GROWERTALKS

Features

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Broad Mites in Ornamental Crops

Heidi Lindberg

Western flower thrips have long been the most challenging insect pests in floriculture greenhouses. However, broad mites (Figure 1) have been posing a more serious threat for greenhouse growers in recent years because of the difficulty of scouting for them. The emergence of *Thrips parvispinus* (pepper thrips) has complicated the issue, since the damage from pepper thrips is like that of broad mites, albeit often on different crops. Broad mites are a potential threat to some of the most important Michigan floriculture crops. Some of the top plants that are attractive to broad mites are New Guinea impatiens (Figure 2), zonal geraniums, thunbergia, torenia, verbena, Rieger begonias, scaevola, Angel Wing begonias, ivy geranium, Solenia begonias, SunPatiens and buddleia.

Figure 1. Broad mite on plant tissue. Photo: Bruce Watt, University of Maine, Bugwood.org.

Challenges & treatments

So why are broad mites so concerning? Because they're microscopic and are very difficult to see with the common 5x to 10x hand lens. Some growers have purchased dissecting microscopes in order to check for and identify this pesky mite quickly in their production systems. Growers often need to send samples to a diagnostic lab for a positive diagnosis.

In addition, greenhouse scouts and growers usually notice the plant damage after the populations are already very high and the crops are unsaleable. Broad mites often feed at growing points and on new tissue, causing bronzing and the distortion, curling and downward-turning of leaves. Unfortunately, the damage to the upper leaves near the apical meristem may only become noticeable three to four weeks after they began infesting the crop. At that point, the crop may be unmarketable, or if growers choose to cut the plants back and apply a pesticide, they may miss their target sales date.

In order to reduce the incoming populations of all pests including broad mites, some growers have adopted dipping incoming vegetative cuttings of problem crops in reduced-risk pesticides, including BotaniGard 22 WP, EpiShield, Hexygon IQ, LalGuard M52 OD, M-Pede, TetraCURB MAX or Suffoil-X (not yet labeled in the U.S. for a dip).

If growers receive a positive diagnosis for broad mites, the following products are recommended: Akari, Avid, Magus, Pylon, SanMite, Savate, Sirocco and mineral oils (ex., Suffoil-X). For growers using biological control, some of the predatory mites (i.e. *Neoseiulus cucumeris*, *N. californicus* and *Amblyseius swirskii*) have been shown to be effective against broad mites when used preventatively and at high release rates. However, as with all biological control programs, cuttings and propagules must be free of pesticide residue in order to effectively use biological control for broad mites. Contact your young plant or cutting supplier to learn about the plant's pesticide history and your local biological control specialist or consultant to develop a strategy for preventative broad mite control.

Scouting & sampling

Scouting for broad mites poses challenges for growers in that the damage is often noticed 20 to 30 days after the initial infestation. In addition to these and other factors I listed above, scouts often wonder: Where is the best place to find the broad mites?

A study by Gobin et al. (2017) in Belgium found that the "manifestation of broad mite damage lagged behind the actual infestation numbers, with broad mite populations often higher on plants next to plants showing symptoms." Therefore, growers scouting for broad mites should examine the plants in the immediate area of the plants with damage. On the plants themselves, 50% to 60% of broad mites were found on the top shoots, while 40% to 50% were found on the lower foliage. The broad mites often hid in the crevices between leaves and the stems of plants near the apical meristem and were also found on flower buds. The broad mites entered the flower buds once the flowers began to open, allowing them to hide between the petals.

Figure 2. Broad mite damage on New Guinea impatiens. Photo: Heidi Lindberg.

Growers who have experienced extremely high broad mite pressure or are growing a significant number of one of their preferred crops might want to consider a more intensive strategy to find broad mites and prevent crop damage. For example, a greenhouse in Belgium (which mainly grows azaleas and rhododendrons) adopted an apical meristem sampling program with assistance from ornamental plant researchers.

In the joint project, growers randomly snipped apical meristems throughout the crop and placed the shoots in a 70% ethanol solution. After shaking, they then would remove the plant shoots and use vacuum filtration to isolate any broad mites. While this is a labor-intensive process, it reduced plant losses and proved to be a strategy to monitor broad mite populations and alter their releases of A. swirskii accordingly.

In order to implement this intensive broad mite scouting strategy, Michigan State University Extension recommends dipping shoots into alcohol. Growers can buy a box of scintillation vials and then dip 10 shoots into one vial. The vial should be labeled with the location information that indicates to the grower where the samples were taken. Growers will need a Buchner funnel, an aspirator and filter paper. Shake the vial and pour over the center of the filter paper, then examine that area of the filter paper under the microscope. This method also works well for thrips.

Pictured: Broad mite damage on celosia. Photo: Heidi Lindberg.

If growers aren't interested in this intensive strategy and do suspect broad mites in their crop, they should send plants to a plant diagnostic lab (such as MSU Diagnostic Services) for evaluation to verify the insect or mite pest. As previously mentioned, Thrips parvispinus has complicated damage-based identification of this pest. *T. parvispinus* causes stippling, curling and distortion similar to the damage of broad mites. The Mid-Florida Research & Education Center has several excellent images of pepper thrips damage for comparison.

While the primary host for *T. parvispinus* are tropical plants (ex., gardenia, schefflera, hoya, hibiscus) they've been found on the following annual crops during 2024 in North America: vinca, sweet alyssum, gerbera daisies and ipomea. If a grower mistakenly applies a pesticide for broad mites, they might not get the expected control while the crop continues to incur more damage.

There are more excellent resources about *T. parvispinus* and controls for broad mites on the Ontario Floriculture page: onfloriculture.com. Growers can find insecticide and miticide management recommendations from MSU Extension at canr.msu.edu/resources/greenhouse-insecticides. **GT**

The study referenced in this article is: Gobin, B., E. Pauwels, E. Mechant and J. Audenaert. 2017. Integrated control of broad mites in ornamental plants under variable greenhouse conditions. IOBC-WPRS Bulletin Vol. 124: 125-130.

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