

Beetle trap

Trench Warfare Beats Beetles

In the war against Colorado potato beetles, researchers have taken to the trenches with great success.

A team of researchers from the University of Guelph and the Ontario Ministry of Agriculture and Food (OMAF) found shallow plastic-lined trenches dug between last season's beetle-infested potato fields and this season's emerging fields will trap up to 80 per cent of insects crawling from one field to another. That's a better kill ratio than insecticides, most of which the beetles are increasingly resisting.

"I'm amazed that trenches have been so effective," says team leader Mark Sears, a professor of environmental biology. "What we have is a passive, non-chemical method to control the potato industry's biggest problem, costing Ontario more than \$3 million a year."

The researchers conducted the experiment on a 10-acre field near Alliston, one of Ontario's leading potato regions. There, they dug a 12- to 16-inch-deep, three-foot-wide trench at regularly spaced intervals between an established potato plot and a new one. They lined the trench with standard mulching plastic, heaping dirt on the sides to keep the plastic in place.

Sensing an emerging crop in a new field nearby, the beetles started their march forward from their overwintering location in last season's field. When they did, they slipped into the trench and were unable to get out.

"They were just like cats pawing at a door," says Sears. "They scratched and scratched, but couldn't make any headway." Unable to reach food, the beetles eventually starved or dehydrated in the trench.

Why didn't they just fly out of the trench? The answer, says Sears, is central to the project's strategy. Colorado potato beetles have a natural tendency to walk from their overwintering sites to new fields nearby. They'll only fly if the field is not within walking distance. Unique to their flying regimen is that they search for a perch to fly from. In the trench, however, there is no perch, so when the beetles crawl in en route to a new adjacent field, they simply can't -- or won't -- fly out.

Trench warfare is one of several non-chemical defences the team has been examining. Others include a predacious stink bug that preys on beetles' eggs and larvae and a propane flamer that wreaks havoc on the

beetles' antennae and other sensory mechanisms. Another possibility is the use of early-maturing border rows of potatoes that attract beetles so farmers can target their insecticides mainly on those rows, rather than on whole fields.

This research is sponsored by OMAF's Food Systems 2002 program, the Ontario Ministry of the Environment's pesticides advisory committee and the Ontario Potato Growers' Association.

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