GROWERTALKS

Pest Management

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We Know What Eradicates Redheaded Flea Beetle

Jeremy Webber

The title says it all really and it reaffirms a statement I've been making while walking crops with our partners for years: "Nematodes always work." In this case however, instead of speaking about fungus gnats and thrips control with the good ol' *Steinernema feltiae* (Entonem), we're talking about its cousin, *Steinernema carpocapsae* (Capsanem) and the notorious redheaded flea beetle (*Systena frontalis*). How we reach this conclusion and what it means to the broader greenhouse and nursery industry is an interesting story from an unexpected crop—cranberries.

Before I go down this tart and agriculturally themed rabbit hole, however, the statement about nematodes always working needs a bit of qualification. The full statement reads more like: "When the correct rate is applied, all of the susceptible targets are dead, tonight." They always work, so logically, if they didn't, they simply weren't there when we thought they should be. Maybe the shipping company killed half of them in transit on the way to you and half of the rate was applied, or a nozzle was clogged somewhere, or your injector finally blew the ring on the injection piston and the rate was way off. There are lots of reasons things can go pear-shaped and these are just a few, but a good IPM consultant is trained to ask the right questions to find the culprit and help you get back on course. The key point is that we've gained the same level of confidence managing this highly pernicious pest (henceforth known as RHFB), but the devil's in the details, so we need to work on ways to have the correct rate, in the right place, at the right time to get the results that we're all looking for.

Enter Ocean Spray Cranberries

Heidi Doering is the national Ornamental Crop Specialist for Koppert U.S., however, back in her early years with the company, the concept of crop specialization hadn't yet been developed. Each Technical IPM Consultant covered the entire Koppert product assortment, from biocontrols to pollination products. While meeting with Ocean Spray's cranberry grower members to discuss pollination in 2020, she heard their concerns of the impending loss of a key broad spectrum IPM tool to manage a variety of their insect pests. One in particular, *Systena frontalis*—cranberry flea beetle (known as RHFB to those in the ornamental world)—is a historically problematic pest that until 2021 was successfully managed using traditional chemistries.

Pictured: In cranberries, nematodes are applied via boom irrigation and chased into the beds with in-bed irrigation.
• Ocean Spray Agricultural Science Specialist Sara Potter and cranberry grower Lewis Faber mixing Capsanem into solution for application onto cranberries.
• QC testing of Capsanem is easily accomplished with a 10X hand lens as the product is being mixed and applied.

Knowing that Koppert had experience controlling cranberry girdler with nematodes, she recognized an opportunity for Koppert's consultative approach to support cranberry growers in potentially finding a biological solution for CFB/RHFB. To learn more, she reached out to Ocean Spray's Agricultural Sciences department and connected with Ocean Spray's Wisconsin-based Senior Agricultural Scientist David Jones. In 2021, they began working together to run small plot trials to test the efficacy of Capsanem against CFB/RHFB and continued them through 2024. These trials resulted in some very interesting results for the cranberry world and enlightening insights for us in the ornamental space as well.

A summary of the trials

First-year trials in 2021 determined that Capsanem nematodes had strong efficacy against the larval stage of RHFB, leading to further trials the following year to test various application rates, while also testing the efficacy of native Wisconsin nematode species. While there was some effect from native species, Capsanem was the clear standout, numerically and statistically, leading to year three of testing.

Scientists at Ocean Spray established an optimal cumulative introduction rate in 2022-23 trials, so the goal in 2024 was primarily to determine both the optimum and minimum number of nematode applications needed to achieve the targeted population knockdown. They also wanted to know whether splitting that up by four introductions at one-quarter the rate was the sweet spot, or if they could make just two intros at one-half the rate each and still achieve strong control results. As in the ornamentals industry, labor is a major factor for cranberry growers, so the fewer trips through the marsh with the spray boom, the better.

The results in 2024 showed two key points from a pair of different studies. The first is that so long as the targeted rate was applied cumulatively, the number of apps to get there didn't seem to make a significant difference in control. There was an increase in control when the rate was split up between three or four applications versus one or two, but results of all trials were still well under spray thresholds throughout the season. This implies that there's some range of freedom for the grower in terms of how and when to get the product into the media.

The second study in 2024 revealed something surprising, however, and this is the main point, in my opinion, for ornamentals. None of the sites that were treated in 2023 with Capsanem required any further treatments in 2024, chemical or biological, to stay beneath their RHFB treatment thresholds. This indicates that the Capsanem nematodes work exceptionally well, but it also indicates that when timed properly, they can seriously crush the population of the RHFB for multiple years.

Translating to ornamentals

Work done by Danny Lauderdale reported by the North Carolina Cooperative Extension in 2018 was the first to pop

onto our radar showing the efficacy of Capsanem vs. RHFB larvae (100% kill rate in his trial), along with a few other products as well, most notably among them Isaria fumosorosea (Isarid). When lab findings line up with repeatable and consistent success in the field, we know that we're onto the beginnings of solid recommendations.

It's a relatively easy process to apply IPM products through spray booms in cranberry marshes. They've literally engineered them to have pop up turf-style sprinkler nozzles in the beds and custom, bed-width booms that are driven down the length of the beds. Apps targeting the root zone are applied via boom and are then "chased-into" the soil with the sprinklers.

If we're going after this pest inside of a greenhouse where there's boom irrigation then we can almost copy/paste this approach. At that point it's a matter of timing, which is relatively well dialed in for most regions with degree day calculations available through your state's extension service.

When we target RHFB outdoors in a container nursery, however, this gets considerably more difficult. Work still needs to be done to learn how to get the Capsanem into the containers in sufficient numbers, with several applications within several weeks of each other, without absolutely destroying your labor budget. Sure, drenching a small crop by hand is always feasible, but prior to my work with Koppert I managed several wholesale nurseries. I'm still scratching my head on practical methods to drench 60 acres worth of spaced-out shrubs in a short amount of time, much less 600 acres. That said, the wheels are turning.

We know what works, we know when to apply this effective control, now we just need to figure out how. Wouldn't it be nice to not spray for RHFB adults every week all summer long? **GT**

For more information on how to protect your crops against redheaded flea beetle, GO HERE.

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