

## Proposed Management of *Spodoptera exigua* beet army worm in Scallion

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22/5/09



### Jamaica scenario

- Infestation of scallion crop St. Elizabeth
- Variety affected most is the evergreen; the local variety not as badly affected. More acreages under production of the former
- Migration of Adult *S. exigua* from outside crop
  - Eggs abundant and various instars of larvae and pupae observed
  - Infestation may have started at least one month earlier
- Farmers repeated use of pesticides with single chemistry may have resulted in pesticide resistance developing and disruption of natural enemy associations hence no control
- Not clear if thresholds are being used to time applications
- Use of mating disruption with pheromones needs to be further investigated
- Concern re pupae present which indicates another generation; fields will have to be plowed under, birds present may assist in lowering the larval and pupal stages present. Field must be monitored first with pheromone traps to detect early presence of adult male moths. Once detected treat with mating disruption chemical eg **check mate** to to

confuse males and disrupt mating of moths upon emergence. (In the absence of a host moths will migrate to nearby fields). (Please note if egg masses are present could be due to already mated females flying in from outside field or treatment is not working). Mating disruption will shut down pheromone traps.

- Mass trapping could be done with bucket type traps and setting 40m into crop from edge of field and next trap at least 30 m apart or traps **pictured below used in Taiwan**
  
- More environmentally friendly and efficacious treatments needed (Use of Bt and Spinetoram formulations) Acetimidiprid (systemic) new chemistry related to imidacloprid new on US market could be evaluated, however since scallion leaves are consumed may be in issue.
  
- Vulnerable stages are the 1<sup>st</sup> to 2<sup>nd</sup> instars; scouting important to detect these stages, description of larval instars cited above. Threshold 5 larvae/25 plants
  
- Eggs difficult to attack with ovicides due to protection with scales and silk threads; becomes more difficult if period is rainy. Natural enemies may afford control at this stage. May have to look at banker plants and strategies to conserve natural enemies
  
- Need to determine natural enemies present that attack life stages of *S. exigua*.
  
- Monitoring of *S. exigua* populations needs to be implemented to mitigate future outbreaks.
  
- Need to determine alternate hosts within 5-10 km of affected areas. Corn, tomato, cabbage and certain weed species eg wild calaloo as listed earlier should be examined.



Pheromone traps, baits and field set-up for mass trapping the three most notorious pests in Taiwan

\*red trap and lure for *S. litura*;  
 blue trap and lure for *S. exigua*;  
 orange trap and lure for *H. armigera*.



Production and harvest of cabbage lettuce by farm cooperatives in Yun-lin County for exportation.

○ **Use of Sex Pheromones**

In order to enhance the application of nonpesticide method in the field, the Taiwan Government has financed researches and extension in using sex pheromones for controlling the insect pests on many crops since 1983. The kinds being promoted included sex pheromones of tobacco cutworm, *Spodoptera litura* (Fabricius) (Lepidoptera:Noctuidae); beet army worm, *Spodoptera exigua* Hübner (Lepidoptera:Amphipyridae); sweet potato weevil, *Cylas formicarius* (Fabricius) (Coleoptera:Brentidae); carambola fruitborer, *Eucosma notanthes* (Meyrick) (Lepidoptera:Tortricidae); smaller tea tortrix (*Adoxophyes* sp.); rice stem borer, *Chilo suppressalis* (Walker) (Lepidoptera:Pyralidae); tomato fruit worm, *Helicoverpa armigera* (Hübner) (Lepidoptera:Noctuidae); turnip moth, *Euxoa segetis* (Schifferrmiller) (Lepidoptera:Noctuidae); Asian corn borer, *Ostrinia furnacalis*; and cabbage looper, *Trichoplusia ni* (Hübner) (Lepidoptera:Noctuidae). Different kinds of sex pheromones were applied to

crucifer, shallot, peanut, soybean, flowers, sweet potato, corn, carambola and tea, respectively (Table 2).

Application of Sex Pheromones and Attractants

1. Beet armyworm (*Spodoptera exigua* Hübner) Monitoring/Mass trapping:  
6-24 traps/ha/1-2 months
2. Mating disruption: 120 spots/0.1 ha/5 months (reported for Carambola fruit borer)

See other file for bucket type traps etc