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SEX SELLS – PHEROMONES TO MANAGE PESTS

Ninety per cent of chemical insecticides have been eliminated from commercial orchards, according to CSIRO research.

"Most of Australia's commercial stone fruit growers now use the pheromone method to disrupt the mating of insects," says CSIRO entomologist, Dr Richard Vickers.

Insects such as the oriental fruit moth are guided to their mates by chemical sex attractants, called pheromones, released by the opposite sex.

Scientists identify the unique pheromone for the insect pest they want to control, and the amount of pheromone needed to disrupt mating or to entice moths in to traps for monitoring.

The pheromone is loaded into different types of tubing, which can either be tied to orchard trees or placed in simple traps often made from milk or orange juice cartons coated with a sticky substance.

As the pheromone permeates through the walls of the tubing it is carried on air currents through the orchard.

"The male either becomes confused and doesn't know which direction to turn for the female, or he becomes desensitised to the lower levels of pheromones naturally given out by the female and has no incentive to mate with her," says Dr Vickers.

"Although it is still not clear how mating disruption actually works the male moths don't find the females, they don't mate and any eggs the female lays are infertile," he says.

There are a number of advantages in using pheromones to disrupt mating, especially with many insect pests becoming more resistant to pesticides.

"When peach growers moved over to mating disruption as a method of controlling oriental fruit moth they found that another pest, the two spotted mite, was no longer a problem," says Dr Vickers.

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In the absence of the insecticide that controlled the moth, the natural enemies of the two spotted mite were able to control this pest as well, according to Dr Vickers.

Pheromones can be used to trap, monitor or control insect pests. Pheromone traps are extremely sensitive and can be very useful in detecting the entry of exotic pest species that we don't have and don't want in Australia.

"The insects follow the pheromone trail into the trap," says Dr Vickers.

Currently, a detection system using pheromone traps is in place for the Asian Gypsy Moth. The traps have now been set up in ports and other potential points of entry around the east coast of Australia, and along the south coast as far as Western Australia.

"Queensland's recent papaya fruitfly infestation may never have taken off had comprehensive monitoring systems been in place at the time," he says.

"Early detection is imperative, but fruitfly was only detected long after it had established itself," he says.

In an effort to reduce the use of pesticides, CSIRO researchers are continuing to explore ways of using pheromone to control the insect pests that cost Australians millions of dollars each year.

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