

RESEARCH IN COLORADO POTATO BEETLE BIOCONTROL

by

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As part of the Potato Agroecosystem Study at the University of Maine Potato Research Farm in Presque Isle, research was conducted on biological control of the Colorado potato beetle. Four biological agents, including two insect pathogens: *Bacillus thuringiensis* (*Bt*, Foil®), and *Beauveria bassiana* (Mycotech Bioproducts Inc., Butte, Montana), and two predators: stinkbugs, *Perillus bioculatus*, and ladybird beetles, *Coleomegilla maculata*, were evaluated. Each of the agents alone were compared with all possible combinations of each and a check. Three foliar applications of *Bt* and *B. bassiana* were applied at weekly intervals beginning with the presence of small CPB larvae. *Bt* was applied at the rate of 5 qt./acre, and *B. bassiana* was applied in an oil formulation at the rate of 2×10^{13} conidia/acre. On three occasions over a 4 week period beginning with the first observance of potato beetle egg masses, stinkbugs were released at a rate of 1 nymph/plant. A single release of ladybird beetles was made at the first occurrence of potato beetle egg masses.

Only the *Bt* treatments reduced potato beetle adults and small larvae densities when compared with the check. However, *B. bassiana* and stinkbug treatments resulted in fewer large larvae than the check. This is indicative of the longer time required for many biological agents. The ladybird beetles were not effective in reducing potato beetle densities.

A biological management strategy which combined the use of *Bt*, *B. bassiana*, and the stinkbugs, was compared with a conventional and a reduced input potato pest management program. All stages of potato beetle densities were lower in the biological management system than in the conventional and reduced inputs. There were no differences in yields between the three pest management programs.