EXITEC

Use in mating disruption to manage the beet armyworm *Spodoptera exigua*

The beet armyworm, *Spodoptera exigua* (Lepidoptera: Noctuidae) is a polyphagous species that can attack a wide variety of crops, in both greenhouse and open field, such as pepper, melon, watermelon, lettuce, alfalfa, cotton, corn, onion or tomate among others.



The beet armyworm
Spodoptera exigua

The damages of this species have increased considerably in the last years, specially in greenhouses. It is native to Southeast Asia but has been widely distributed in other areas such as South of Europe, Africa, Asia, Australia, Canada and the United States.
Mating occurs soon after emergence of the moths. Two-three days after mating, the eggs are laid in clusters in the underside of the leaves. Eggs are covered by scales from the female's abdomen for protection. The larvae present 5 instars with a total duration of 25 days approximately. During the first instars, larvae have a gregarious behaviour causing important damages, as larvae mature they become solitary. Pupation takes place in the soil for 6-18 days, after which adults emerge.
The whole cycle can take 30 to 60 days depending on the weather conditions, presenting 3-6 generations per year, although in areas with good weather conditions this species can be found continuously throughout the year. Damages are caused by larvae when feeding on leaves and fruits. Buds and flowers may also be affected. The main symptoms focus on the presence of holes in the leaves as well as drillings and/or gnawings in the fruits. The wounds may also be the entry of other secondary pathogens such as fungi and bacteria.



CONTROL MANAGEMENT

As preventive measures it is recommended to remove the weeds acting as shelters as well as damaged plant material.
A high number of active ingredients have been used to manage this species but their indiscriminate use has developed the appearance of resistances increasing the damage.
Today there are other tools, more selective, to manage this species such as mating disruption. This technique consists of creating a saturated atmosphere with sex pheromone of the target insect to confuse males and therefore avoid or postpone the consequent matings.







FORMULATION

The product EXITEC is a dispenser comprising the compound (Z, E)-9,12-tetradecadienyl acetate, described as the main component of the sex pheromone of *S. exigua* and (Z)-11-hexadecenyl acetate, identified as one of the minor compounds of the sex pheromone.
The material of the dispenser is permeable to vapours and allows the emission of the different products at a controlled rate.
In regular weather conditions, the persistence of the dispensers is 180 days approximately, although it may be reduced at high temperatures and/or strong winds.

APPLICATION



- Dispensers should be placed in the crop before the first flight of adults or once the first adult is detected.
- In greenhouse, dispensers should be placed directly in the overhead support wire (approximately at 1.6-2 m, depending on the height of the wire). They can also be tied with the help of a wire to a rope at the same height. In small size crops, dispensers should be placed approximately 20 cm above the crop.
- The number of dispensers per hectare recommended is 150-250/ ha following a homogeneous distribution.
- It is advisable to monitor the pest by placing 2-3 monitoring traps. The trap recommended to be used is the delta or funnel trap with the corresponding dispenser for monitoring (EXILAB). Each trap should be placed at about 1.5-2 m in height, depending on the height of the crop.
- If they are small size crops, they will be placed a few centimeters above it (20 cm approximately). The number of captures observed in the traps will determine the correct efficacy of the technique.
- It is recommended to do regular damage assessments. Depending on the number of catches observed in the monitoring traps as well as the level of damage it might be considered necessary the application of an additional treatment.

HANDLING AND STORAGE

The packaging material is impermeable to the vapors of the different products. It is recommended to store the product in its original, unopened containers, preferably in the freezer until ready for use. Under these conditions, the product can be stored for a period of two years.
Avoid opening, cutting, or puncturing the diffusers. Under normal handling of the product, there is no risk of toxicity to humans, animals, or plants. Likewise, the risks of water and soil contamination are negligible.
It is recommended to use gloves when handling the diffusers.
Used diffusers and their containers should be managed according to current legislation.

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