

compound,” says Ted Underhill. “Usually there are only two, but sometimes three or more may be involved. What is worse, the amounts of each component in the natural mixture differ. We have to get the ratios right as well.”

Ratios aside, however, with 200 possible compounds to choose from the number of combinations works out to 20,000, an enormous task when translated into the field-testing of each mixture in a separate trap for each moth species.

To get around the problem, the PRL group uses an unusual instrument that substantially reduces this number. Called an “electroantennogram”, it involves connecting a living male moth into an electric circuit. Experience has shown that when chemicals with pheromone activity are placed across the insect’s antenna, an electrical response is recorded.

Comments Warren Steck: “almost without exception, whenever the instrument has identified a compound as an attractant for a given moth species, the field tests have verified its pheromone activity. With the electroantennogram, the number of chemical combinations are reduced to a manageable number of possibilities. And once the components are known, we simply play with the relative amounts to get the best mix ratio.”

To date, the group has identified attractant mixtures for at least 60 moth species in western Canada, some of which have a considerable effect on the agricultural and forestry economies.

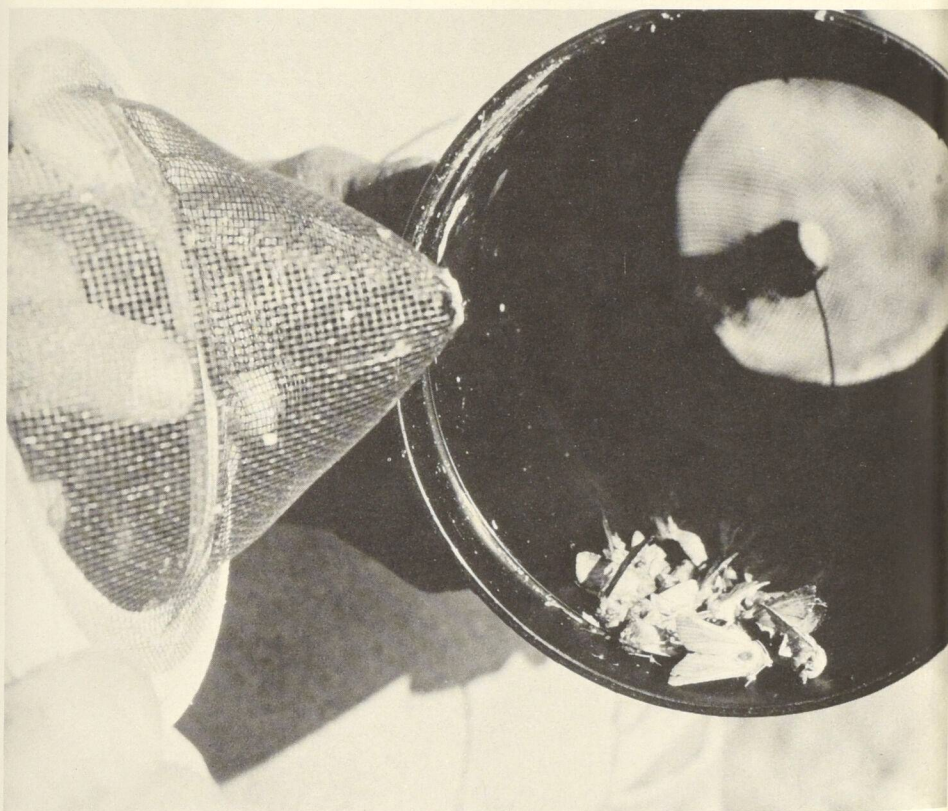
Pheromones have another potential application as population “controllers” in high density, small crop area situations such as exist in orchards. The technique, already shown to be feasible in the United States, involves saturating the area with pheromones, thereby confusing the male moths and decreasing their chances of finding females. In another variation of this approach — suggested for sunflower moths in western Canada — many traps are set out with a view to decimating the male moth population.

For the present, however, the monitor system seems to be the most widespread and promising application of insect pheromones. With its increasing availability, farmers can be more judicious in their use of insecticides, chemicals which are not only expensive, but are being viewed increasingly as long-term “risks” to the environment. □

Wayne Campbell



Bruce Kane, PIB/DIP



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Ted Underhill and Burt Bailey examine the catch from one of their field traps. The photo below shows that only one species type has been lured by the pheromone “scent”.

Ted Underhill et Burt Bailey examinent les insectes pris au piège. La photo ci-dessous montre qu’une seule espèce d’insectes a été attirée par l’«odeur» de la phéromone.