Empire State Fruit and Vegetable Expo - 2012
Syracuse, NY

Title of session: High Tunnel Production

Speaker: Dr. Greg Loeb, Department of Entomology, Cornell University

Title of talk: Managing arthropods in high tunnels

Summary: Arthropod pest management concerns under high tunnels are not that different than they are outside for the most part. If anything, arthropod pests are often less problematic. For example, Japanese beetle populations tend to be lower under plastic than in the open field. The current theory is that changes in light characteristics (reduction in ultra violet part of spectrum) somehow discourage adult beetles from colonizing or remaining on plants under UV filtering plastic. However, there are some arthropod pests that may even be more problematic under high tunnel production. In this talk, I will focus on several raspberry pests: two spotted spider mite, potato leafhopper, and if time, a potentially new pest in our area, the brown marmorated stink bug.

Two spotted spider mites can become very abundant on plants grown in tunnels and greenhouses, reaching upwards of 100 mites per leaf and causing serious leaf feeding damage and reduced photosynthesis. These tiny, spider-like arthropods, use piercing mouthparts to remove cell liquids thereby creating characteristic white stippling. Here are some take-home messages I will cover for two spotted spider mite.
1. Short generation time means populations can build up quickly.
2. Monitor regularly.
3. Problems with spider mites in tunnels is common.
4. Consider releasing predatory mites, purchased from insectaries, for biological control of spider mites.
5. *Amblyseius fallacis* has been effective against spider mites on raspberries in tunnels.
6. Start release of predatory mites early in the infestation cycle. May require back to back releases.
7. Acramite and Savey are two miticides that are relatively easy on predatory mites.

Some varieties of raspberries are sensitive to feeding by **Potato leafhoppers** (Courtney Weber will discuss this in his talk). The symptoms include distorted growth at shoot tips, leaf cupping, and yellowing around the edges. In some cases the damage can be severe. The leafhopper uses its sucking mouthparts to tap into phloem vessels in the leaves. The feeding activity plus leafhopper saliva are responsible for the damage. Adults migrate north on storm fronts in the spring and feed and reproduce on a number of different plants, including raspberries. Here are a few additional take-home points for potato leafhopper.

1. Both adults and the immature stage (nymphs) can cause damage.
2. Adults are greenish-yellow in color. Nymphs walk side ways.

3. Monitor for characteristic feeding injury.
4. Proximity to alfalfa may increase problems (especially after alfalfa is mowed).
5. Plants will recover from injury if leafhoppers are controlled, but new
   colonization may require additional treatments.

Brown marmorated stink bug (BMSB) originates from Asia. It was accidently introduced into Pennsylvania about 15 years ago and has been spreading through the USA ever since, reaching NY a few years ago. This insect is a plant feeder, using its soda straw like mouthparts to suck out plant juices. It is known to feed on a wide range of plant species, including a number of fruit, vegetable, and field crops where it can cause serious damage. It has been observed on plants grown in high tunnels. Pome fruit seem to be particularly vulnerable but small fruit crops are vulnerable as well. BMSB has caused serious economic damage to fruit, vegetable, and field crops in the Mid-Atlantic States. Time will tell to what extent BMSB will be a problem for NY berry growers and to what extent pest management practices will need to change to accommodate them.

NY now has several insecticides labeled for use against BMSB on berry crops through 2ee exemptions. Generally speaking, it's a hard insect to kill. On brambles the Actara has a 2ee exemption for BMSB, on strawberries Lorsban Advanced and Danitol have exemptions for use against BMSB.