

Battling bugs with love trap

REHOVOT, Israel — Israeli scientists here are successfully controlling fruit pests and other insects by trapping them with the aromatic allure of female bugs.

In an effort to eliminate the use of chemical pesticides, researchers with a new slant on romance have transferred the war against crop-devouring pests to the boudoir.

This modern version of the

Samson and Delilah story has its origin in the pheromone, an odorous chemical compound secreted by insects to communicate with one another. Each pheromone carries a different message including danger and... the invitation to mate.

Moshe Sternlicht of the Institute of Plant Protection at Israel's Agriculture Research Organization is one of the country's leading

researchers in the exploitation of pheromones.

The technique, pioneered in Germany and the United States, is a simple one, he says. During the mating season, male insects are attracted by pheromones emitted by the females. This means that the bug population is concentrated in specific locations during a specific time for the purpose of reproduction.

Exterminating them at the right time and place or even simply disrupting the

reproductive process would enable farmers to reduce crop destruction significantly.

The trick, then, is to find a way to exploit the mating process and the answer lies in the pheromone which triggers the cycle of reproduction.

The technique is based on the identification, isolation and, if possible, the synthetic reproduction of the pheromone. This work is done by chemical researchers and each insect is a story unto itself.

Once the pheromone has been isolated, it can be used in a number of different ways.

The most common is monitoring. The pheromone is fastened to a crop along with a gluey transparent panel. The unsuspecting male is attracted by the scent and trapped - but not in the snares of love.

The farmer counts the number of males caught per week and, by keeping a record over a period of time, can estimate exactly when the bug population in his fields is at its peak.

Then - and only then - he sprays the crop, guaranteeing minimum use of chemical insecticides with maximum efficiency.

This technique is based on random plantings of the

pheromone in order to get a reliable reading of the insect population. But Sternlicht says when large numbers of pheromone-emitting dispensers are scattered all over the orchard, the entire male population can be trapped and exterminated, without the need to spray them at all.

Another technique which is now being put into practice is confusion. This is an instance of the male having it too good. The pheromone is emitted from a vast number of special dispensers located all over the field. The male insect zeros in on one source of the smell.

... then another ... then another, and soon becomes so confused about the whereabouts of its would-be mate that it gives up.

An even more devious technique is sterilization. As the male insect approaches the pheromone, it brushes past a substance which renders it sterile.

The other side of this coin is the development of anti-pheromones, wherein the pheromone substance is modified to produce a compound inhibiting the attractive power of the natural pheromones being diffused by the actual females in the field.

The last two methods are still in the early experimental stages.

Not only do they destroy bugs but they also eliminate or drastically reduce the

need for chemical sprays, with all their negative side effects. In recent years, scientists say, the nations of the world spend more than \$2.5 billion annually on two million tons of pesticides.

The effectiveness of these methods depends on efficient means for distributing the pheromone and trapping the insects. Sternlicht has devoted much time to this problem; recently he developed a new dispenser which allows for the uniform emission of the pheromone for up to four months and does away with the adhesive plate, which needed frequent replacement.

The insects are attracted to a funnel-like object and they slide down into a plastic bag which can accommodate a far larger number of insects than could earlier devices. The farmer has to replace the traps only once every four months, thereby saving valuable work hours.

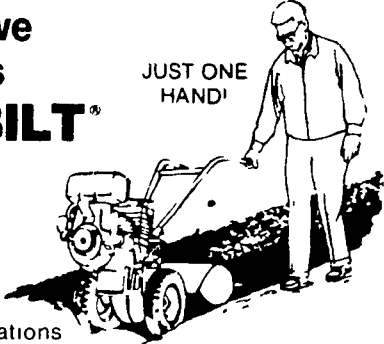
A different type of dispenser is being developed for the confusion technique. One such device involves the use of hollow fibers, tiny hollow plastic tubes filled with pheromone and sprayed on the leaves of the crops.

So the war against pests continues and to those bug lovers who might protest at the underhanded methods being developed, Sternlicht and his colleagues can only say, "All's fair in love and war"

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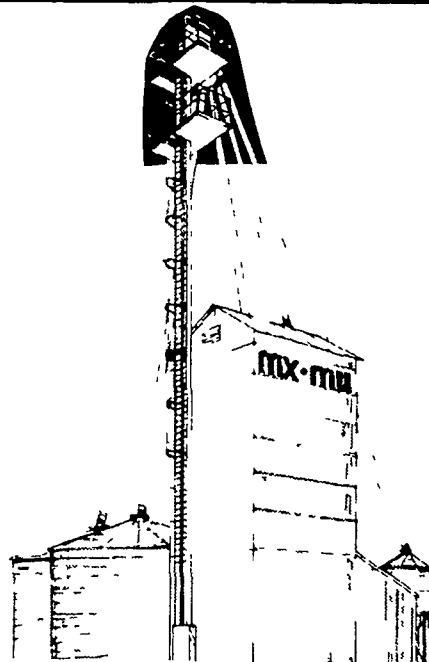
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