

GROWERTALKS

Pest Management

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Making the Transition

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Back in 2018, the University of Maryland Extension, and the Maryland Nursery & Landscape Association worked together to organize a practical biocontrol conference for greenhouse and nursery managers. One of the perennial and annual plant production nurseries—Babikow Nursery in Rosedale, Maryland—had several of their growers attend.

The nursery, like most operations, was spending a fair amount of time and spraying efforts in controlling aphids in the spring and thrips in the summer on their annual and herbaceous perennial crops. In 2019, they decided to adopt some of the biological control practices that had been suggested at the Maryland Biocontrol conference.

*Pictured: Sachets of *Amblyseius cucumeris* used year-round and replaced every four weeks will help control thrips.*

*Purple Flash Ornamental Pepper is an ideal banker plant for *Orius insidiosus* and *Aphidius colemani* parasitoids.*

They started by making a list of the key perennial crops that had problems with aphids and thrips in past

seasons. We suggested they start oats or barley seeds in small pots and grow these as banker plants for aphid biological control. Bird cherry oat aphid would be introduced onto these banker plants later in the spring. (The seed was purchased from a local farm supply store.)

Next, pepper plants were started in late winter to serve as banker plants for *Orius insidiosus* (Minute pirate bugs) used for biological control of thrips. Pepper cultivars were selected based on published work on the selection of the best pepper varieties for use as banker plants by Rose Buitenhuis of the Vineland Experiment Station in Ontario, Canada, and Michael Brownbridge of Bioworks. The Babikow growers chose to use Purple Flash and Red Missile pepper plants.

Which bios and banker plants work best?

They asked if one was different from the other, so we decided it was worth it to try both and see which performs the best. What we found out over the season was that Purple Flash is slower to come into the bloom stage and flowered abundantly at first. As the season progressed, the plants continued to produce blossoms, but in much smaller numbers and flushes of blooms. This continued throughout the summer into fall.

The Red Missile peppers came in bloom faster and flowered very heavily. When the fruit formed, the flowering fell off to nothing. You have to remove the fruit on Red Missile to keep it blooming later in the season. They did make lemonade out of lemons, harvesting many of the peppers and made them into a colorful display with the fruit.

All of the pepper plants used as banker plants were put in hanging baskets and placed in various places in the greenhouse growing area. They use one to two plants per 1,000 sq. ft. of growing area.

The really interesting thing is the peppers developed populations of green peach aphids. The *Aphidius colemani* released in the greenhouse homed in on these aphid-infested plants and had a heavy parasitism rate on the green peach aphids. The pepper plants served both as banker plants for the *Orius insidiosus* and as banker plants for the *Aphidius parasitoids*.

Two key herbaceous perennials plants grown at the nursery were noted to have problems with thrips each year—solidago and *Mazus reptans*. Other plants that historically suffer heavy feeding by thrips in their perennial propagation houses include asclepias, pycnanthemum, isotoma, echinacea and rudbeckia.

The growers decided to concentrate the predacious mites, *Amblyseius cucumeris*, on the plants that are highly susceptible to thrips damage early in their growth stages starting in February. They applied the mites with an in-house made blower and used the slower release beneficial mite sachets. The predacious mites applied using the blower were applied on a two-week basis. The sachets of grain and *A. cucumeris* were replaced every five to six weeks.

They continued to use the sachets year-round in the perennial propagation houses. In the spring of 2020, they added lantana to the list of susceptible plants. They released the bulk of loose-fill *Amblyseius cucumeris* on lantana crops using a blower. Applications were made every two weeks at the rate of 50,000 per 4,000 sq. ft. during the months of April and May. The ornamental pepper banker plants were in flower by May 1, 2020, so they were able to release the *Orius*. Since *Orius* are impacted by shorter daylength, waiting until April made sense in Maryland to ensure they would be active.

For the 2020 *Orius* banker plants, the grower sowed the ornamental peppers Thanksgiving week 2019. They put three plants in a 10-in. hanging basket. (The use of hanging baskets allowed them to save valuable bench space for cell packs.) They hung six banker baskets in each 2,500-sq. ft. house. In 2020, they used a total of 18 ornamental pepper hanging baskets.

They trialed the banker plant system using barley plants for bird cherry oat aphids to support a population of the parasitic wasp *Aphidius colemani*. They began the trial January 1, 2020 and it ran until mid-May 2020 (it was suspended due to the *Aphidius colemani* not performing well in the heat of the greenhouse in July and August). They re-established the aphid banker plant system in September 2020 and it worked well during the fall months through early winter.

Tony Eversmier, the head grower, and Amelia Sifleet, associate grower, at Babikow Greenhouses estimated that they've been able to reduce insecticide use about 90% for the 2020 season.

In many greenhouses, foxglove aphid and potato aphid can become major problems. A banker system developed by

Carol Glenister of IPM labs involves the use of fava bean banker plants. They've used fava bean to support pea aphids as a baker plant source for *Aphidius ervi*. The parasitic wasp, *Aphidius ervi*, is very effective in killing both foxglove and potato aphid. You don't need more than one per 1,000 sq. ft., but you do want to add younger ones as you go. The plants don't hold up as long as the barley does. **GT**

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