

Biofertilizers Practical

BIOCONTROL

Trichogramma

Photographs (Identification & Application)

Presented by
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Trichogramma –

an egg parasite, a minute endoparasitic wasp

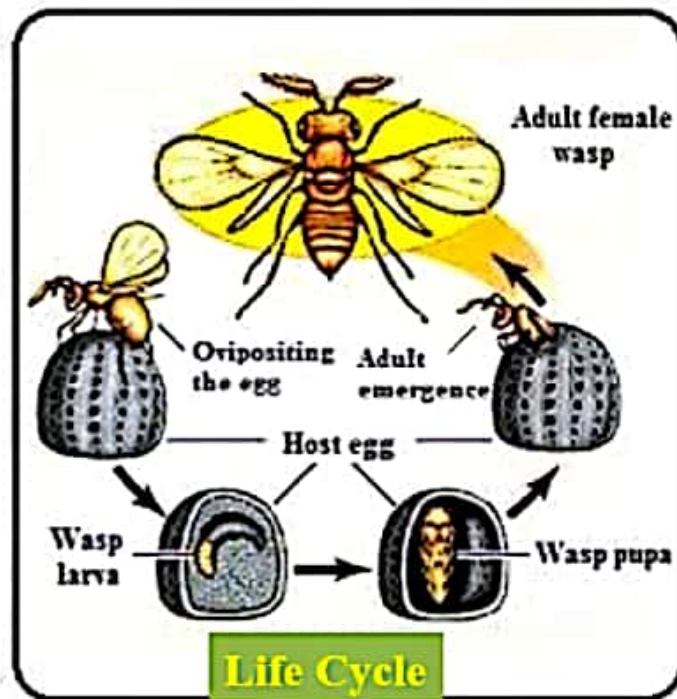
Taxonomic Classification:

Phylum: Arthropoda

Class: Insecta

Order: Hymenoptera

Family: Trichogrammatidae



Description:

1. *Trichogramma* is an endoparasitic wasp. They parasitize insect eggs especially the eggs of lepidopterous pests and check the population of insect pests at egg stage, before insect pests could cause any damage to the host plants. They are mostly utilized in biological control programmes.
2. Its common hosts are eggs of hundreds of species of insects, especially **moths**, **butterflies**, and **sawflies**. It is especially important in management of codling moth and fruitworm (pests). A few species parasitize eggs of beetles, flies, true bugs, other wasps, and lacewings.
3. **Morphology:** Adults are approximately 1/25 inch (1 mm) or less than 1 mm. They often have wing hairs (setae) arranged in rows. Their body is relatively compact and the antennae are short. *Trichogramma* species are difficult to identify due to their minute size and generally uniform morphological features.
4. **Life cycle:** *Trichogramma* spp. undergo complete metamorphosis. The adult wasp lays an egg within a recently laid host egg, and as the wasp larva develops, it eats the host embryo, causing the egg to turn black. Such parasites are called **parasitoid** (an insect larva that kills its host, usually another insect, by consuming the soft tissue of the host before metamorphosis into an adult). Because their life cycle from egg to adult is about 7 to 10 days, these parasites have many more generations than their hosts, and their populations can increase rapidly.

5. *Trichogramma* turns the eggs of some caterpillar species black. This is the best way to detect parasitization by *Trichogramma*.

Applications:

1. They are used as biocontrol for insect pests especially, codling moth (*Cydia pomonella*) and fruitworm (cotton bollworm/corn earworm/*Helicoverpa zea*).
2. Several species of *Trichogramma* are commercially available. e.g. *T. chilonis*, *T. japonicum*, and *T. pretiosum*. Different species and strains of *Trichogramma* typically prefer different host eggs and crop habitats and have different searching abilities and tolerance to weather conditions.
3. These are shipped as parasitized moth eggs fixed to cardboard sheets. Each sheet holds about 125,000 *Trichogramma*. The sheets are perforated into 30 small squares, each with 4,000-5,000 *Trichogramma*. Carefully tear the sheets along the perforations and either distribute them immediately throughout the crop or hold them in containers with food until the adults begin to emerge.
4. It is used as an augmentation (inundative release) biocontrol strategy. Releases should start as soon as moths (pests) are first detected (either seen flying or trapped in pheromone lure traps). They should be released at rate of 100,000-300,000/acre (250,000- 750,000/hectare) over three weeks or evenly spread out over the egg-laying period of the target pest.