogramma* Spp. reported in India.

Sr. No.	<i>Trichogramma</i> Spp.	Sr. No.	<i>Trichogramma</i> Spp.
1	<i>T. achaeae</i>	15	<i>T. japonicum</i>
2	<i>T. agriae</i>	16	<i>T. kankerensis</i>
3	<i>T. breviciliata</i>	17	<i>T. kashmirica</i>
4	<i>T. brevifringiata</i>	18	<i>T. latipennis</i>
5	<i>T. chilonis</i>	19	<i>T. manii</i>
6	<i>T. chiloetraeae</i>	20	<i>T. pallidiventris</i>
7	<i>T. convolvuli</i>	21	<i>T. pieridis</i>
8	<i>T. cuttackensis</i>	22	<i>T. plasseyensis</i>
9	<i>T. danaidiphaga</i>	23	<i>T. poliae</i>
10	<i>T. danausicida</i>	24	<i>T. rabindrai</i>
11	<i>T. flandersi</i>	25	<i>T. raoi</i>
12	<i>T. giriensis</i>	26	<i>T. sankarani</i>
13	<i>T. hebbalensis</i>	27	<i>T. semblidis</i> (Aurivillius) <i>Oophthora semblidis</i> Aurivillius
14	<i>T. hesperidis</i>	28	<i>T. thalense</i>

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