

# Scientists battle European corn borer

By Joan Easley  
 NEWARK, Del. — Agricultural scientists go to great lengths to slow down a destructive insect like the European corn borer. In the 1940s they went to Europe in search of natural controls.

There they found several insects that parasitize the corn borer. They brought these insects back to the United States to see if they would establish themselves and keep U.S. corn borer numbers down.

The one that seemed most promising was a hungry little fly called *Lydella*. For the next several years it did a creditable job of controlling corn borer populations in Delaware and other corn-growing states in which it had been introduced.

During the 1960s, however, Paul Burbutis, University of Delaware Agricultural Experiment Station researcher who was heavily involved in the *Lydella* project, discovered that for unknown reasons the parasite had disappeared in this country.

Burbutis decided to try again. He and two researchers from the nearby U.S. Department of Agriculture Beneficial Insects Laboratory, Larry Ertle and Richard Dysart, imported thousands of European corn borer larvae from Yugoslavia. They knew that about 10 percent of the borer larvae in that country carry the *Lydella* parasite.

To find out which, though, they had to raise all the larvae to maturity and wait for the parasites to emerge. In the interest of safety, they carried out this work in the quarantine facility of the USDA lab.

They released *Lydella* in Delaware and New Jersey in 1974, 1975, and 1976. However, winter checks of the fields during 1975 and 1977 failed to turn up any surviving *Lydella*. The researchers decided their attempt to reintroduce it had been a failure.

During a routine corn borer survey in 1978, however, a few *Lydella* parasites turned up. Encouraged, the researchers employed a student, Nate Erwin, to conduct a systematic search throughout the state. He found a few more surviving pockets of *Lydella*.

Since 1979, *Lydella* has continued to multiply and spread throughout Delaware. Other corn-growing regions, encouraged by Delaware's success, would like to reintroduce the parasite too.

University of Delaware Agricultural Experiment Station researcher Charles Mason has agreed to try to reintroduce *Lydella* to Iowa, Missouri, Nebraska, and possibly Minnesota. He's working with mid-western entomologists to learn why *Lydella* disappeared in the first place so it won't happen again.

Past experience and a search of the literature have given Mason a few hints that may help insure the

success of the midwestern reintroduction attempt. The evidence seems to indicate that *Lydella* is better able to survive near large bodies of water. This is probably because *Lydella* also parasitizes the stalk borer, an insect that feeds on grasses common to wetter areas. For that reason Mason will release the parasites near water.

Whether he succeeds or fails in his initial attempt to re-establish the parasite in the Midwest, Mason will pay close attention to what happens in hopes it will help him understand the factors that led to the parasite's first disappearance. If the parasite fails to reestablish itself, he hopes to find out why. And if it succeeds, he will want to know what factors influenced population numbers.

Agricultural conditions vary from year to year. Farmers switch varieties and chemicals, and the weather changes. Any of these factors could have caused *Lydella*'s disappearance.

Mason is considering the possibility that a change in corn varieties caused the problem. *Lydella* deposit their young as living larvae at the base of the entrance hole to the corn stalk created by the corn borer. But they refuse to do this on some corn varieties, perhaps because these lack certain chemical attractants that other varieties possess. Midwestern scientists are pursuing this line of research.

There are other possible ex-

planations for the parasite's disappearance. Perhaps environmental conditions became less favorable to *Lydella* and more favorable to one of its ecological competitors — such as a disease organism or another parasite of the European corn borer. Even more complicated, nature has created a miniscule wasp that parasitizes the *Lydella* fly. A change in environment could have allowed the wasp to thrive at *Lydella*'s expense.

To test whether a chemical may have caused *Lydella*'s disappearance, University of Delaware graduate student Bob Leighty is feeding sublethal doses of insecticide to corn borers in the laboratory. Some of the borers in the experiment are parasitized by *Lydella*. Leighty wants to learn whether a dose of insecticide that is only slightly harmful to the borer could be fatal to the parasite. If so, entomologists will have to reconsider pest control recommendations so as to maximize *Lydella*'s chance of survival.

Wherever possible scientists prefer to rely on nature's own pest control mechanisms such as *Lydella* instead of chemicals. Now through the efforts of University of Delaware and USDA entomologists, *Lydella* is back on the job in Delaware. With a little luck it will soon be back at work in the rest of the United States, and scientists will know what to do to keep it there.



University of Delaware Agricultural Experiment Station researcher Charles Mason checks for corn borer damage in hopes to re-introduce the corn borer parasite *Lydella* to the Corn Belt.



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