ML 2015 Ch 76, Art 2, Sec 6a Project Abstract
For the Period Ending June 30, 2021
Amended December 8, 2022

PROJECT TITLE: MITPPC #10: Overwintering, Migration and Development of Cost-Effective Practical Management Strategies
for the Invasive Spotted Wing Drosophila in MN
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FUNDING SOURCE: Environment and Natural Resources Trust Fund
LEGAL CITATION: MINNESOTA INVASIVE TERRESTRIAL PLANTS AND PESTS CENTER
ML 2015, Ch. 76, Art. 2, Sec. 6a

APPROPRIATION AMOUNT: $477,541
AMOUNT SPENT: $477,541
AMOUNT REMAINING: $0

Sound bite of Project Outcomes and Results

Our project developed new cost-effective methods to help growers manage damage and reduce yield loss caused by the invasive Spotted-wing drosophila in small fruit while reducing pesticide use. Additionally, we have gained basic knowledge on the behavior and flight capabilities of this pest that will contribute to future management strategies.

Overall Project Outcome and Results

Spotted wing drosophila (*Drosophila suzukii*, SWD) is an invasive fly that lays eggs in intact, ripening fruit such as blueberries, strawberries, and raspberries. This pest has caused considerable economic losses for small fruit growers. First detected in MN in 2012, SWD threatens 750 acres of raspberries, strawberries, grapes, and blueberries, in addition to its 5,000 high tunnel operations statewide. At the start of our project, current control tactics were limited to repeat applications of broad-spectrum insecticides that failed to adequately protect fruit from infestation, in addition to posing risks to the environment. Additionally, we faced gaps in understanding the basic biology ad behavior or SWD, such as migration and overwintering in Minnesota, which hindered our ability to recommend appropriate management strategies. To address this, we proposed three goals: 1) develop SWD forecasting tool using local migration and overwintering data; 2) investigate efficacy of alternative management techniques; and 3) research economic impact and develop decision making tools. As a result of our work, we have indirect evidence showing that SWD may be overwintering and little evidence that the SWD has the flight capabilities for long-distance movement. We learned that physical exclusion can effectively reduce SWD damage and is cost-effective for small farms and reduces the need for insecticide sprays. Our work on biopesticides and novel repellants shows promising results in the lab but is less consistent in the field, warranting new methods to increase field efficacy. Economically, we found that SWD is responsible for at least $2 million in losses annually to raspberry growers alone, establishing the need for management for the statewide fruit industry, and growers can benefit from adopting physical exclusion and biological based pesticides. Our science-based management recommendations for this best improves overall sustainability of small fruit production in Minnesota.

Project Results Use and Dissemination

Our project has resulted in six peer-reviewed publications in scientific journals, eight academic presentations, over thirty talks to grower audiences and dozens of online newsletters, articles, and blog submissions, and a

grower decision making tool. Grower recommendations are available on the FruitEdge website and archives on the UMN Extension Fruit and Vegetable News. Through this work, we have leveraged an additional $750,000 in federal funds to further develop sustainable production and pest management techniques for small fruit in Minnesota.