

## Biocontrol Based Integrated Pest Management Program for Potato

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In 1991, we integrated the cultural practice of crop rotation with conservation of existing native natural enemies of Colorado potato beetle (cpb), *Leptinotarsa decemlineata*, and augmentative releases of natural enemies where populations were low, and the use of a systemic insecticide for controlling aphids, *Macrosiphum fabae* and *Myzus persicae*, and potato leafhopper, *Empoasca Myiopharus*. The native enemies were larval parasites of *Myiopharus* and the egg predator *Coleomegilla maculata*. All of the rotated fields were provided by commercial growers (five fields). The systemic insecticide Thimet (phorate) was used for controlling aphids and leafhoppers, so that foliar sprays harmful to natural enemies could be avoided. M-One or Foil (*Bacillus thuringiensis*) was used for controlling larval populations of CPB.

The growers involved in this "bio-intensive IPM program" achieved excellent control of Colorado potato beetle and potato leafhoppers. Predation by *C. maculata* was measured weekly in each field and ranged from 0 to 70%, and averaged about 40% for the season. The average cost for insect control for the "bio-intensive growers" was \$125.02/acre, for all other IPM cooperators it was \$175.38 and for non-IPM growers it was \$227.98. Extreme insect control problems occurred on Long Island, NY (\$443.61/acre) in 1991, and if we do not put in place an insect management program that is environmentally safe and retards resistance development, most states in the Northeast will soon face a similar situation.