



IR-4/EPA Demonstration Research Grant Report 2004



2004 Demonstration Research Results

Table of Contents

Title	Page
Executive Summary.....	3
Efficacy of Mycotrol ES Against Blueberry Flea Beetle in Lowbush Blueberry. F. Drummond	5
Evaluation of Serenade for Management of Apple Diseases. B. Turechek	12
Evaluation of biofungicides for managing powdery mildew of pumpkin, 2004. M. McGrath.....	16
Evaluation of biofungicides used with compost tea for managing powdery mildew of pumpkin, 2004. M. McGrath.....	19
Biopesticide-based area-wide approach to managing codling moth in Michigan Apple L. Gut	21
A demonstration Trial of Bio-Fungicides with Efficacy for Controlling Dollar Spot in Turfgrasses. M. Peterson.....	33
Incorporating Nuclear Polyhedros Virus Into an IPM Program for Corn Earworm in Sweetcorn. B. Hammon.....	42
Effectiveness of Contans and Serenade Within a Biologically Intensive Integrated Pest Management System for Sclerotinia Drop on Lettuce. M. Matheron	47
Evaluation of Mycotrol O [®] (<i>Beauveria bassiana</i> , GHA strain) application enhanced with Canola oil to prevent grasshopper infestation of improved pastures and irrigated fields. A. Latchininsky.....	52
Grape powdery mildew fungicide trial. D. Gubler.....	55

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Introduction

Biopesticides are often produced by small companies without the means to conduct on farm trials through university researchers. The lack of knowledge about biopesticide products by the university and extension community has hampered their adoption by growers. In order to promote the adoption of safe pest control technologies, the IR-4 Project and the Biopesticides and Pollution Prevention Division of the U.S. Environmental Protection Agency have been cooperating in the review and funding of this research. These results may be useful or interesting, however IR-4 and the EPA can not attest to the accuracy of information provided. Providing this information does not constitute endorsement by IR-4 or the EPA or its employees of the information or products presented in this report.

The following is a summary prepared by the IR-4 Biopesticide Manager. This summary is not intended to replace or change the interpretation of any data presented in this report. The data were generated by the individual researchers and not IR-4 or the EPA.

Executive Summary

This report contains the results of nine studies on research initiated in 2004 .

Maine -Mycotrol /Blueberry Flea Beetle Mycotrol (*Beauvaria*), Imidan and Entrust were similar in their control of flea beetle larvae and all were better than the control. About 83 % of larvae collected 1 or 12 days after application of Mycotrol died . In the field, Mycotrol combined with Spinosad provided 100% control of flea beetle.

NY -Serenade /Apple Diseases Spray programs including Serenade in rotation with conventional disease control products performed equal to the grower standard for the control of apple scab, powdery mildew and fireblight.

Long Island- Biopesticides Powdery Mildew/Pumpkin The biopesticides Oxidate or Trilogy rotated with Quintec provided greater than about 90% season long control of powdery mildew. Oxidate, Sporan, Trilogy , Bugitol , Eco-Erase, and JMS stilet oil alone were similar to the standard fungicide treatments Bravo and Quintec, early season , but were not as good in later ratings.

Michigan- Codling Moth/ Apples This project was conducted on 800 acres. Combinations of pheromone and codling moth granulosis virus were used . Moth captures in orchards that had previously used pheromones were never more than 2 per trap and rarely reached 1 per trap in the protected areas. In areas that never used pheromones before, the populations were greater and contained more than 20 per trap. Fruit injury was 43% less in the area wide project and never

exceeded 1.5%. Through posters displayed in local farm supply center, at least an additional 800 acres on adjacent farms voluntarily chose mating disruption for codling moth control.

Mississippi - Dollar spot/Bermudagrass Zerotel alone or EcoGuard (*Bacillus linchiformis*) rotated with Daconil Ultrex or TurfShield (*Trichoderma harzianum*) rotated with Chipco 26019 had about a 55% reduction in dollar spot while the fungicide standard Daconil, reduced dollar spot by 52%. Chipco 26019 (another chemical standard) alone only had 15% dollar spot control.

Colorado- Corn Earworm/Sweet corn Nuclear Polyhedrus Virus (NPV) rotated with Spinosad was as effective as a pyrethroid (Warrior) program in controlling corn earworm. Spinosad is expensive compared to the pyrethroid or the virus. The most likely adoption by growers is expected to be a tank mix between the pyrethroid and the NPV.

Arizona -Sclerotinia/Lettuce The results of this study suggest that the biological product Contans and Serenade, used either alone or with the conventional fungicide Endura, can provide effective levels of control of lettuce drop caused by *S. sclerotiorum*. The incorporation of Contans and/or Serenade in lettuce drop management programs could provide not only good levels of disease control but also resistance management for the conventional fungicide, utilizing alternation products that have a low environmental impact.

Wyoming- Mycotrol/Grasshoppers Pasture Mycotrol (*Beauvaria*) decreased the density of grasshoppers in pasture or rangeland, but mortality in the control plots made it difficult to access. Carrier oil did not effect treatments.

California- Powdery Mildew/Grapes Serenade in rotation with conventional fungicide treatments of Pristine, Procure, Flint or Quintec was as effective as rotating only conventional fungicides in controlling the incidence and severity of powdery mildew in grapes.