MBB parasite success reported in Del.

NEWARK, Del. — Before 1975, more than half of Delaware's 100,000 soybean acres were routinely treated with insecticides to control the Mexican bean beetle, a voracious pest capable of reducing yields by as much as 26 percent at high infestation levels. Last summer, less than 1 percent of this acreage was treated, thanks to the hot weather and a busy little wasp with a very long name - Pediobius foveolatus - which lays its eggs in bean bettle larvae.

From 1976 to 1978 large numbers of this parasite were released as part of the University of Delaware extension service's integrated pest management-trap crop program. In 1980, the Delaware Department of Agriculture began releasing the beneficial insect in snap bean nurse plots strategically planted at the edges of fields of cooperating soybean farmers, as part of a cooperative project funded by the U.S. Department of Agriculture. Purpose of the project was to determine the economic feasibility of using Pediobius instead of chemicals to control the MBB on Delmarva.

"Since initiating the parasite releases, insecticide use for MBB control in Delaware has gradually declined," reports extension pest management specialist Joanne Whalen. "During the first three seasons of the release program (1980-1982), only about 20 to 25 percent of the state's soybean acreage was treated with insecticides, as compared to 50 to 60 percent before 1975. Last summer less than 5 percent of Delaware soybeans required treatment for MBB control."

Whalen and extension entomologist Mark Graustein feel that declines in both in-season and overwintering MBB populations since 1979 have been largely responsible for this dramatic reduction in insecticide use. "Though weather conditions also have contributed, we feel that Pediobius deserves a lot of the credit," Graustein says. "In parts of the state where parasites have never been released, farmers have still experienced economic levels of MBB." As a result, insecticide use has remained high in these areas. For example, around Roxana, 20 to 25 percent of the soybean acreage had to be treated for MBB last summer.

"Over the past four years we've literally chased the bean bettle up and down the state with our parasite release program," Graustein says. Whalen agrees: "It appears that the parasite has helped signifcantly in holding MBB populations below an economic level where it has been used."

Data collected over the past four years show that Pediobius is at least as effective as insecticides in controlling MBB.

Potential yield loss

Without control- 26% of soybean yield lost.

With parasites- 4% loss, 22% savings with the parasites.

With chemicals- 4% loss, for same savings.

Translated into dollars using 1981 figures, potential MBB losses in Delaware could have cost farmers as much as $11,407,500, assuming a state yield of 7,020,000 bushels (260,000 acres x 27 bushels x $6.25 per bushel) with a 26 percent loss to the beetle. This compares with an estimated loss of only $1,755,000, using either chemicals or the parasite to hold MBB losses to 4 percent.

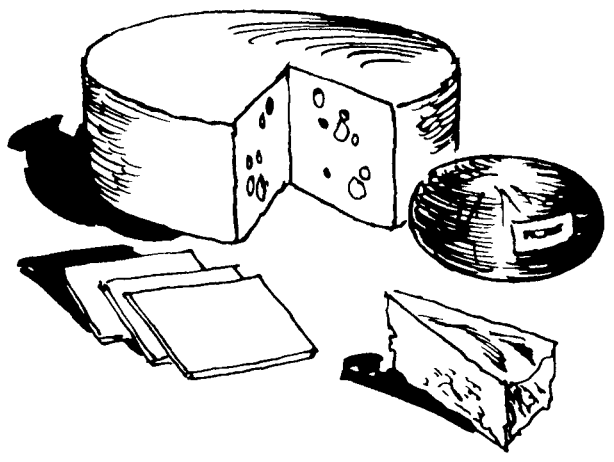
Is use of Pediobius cost effective, compared to chemical controls?

Decidedly yes, Whalen says Compared to an average yearly chemical cost (excluding application) of $7 to $9 per acre for a systemic insecticide, or $3 to $6 an acre for a foliar spray, the parasites themselves cost between 10 cents and 12 cents an acre per year. Beyond that, it costs about $100 for the labor, machinery and seed to establish small snap bean nurse plots at the edge of a soybean field. (These plots consist of a mixture of two-thirds snap beans to one-third soybeans. The MBB greatly prefers snap beans to soybeans; therefore, overwintering beetles lay their eggs in these plots rather than in the soybean fields. This provides a concentrated population of larvae in which the parasitic wasp can lay its eggs.)

Even with statewide release of the tiny beneficial insects, localized MBB outbreaks still occur, and chemical controls are required as well, Whalen cautions. For this reason it is important to scout fields routinely– especially those with early planted, full-season soybeans, where economic infestations are most likely to develop.

In spite of occasional rescue treatments, she and Graustein feel that in the long run the cost of controlling the bean beetle with the parasite will be much lower than with chemicals.

Unfortunately, since Pediobius can't overwinter in Delaware's climate, this biological control against the Mexican bean beetle requires annual releases.



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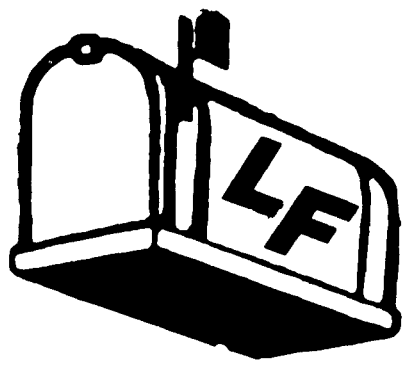

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