

**Paul C. And Edna H. Warner Endowment Fund for Sustainable Agriculture
Report Form**

Project Title: **Augmentative Biological Control of Spider Mites on Hops**

Project Leader: **Celeste Welty**

Co-Project Leader: **Susan Ndiaye**

Progress Report: **12/30/2016**

Summary:

The twospotted spider mite is significant pest in hop yards throughout Ohio and causes a reduction in the quantity and quality of hop cone yield. This project evaluated the possibility of releasing predatory mites as a pest management strategy. Samples that were collected to determine the effectiveness of this strategy are still being analyzed, so no conclusions have been drawn at this time.

What was done?

This project evaluated the effectiveness of releasing two predatory mite species, *Galendromous. occidentalis* and *Neoseiulus fallacis*, for biological control of twospotted spider mites on hops in Ohio. Starting in May, we collected leaf samples weekly from four hop yards in central and southwestern Ohio. The samples were brought back to the lab and we counted the number of spider mites per leaf. When the spider mite population in a hop yard reached the action threshold, we released predatory mites that were obtained from a commercial insectary. We released each predatory mite species at both a high and a low rate in different plots. After the release of the predators, we continued to collect leaf samples weekly to monitor the spider mite population as well as predatory mite populations. We are in the process of mounting the collected predatory mites on microscope slides, so they can be identified to species.

What were the results?

It will still take a few more months to finish mounting and identifying the predatory mites that we collected. Once the predatory mites are identified to species, we will be able finish analyzing our data. We will be able to determine whether or not the predatory mites that we released were able to maintain their populations, and whether or not they were effective in managing the spider mite populations. We will also be able to determine if the predatory mites that we released spread to adjacent hop plants. We will also learn if there are any naturally occurring predatory mites.

How have the results contributed or will they contribute sustainable agriculture?

During this project, we learned that the quantity of predatory mites sold by various vendors varied greatly from the stated quantity; it was often far less than expected. Because of this, we would tentatively recommend that growers not purchase *G.*

occidentalis. Throughout the course of this project, photos and video were taken showing proper scouting techniques as well as predator release techniques. The video footage is currently being made into an extension video on proper scouting for spider mites on hops. We will also be producing a fact sheet on proper scouting techniques. Once the results are analyzed, if the use of predatory mites was an effective management technique, it will be compared with the conventional and organic methods currently being used by hop producers. Susan Ndiaye was invited to present at the February 2017 “Ohio Hops Conference and Trade Show” and will be talking about proper scouting techniques as well as possible management strategies.