GROWERTALKS

Columns

7/31/2017

# How to Defeat Two-Spotted Spider Mites

*Tami Van Gaal*

Controlled Environment Agriculture (CEA) growers produce edible crops under cover, in structures ranging from greenhouses and high tunnels to vertical-grow plant factories and smaller indoor grow facilities. Regardless of whether photosynthesis is fueled by natural or artificial light, these crops are all susceptible to pests. One pest that will happily feed upon a wide range of crops is the two-spotted spider mite (TSSM).

Many CEA and ornamental growers have found success in controlling TSSM with an integrated pest management (IPM) approach based heavily on use of biological control agents (BCAs).

*Pictured: Phytoseiulus persimilis mites.*

Before we address the BCAs for use against this crossover pest, let's recall the main rules of the game when using BCAs:

1. Start early. Even with the curative option for TSSM, it's critically important to begin releases prior to pest presence. BCAs work best by preventing establishment; they have a harder time coming from behind.

2. Practice dedicated, vigilant scouting. Scouting should include monitoring and inspecting for both pests and beneficials. IPM specialists are essentially ecologists, managing predator-prey relationships. Without an adequate predator population (the BCAs), your prey population (the pest) will increase.

3. Plan your releases in advance. Have a strategy in mind and place your orders for base-level, preventative releases well in advance. Remember that BCAs aren't stocked on a supplier's shelf like a chemical; they're raised based on projected needs. If you need to add to an order, be sure to notify your supplier in time to make the following week's scheduled delivery.

4. Know your spray history. Be ready to share your crop history with your supplier. They can help you evaluate the products used for risk of residual toxicity to BCAs.

All spider-mite predators recommended by Griffin's GGSPro tech services team are predatory mites. Three different species are utilized, each with special strengths:

• ***Phytoseiulus persimilis*: The voracious feeder—**Persimilis mites represent the rare case in which a BCA can be used curatively against active pests. These fast-moving, orange/red mites naturally move up through the canopy. Therefore, release persimilis mites on the lower leaves of affected plants. Release on a weekly basis until control is achieved.

Assuming TSSM are present, persimilis will establish on some crops following repeated releases. This establishment is especially easy on strawberries and peppers. Persimilis feeds only on TSSM. Preventative releases ahead of TSSM infestations will only doom the predator mites to starvation.

In some situations, residual vermiculite from the persimilis carrier can be problematic on the crop. If this is a concern for you, GGSPro can help with a solution.

• ***Amblyseius andersoni*: The diverse feeder—**Fast-moving andersoni mites are clear/white in color and generally used for preventative control. They can be released in bulk, sprinkled on the foliage on a weekly basis or they can be released in sachet form. Sachets are hung in the crop canopy and contain a breeding colony along with a food source. The continuous generation and release of predator mites can be expected to continue for four to six weeks under ideal conditions.

Place the first set of sachets at transplant and replace the sachets every four weeks for the duration of the crop. In addition to feeding on TSSM, andersoni will also feed on red spider mite, russet mite, broad mite, cyclamen mite, thrips and pollen. Andersoni also have potential against Lewis mite. Andersoni will enter diapause (a non-feeding, resting stage) under decreasing photoperiod and temperature in the fall.

• ***Amblyseius californicus*: The tolerant feeder—**Californicus falls between persimilis and andersoni with respect to aggressiveness in feeding, speed to suppression and prey range. However, this predator mite is much more tolerant of higher temperature, lower humidity and lower food supply, which means it will be a bit better adapted to the conditions favoring TSSM. Californicus will also feed on broad mites and cyclamen mites. Avoid concurrent use of persimilis and californicus in long-term crops, as persimilis will eventually lose out to the californicus.

You can win the battle against TSSM in your crops with either an integrated approach or a BCA-only approach. It's just a matter of using the right predatory mite at the right time. **GT**

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*Tami Van Gaal is CEA Division Leader for Griffin. She can be reached at tvangaal@griffinmail.com.*