CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)
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Project Number
J2221

Project Title
Population Management of Plodia interplunctella through Pheromone Confusion

Abstract

Objectives/Goals
The purpose of this experiment is to see if synthetic pheromone can cause mating disruption in the Indian meal moth.

Methods/Materials
Pupae were separated into glass tubes where they transition into moths. The moths are sexed and put into groups. For the Control test 5 female moths are used to bait a trap and 30 feet away 25 male moths are released. After 12 hours the trap is checked. For the pheromone confusion test, 5 female moths are used to bait a trap and placed in the corner of the garage. 25 feet away a trap is baited with synthetic pheromone. 30 feet away from both traps, 25 males are released. After 12 hours the traps are checked for results.

Results
A control test was run using just the female lured trap and after the 12 hour testing period 11 male moths were captured in the female lured trap. A testing trial was then run resulting in 12 male moths captured in the pheromone lured trap and 2 male moths were captured in the female lured trap. The second control trial resulted in 13 males captured in the female lured trap. A testing trial was then run resulting in 5 males captured in the pheromone lured trap and 3 males in the female lured trap. The third control trial resulted in 9 males captured in the female lured trap. A testing trial was run resulting 8 males captured in the pheromone lured trap and 2 in the female lured trap. The fourth control trial resulted in 11 males captured in the female lured trap. A testing trial was run resulting 8 males captured in the pheromone lured trap and 2 in the female lured trap. The final control trial resulted in 8 males captured in the female lured trap. A testing trial was run resulting in 7 males captured in the pheromone lured trap and 3 in the female lured trap.

A control test was required for each trial to alleviate any variability that may have occurred during the moth rearing and sexing process since new moths were used for each trial.

Conclusions/Discussion
The results of this study show that the number of males captured in the pheromone lured traps is significantly greater than the number captured in the traps lured with virgin female moths. The development and application of mating confusion strategies are vitally important in the process of eliminating the need for the use of pesticides.

Summary Statement
Developing a method of insect population control to evetually alleviate the use of harmful pesticides.

Help Received
Mother took photos; Dr. Judy Johnson provided Plodia interplunctella larvae