Beneficial Insects

TECHNICAL DATA SHEET

bioBest SUSTAINABLE CROP MANAGEMENT

DISTRIBUTED BY PLANTPRODUCTS®

T-BRASSICAE-SYSTEM

*Trichogramma brassicae**

Trichogramma are extremely tiny wasps in the family Trichogrammatidae (ranging from 0.2-1.5 mm). They parasitize insect eggs, especially eggs of moths and butterflies. Trichogramma can attack the eggs of the most damaging caterpillar pests of vegetable, fruits and tree crops. Females can lay 1 or more eggs inside the host's eggs (1-10 eggs per day), depending on egg size, so one or more adults can come out of each host. They turn the eggs black and chew a hole to come out as adults. They can also kill the pest eggs by host feeding (piercing the eggs and sucking up juices for nourishment). Sugar sources and host egg yolk can increase the adult lifespan to approximately 10 days or more.

Features

- Parasitic wasp of eggs
- Rapid development, no diapause
- Mainly parasitizes Lepidopteran hosts
- Can also kill by hostfeeding

Targets general Lepidoptera species, for example:

- Cabbage Looper
- Cherry and cranberry fruitworms
- Climbing Cutworm
- Codling moth
- European Corn Borer
- Armyworm
- Leafroller
- Tent Caterpillar

Crops

- Brassica, Leafy greens and other vegetable crops
- Field and Row Crops
- Ornamental Crops
- Fruit crops (apples, blueberries) and others

**Other species of Trichogramma may be available upon request. Contact your Plant Products advisor.*

Product Specifications

Commercial name	Specifications
T-Brassicae-System-500K	• 5 strips with 100K pupae (30 cards per strip) • Pupae on cards
T-Brassicae-System-1Mil	• 100% Biodegradable packaging • Pupae and Ephestia eggs

Storage

Do not store the emerged adult wasps for more than 4 hours. Do not cold store the wasps' pupae for more than three days. Hold at 45-50% RH and a temperature of 40°F - 4-5°C.

Rates

Mode	Dosage	Repeat
Preventative	1-2.5/sqft	weekly or biweekly
Curative	5-10/sqft	weekly or biweekly
Field General Application	50,000-100,000/acre	weekly or biweekly

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T-BRASSICAE-SYSTEM

Instructions

Strips (Please see the illustration below)

- To obtain an even distribution in the target area, cut each strip into 30 hanging cards. Flip the strip over (egg side down) to see the perforated lines. Cut with scissors along the lines; do not tear.
- Distribute the hanging cards in the evening or in the early morning.
- Place them in a shady location, protected from direct sunlight and rain.
- Emergence can be seen as tiny brown dots moving around (a magnifying glass may be helpful).

Bulk

Sprinkle directly onto leaves, pour into Bio-Boxes, or place in a container with holes or a mesh wide enough to allow adults to fly out on their own.

Release conditions

Ideal temperatures for release and activity of T-Brassicae-System are between 73-85°F (23-30°C).

Additional information

Trichogramma disperses mainly by jumping, walking or taking small flights. They are tiny and light and can be easily dispersed by wind.

Ant control is an essential part of any biological pest control program. They often attack the beneficial insects while they are still developing. For this reason, if ants could be a problem in your farm, it may be best to distribute the cards as soon as emergence has started.

Timing of Application

Timing is critical to ensure host eggs are available for parasitism. Monitoring adult flight is key to decide when to start Trichogramma releases. Depending on the pest, pheromone traps, Degree Day Models or PATS-C cameras could be used to determine when egg laying is about to start.

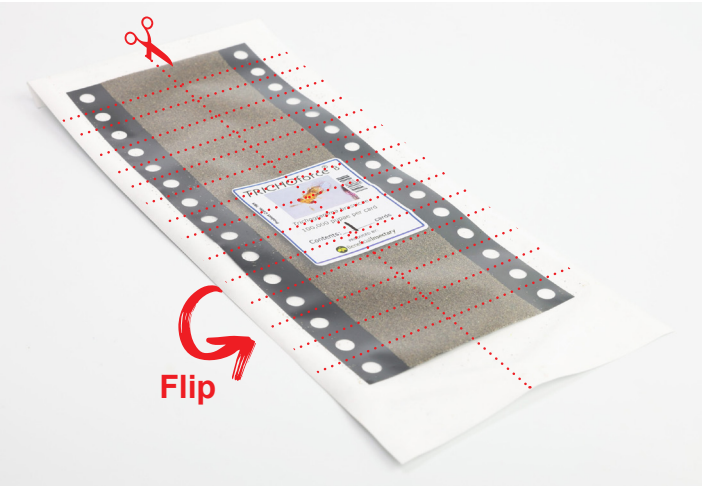
Compatibility

Broad spectrum insecticides can be detrimental to the performance and establishment of Trichogramma. However, the use of caterpillar larvicides like *Bacillus thuringiensis* (Bt) and baculoviruses can greatly complement the activity of Trichogramma and help deliver a successful biological control.

Checking efficacy of Trichogramma

The black color and exit hole of parasitized eggs are evidence of parasitism. Its difficult to see T-Brassicae at work, due to its small size. If you can find the moth eggs, you may be able to determine if they have exit holes from the wasps. A reduction in the numbers of caterpillars present and less damage to the crop are also indicative that Trichogramma is working.

Flip the strip so the egg side is facing down, then cut along the perforated lines.



T-BRASSICAE-SYSTEM

Life cycle and appearance**

Egg	Larval and Pupae stages	Adult
• Trichogramma eggs are laid inside the host's eggs.	• Wasp larvae develop inside the host and undergoes 3 larval stages, before pupating, they turn the eggs black or dark in color • Wasps pupate inside the insect egg and chew their way out to seek new eggs to parasitize (exit hole) **Developmental time** • Roughly 4-7 days in their immature stages	• 0.2 - 1.5 mm (depending on species) • Will deposit up to 50 eggs • Can build up to 30 generations per year (many of which overwinter) • Lifespan ~10 days in the presence of sugars and host's egg yolk. With sugar alone about 3 days
		

**73-85°F (23-30°C)