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AN INTEGRATED BIOLOGICAL CONTROL
PROGRAM FOR *LEPTINOTARSA DECEMLINEATA*

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Studies were conducted at the University of Maine Potato Research Farm in Preque Isle, Maine to examine the potential of a combination of biological agents for management of the Colorado potato beetle (CPB), *Leptinotarsa decemlineata*. A combination of small plot evaluations and cage studies were used to assess the effectiveness of foliar applications of insect pathogens, *Beauveria bassiana* and *Bacillus thuringiensis*, and releases of predators, *Perillus bioculatus* and *Coleomegilla maculata*. Each agent was evaluated independently and in combination with the others. The combination of biological agents were combined in a large plot study to compare an integrated biological control strategy with conventional, and low-input pest management programs.

All *Bt* treatments resulted in significant reductions in small and large CPB larval densities over the season when compared with other treatments. Significant reductions in fourth instar densities were seen in the *B. bassiana* and *P. bioculatus* treatments compared to the control, however densities were not as low as those in the *Bt* treatments. Analysis of the cage data revealed no impact of *C. maculata* releases on CPB populations. The number of adults produced were significantly reduced in all *Bt*, *B. bassiana*, and *P. bioculatus* treatments compared with the control. The lowest mean emergence was observed in plots with all three mortality agents, however, only *P. bioculatus* alone resulted in significantly higher adult emergence than the remaining non-control treatments. These results indicate that considerable additional mortality occurred during the stage in the soil in the *B. bassiana* treatments.

The large plot experiment resulted in no significant impact of pest management treatments on CPB egg populations, but significantly lower densities of small and large larvae and adults throughout the season in the biological treatment compared with the conventional and low input treatments. There were no significant differences between yields in any of the treatments.