Pheromone Trap:
Cotton bollworm

M2i technology

- Unique patented process of pheromone micro-encapsulation
- Controled rate of pheromone release for greater efficiency
- 100% biodegradable
- Easy storage, at room temperature
- Extended shelf life: 2,5 years

User guide

M2i recommends: Armigera Pro Caps® syringe + Funnel trap

Trap setup: place the pheromone holder (cage) in the upper part of the trap. Put a drop of the product into the lower part. Snap the upper part of the trap into place. Empty the remaining content of the syringe into the pheromone holder. The moths are attracted by the sexual pheromone, enter the trap and are caught.

Characteristics of Armigera Pro Caps®

Type of product	Pheromone dispenser
Use	Monitoring
Active substance	Z-11-Hexadecenal
Formulation volume	0,5 ml
Indicative diffusion*	3 months
Targeted insect life-stage	Adult (moth)
Estimated radius of diffusion	Moths attracted on a radius of 5-10 m

* depending on climatic conditions, for an average temperature of 30°C and without strong winds.

Monitoring setup

Detection period: strongly dependent ~~of~~ on the location (adapt and renew the pheromone dispenser according to the recommended diffusion time).
From May to October in the South of France; the whole year in tropical areas.

Trap location: hung 30 cm above the crop.

Recommended density: 1-3 traps / ha.

Pest monitoring and recommendations

Trap follow-up frequency	Weekly
Recommended intervention	7 moths/trap/week
Pest control methods	During the critical season and depending on trapping levels: it is possible to perform an additional insecticide and/or a biocontrol treatment according to the insect life stage. Refer to recommendations of registered products for plant protection (ephy.anses.fr) and/or to your technical advisor.
Possible preventive measures	Favor the introduction of predators (auxiliary insects, birds); favor intercropping and crop rotations; favor tillage.

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The cotton bollworn (*Helicoverpa armigera*)

Pest life-stage: caterpillar **Order**: Lepidoptera

The cotton bollworm is native from tropical areas. Adult are up to 18 mm long. Male and female can be differentiated by the color of their body (abdomen and wings). The female is orange-brown to reddish-brown, whereas the male is greenish-fawn. Caterpillars are long and their color varies with the larval instar. Young caterpillars are white-yellow to brown while last instar caterpillars become green or brown.

Damages are caused by the caterpillars feeding on young shoots and also leaves, flowers and fruits. It causes the development of fungal diseases and mold. This species can cause 100% of production loss.

Helicoverpa armigera can achieve up to 10 generations per year depending on climatic conditions. This species can enter in diapause (facultative diapause) under adverse conditions such as food shortage, low temperature, rainfall, etc. It also has a strong ability to migrate over long distances.
Be aware that this insect can be resistant to insecticides, including sometimes *Bacillus thuringiensis.*

Recommandations / Security
Keep out of reach of children. Keep away from domestic animals.
Store away from food and drink. Do not freeze.
Do not eat, drink or smoke during use.
Wash hands after use.
Store in original packaging. Comply with doses, conditions, instructions and precautions for use mentionned in the user's guide.
Dispose of the empty and clean packaging in the household trash.

First aid
If eye contact occurs, rinse with water for several minutes.
In case of skin contact, wash with plenty of water.
If swallowed, do not induce vomiting, rinse mouth and see a doctor.
In case of faintness, see a doctor and show him the product label.

Product approved for organic agriculture.

Host plants

The cotton bollworm is a strongly polyphagous species feeding on multiple gardening plants (tomato, peas, bean, etc.), crops (corn, cotton, etc.) and arboriculture (citrus, prunus, etc.).

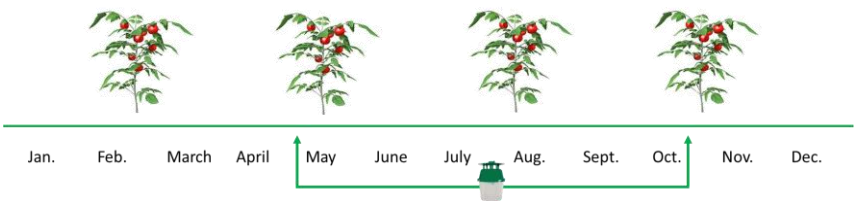
Detection strategy: pheromone monitoring

Pheromones are substances produced by insects which operate as a signal between individuals of a same species. There are different types of pheromones: alarm, aggregation, sexual… Monitoring with sexual pheromones is based on a lure placed inside a trap which mimics the substance produced by the female. Lure attracts males which are captured. This enables the detection of the pest's onset and the follow-up of its infestation level. Monitoring also helps decision-making (to launch a curative intervention) and/or measuring the efficiency of a treatment.

Benefits

This method is efficient, selective and harmless for fauna, flora, operators and local residents. It does not generate residues, inputs or resistance mechanisms.

Detection period for *H. armigera*



Indicative period for Europe

Icons made by WesAbrams

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