Small Fruit Mite - Broad Mites on Blackberries

Broad mite (Polyphagotarsonemus latus) has been problematic for pepper growers in PA for the last couple of years. Now we can add blackberries to the list of crops that they frequent.

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In PA, we first found broad mites on blackberries in 2013. In 2015, we found that they can contribute to a nearly total crop loss on primocane-fruiting blackberries. On these plants, bacterial issues are part of the problem with symptoms similar to those from fire blight (tissue browning and death) present. At this point, we don't know whether the two issues just happen to be present at the same time, whether injury by the mites may be contributing to tissue susceptibility to bacterial infection, or whether other interactions are coming into play. In Arkansas and North Carolina, researchers began experiencing problems with broad mites on primocane-fruiting blackberries in 2006 and a commercial grower has had problems since 2014.

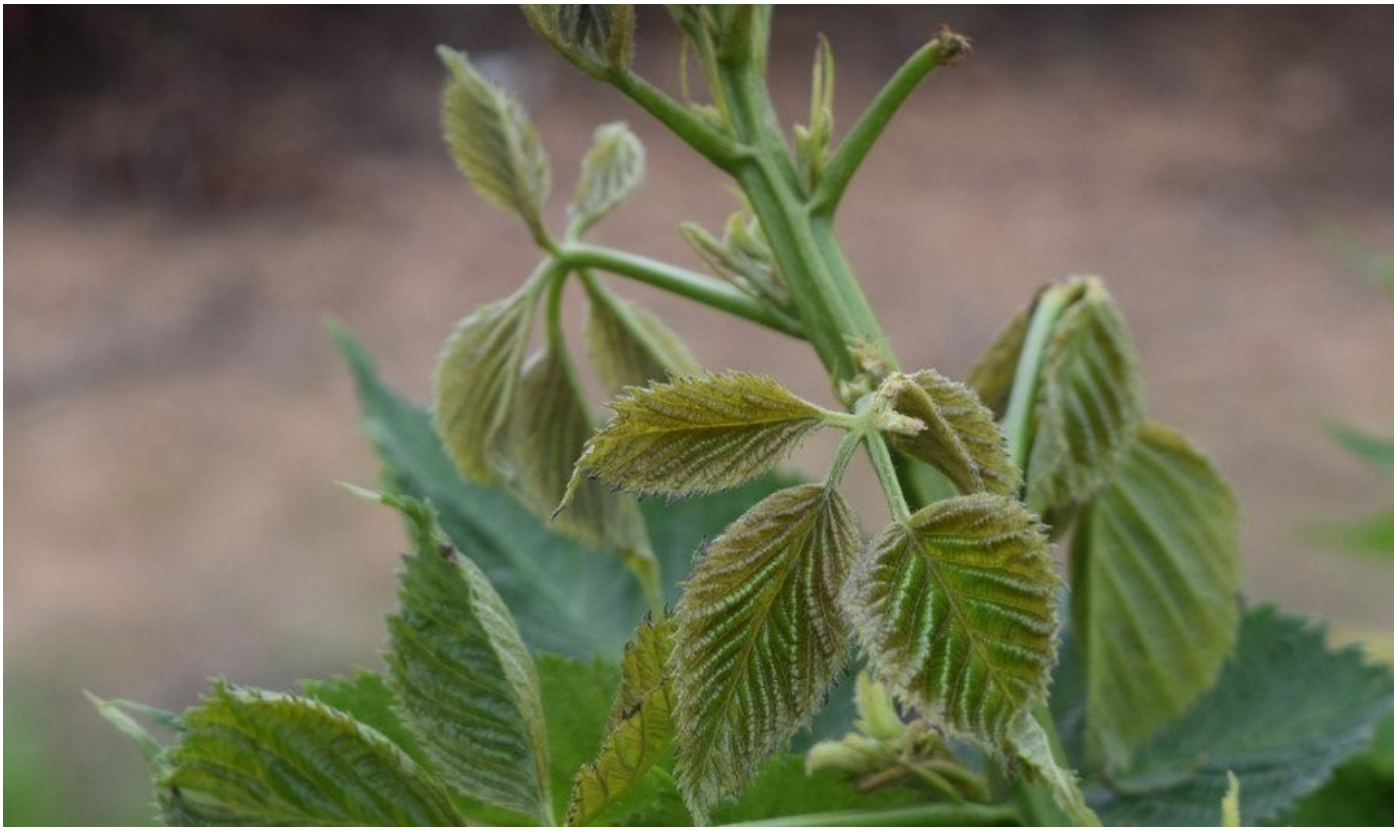

Photo 1: Leaf distortion and cupping of blackberry leaves infested by broad mites. Photo credit: Donn Johnson, Univ. of Arkansas

Typical damage from broad mites is tissue distortion, reduced terminal leaf growth, either downward or upward curling or cupping of leaves (Photo 1) and flower clusters that appear compressed (Photo 2) or blossoms that dry up. Symptoms on flower clusters may not show up until the second year of infestation. Broad mites build up to hundreds per leaflet on younger terminal leaves.

Photo 2: Infested blackberry terminal growth showing upward leaf cupping and compression of flower cluster. Photo credit: Kathy Demchak, Penn State

These mites are very tiny - less than 0.2 mm (about 1/100th of an inch) as are their distinctive eggs dotted with white spots (Photo 3). These mites are difficult to see even with a 16X hand lens.

Photo 3: Greatly-magnified young blackberry fruit with broad mite female (right) and eggs (left of center). Photo credit: Sara May, Penn State

Because of the small sizes of broad mites and the eggs, symptoms of leaf curling and dying terminal foliage (Photo 4) and flower clusters are all that a grower is likely to notice.

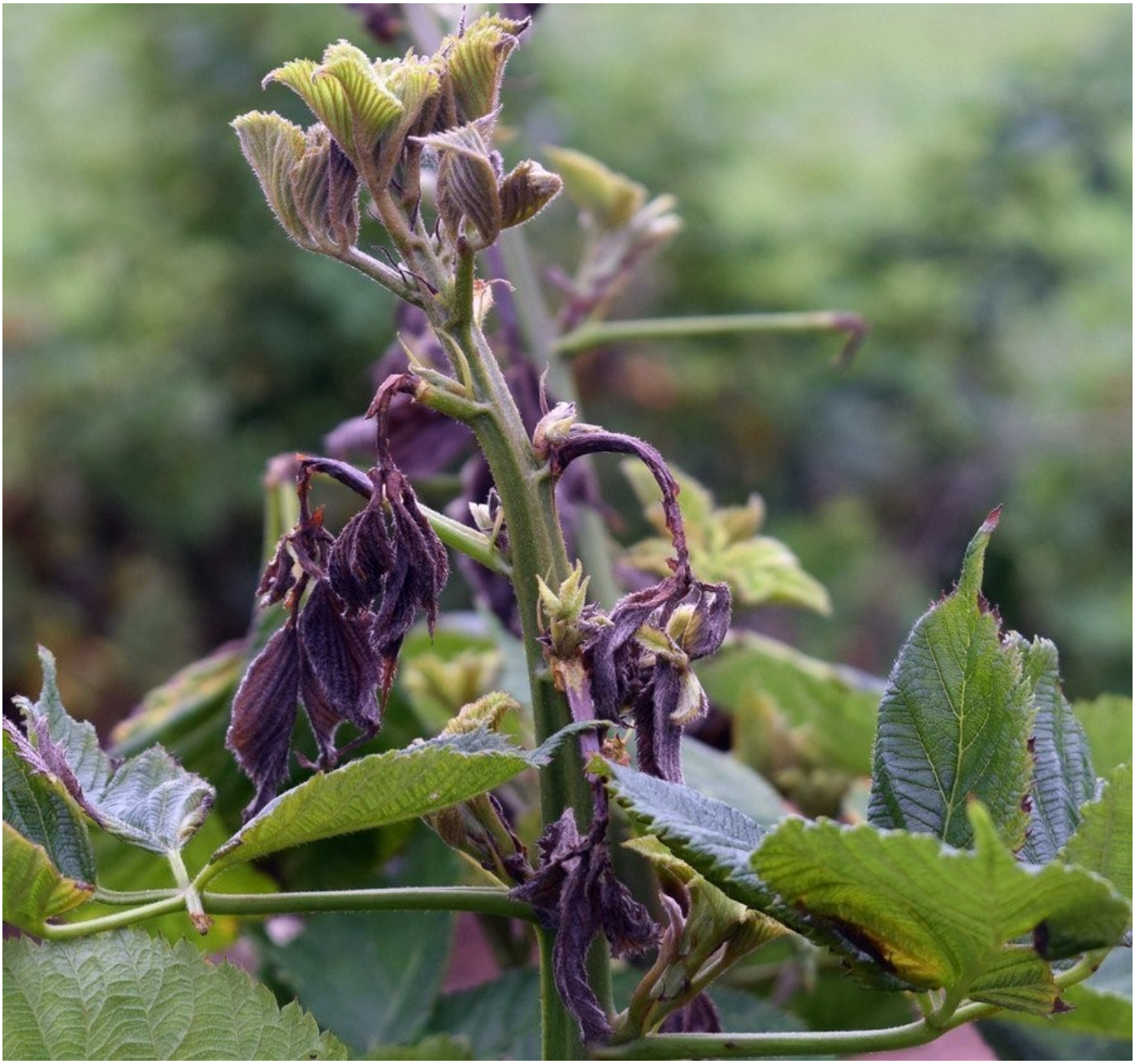

Photo 4: Terminal dieback of blackberry plant resulting from broad mite infestation. Photo credit: Donn Johnson, Univ. of Arkansas

With citrus, the mites are found in depressions on the fruit where the females lay their eggs, and as is evidenced by the number of mites and eggs on a young blackberry fruit (Photo 5), it appears that blackberries provide a similarly desirable fruit surface.

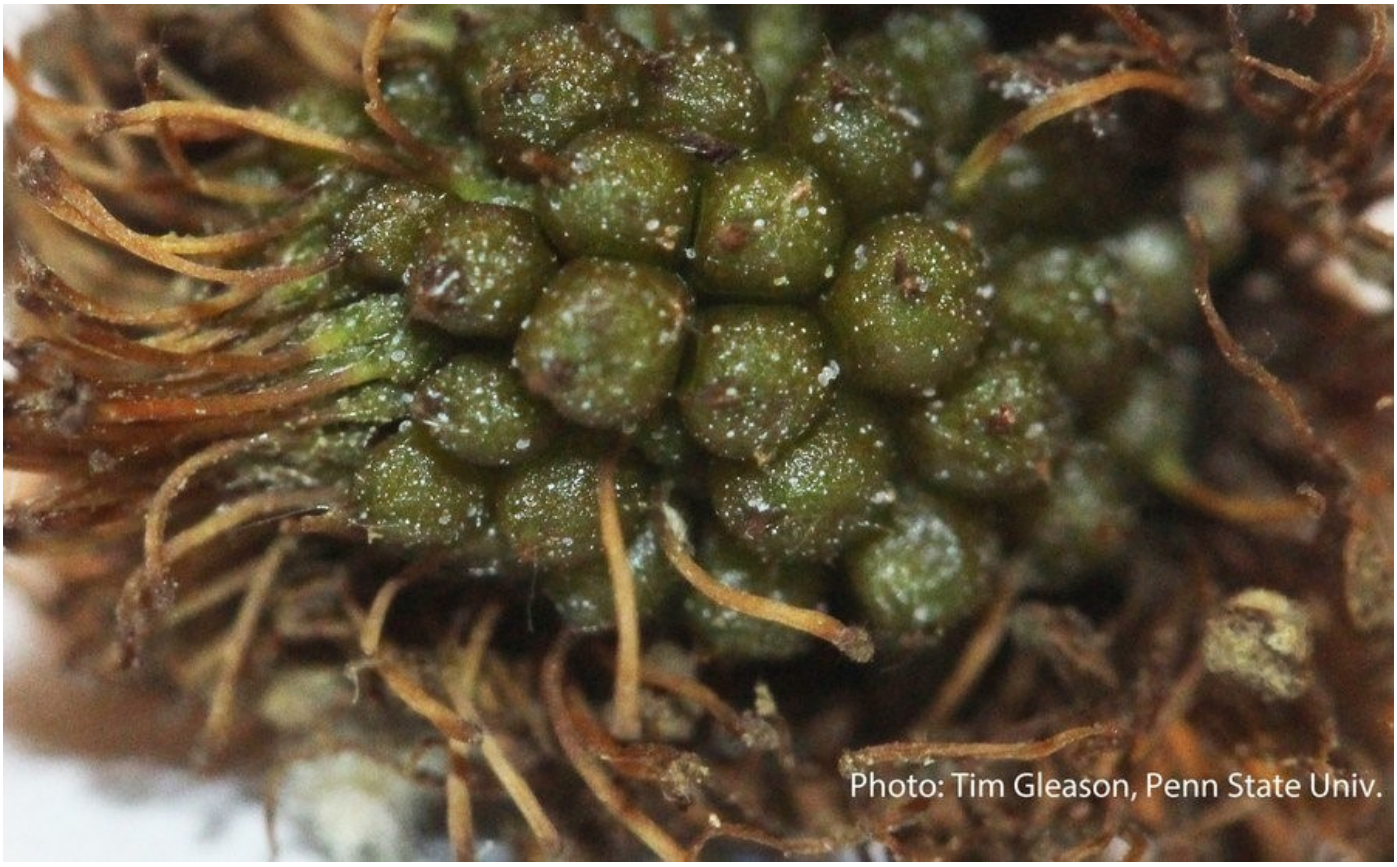

Photo 5: Young blackberry fruit with numerous broad mite eggs and adults. Photo credit: Tim Gleason, Penn State

At this point, we mainly want to make growers aware of this potential problem in case they have seen similar symptoms (either terminal leaf and flower distortion or symptoms similar to fire blight), especially if they are growing primocane-fruiting blackberries in the field or high tunnels. We're not sure exactly why we are seeing this new mite pest on blackberry at this time or where it came from. Perhaps this pest is better able to survive in more mild winter temperatures, both in the field and in high tunnels.

In both instances where broad mites were problematic in PA, the blackberries were grown in high tunnels, but they are ones from which the covers are removed for the winter. Since the tunnel climate is generally conducive to increased mite populations, their numbers may have increased, regardless of whether the cover was removed for the winter or not. Interestingly, there is some evidence that they may be able to gain mobility by attaching themselves to whiteflies.

So, what can one do to control broad mite infestations? First, keep watch for them, and if you notice just a plant or two exhibiting suspicious symptoms, rogue it out along with a couple of plants to each side of it. It appears that it is possible to hold the problem at bay, or slow it down greatly by utilizing this simple practice. Practices similar to those that would assist with controlling two-spotted mites (conserving natural enemies, releasing predatory mites early enough and at timings that would allow them to establish in the planting, and avoiding use of broad-spectrum insecticides) may be beneficial,

though there is currently very little information in this area.

Few miticides are labeled for use on blackberries at this time, resistance development is a huge concern, and efficacy data is somewhat limited, so we will need to do some work before making recommendations on miticide usage. Stay tuned for more news on this front.

Acknowledgement

Thanks to Sara May at Penn State's Plant Disease Clinic for assistance in diagnosing this problem in Pennsylvania.

Additional Reading/References

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