Kansas Insect Newsletter

For Agribusinesses, Applicators, Consultants and Extension Personnel

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June 29, 2012 No. 16

Aster Yellows

Aster yellows are a phytoplasma, previously considered a "mycoplasma-like organism," that resides in the phloem of plants. The causative agent of aster yellows is *Candidatus* Phytoplasma asteris. Plants infected with aster yellows may exhibit a variety of symptoms including stunting, yellowing of foliage, witches'-broom (clumping of plant parts), abnormalities associated with flower parts, and greening of flower petals. Aster yellows are an arthropod-spread disease vectored primarily by the aster leafhopper (*Macrosteles quadrilineatus*) but may be vectored by other leafhoppers. The leafhopper acquires the phytoplasma by inserting it's mouthparts into the phloem of infected plants. After acquiring the phytoplasma, the incubation period takes several weeks before the leafhopper can serve as an efficient vector. Eventually, when the leafhopper feeds on an un-infected plant, the phytoplasma is injected through the mouthparts (stylet) into the phloem. Afterward, the phytoplasma becomes established and multiplies. Infested plants typically exhibit symptoms after one to two weeks depending on temperature. The aster leafhopper may carry the disease over long distances as the insect migrates northward from the south. In addition, a number of weeds and perennial plants may harbor aster yellows including chicory, dandelion, horseweed, thistle, and Queen Anne's lace (which is a plant we recommend for attracting beneficial insects including parasitoids and predators into the garden). A wide-variety of horticultural plants grown in landscapes and gardens are susceptible to aster yellows including *Aster*, *Centaurea* (Bachelor's-Button), *Coreopsis*, *Delphinium*, *Echinacea* (Purple Cone-Flower), *Gladiolus*, *Limonium* (Sea Lavender or Statice), *Phlox*, and *Veronica*. A number of vegetable crops are also susceptible to aster yellows such as carrot, celery, lettuce, and spinach.

Management of aster yellows primarily involves removing infected plants and weed hosts from the landscape or garden, regulating leafhopper populations, and selecting plants that are not susceptible to aster yellows. Regulating leafhopper populations with contact insecticides is difficult because they are very mobile and feed on a variety of plant types. Strategically placing yellow sticky cards or tape around susceptible plants may be effective in capturing adults, and reducing potential for transmission of the phytoplasma. If aster yellows is a perennial problem in your landscape or garden, than it may be best and more efficient to utilize plants that are not hosts of the phytoplasma.

Raymond Cloyd

With The Weather "Heating-Up" It Is Time For…The Twospotted Spider Mite

The warm or hot weather (depending on your perspective) that we are encountering throughout Kansas and will experience later on means it is time to be on the look-out for damage caused by the twospotted spider mite, *Tetranychus urticae*. Twospotted spider mite is considered a warm-weather mite because, in general, populations are primarily active from late spring through early fall. Summer temperatures allow twospotted spider mites to reproduce rapidly, so they tend to overwhelm natural enemy populations, which are able to regulate them under "moderate" temperatures.

Twospotted spider mite has a very broad host range, feeding on a wide-variety of ornamental trees and shrubs including ash, azalea, black locust, elm, euonymus, maple, oak, poplar, redbud, and rose. In addition, they feed on horticultural crops including watermelon and tomatoes. Twospotted spider mite will also feed on many herbaceous annuals and perennials such as marigold, pansy, aquilegia, buddleia, clematis, daylily, delphinium, phlox, rudbeckia, salvia, Shasta daisy, and verbena.

Twospotted spider mite adults are oval and approximately 1/16 inch (2.0 mm) long. They vary in color from green-yellow to red-orange. Adults have two lateral dark spots that are visible when the spider mite is viewed from above. Both adults and nymphs may be present on plant parts as well as eggs and larvae; however, they are often more numerous on older leaves. Populations of twospotted spider mite produce fine silk, which may be observed between leaves, and the petiole and stem. Webbing produced by twospotted spider mites protects them from natural predators. Heavy rainfall may disrupt and remove the webbing but may have minimal impact on populations because of their being located on leaf undersides.

Twospotted spider mites feed by removing chlorophyll (the green pigment) from individual plant cells with their stylet-like mouthparts. They feed near the leaf midrib and veins, which contain the highest concentrations of amino acids. Leaves are stippled in appearance, with silvery-gray to yellow speckles. Heavily-infested leaves appear bronzed, turn brown, and eventually fall off. The warm and dry conditions of summer favor rapid development of twospotted spider mite populations, in addition to enhancing feeding and reproduction. The life cycle from egg to adult occurs within 5 days at temperatures >75ºF (24ºC). Twospotted spider mite females don't have to mate to reproduce laying up to 300 eggs during their two to four-week lifespan.

Twospotted spider mite management involves maintaining plant health, implementing sanitation practices, and/or using pest control materials with miticidal activity (miticides). First of all, it is important to avoid exposing plants to any type of "stress" via maintaining proper watering, fertility, and mulching since this may reduce any potential problems associated with twospotted spider mite populations. For example, inadequate moisture or overfertilizing plants, particularly with nitrogen-based fertilizers, may enhance development and reproduction of twospotted spider mites. It is recommended to monitor for twospotted spider mite populations routinely by knocking the spider mites off plant parts such as branches or twigs onto a white sheet of paper. This makes it possible to easily observe the spider mites. Plant-feeding spider mites typically leave a green streak when crushed whereas predatory mites leave a red streak. A very effective and rapid method of dealing with twospotted spider mite populations is applying a forceful water spray throughout the plant canopy at least twice per week during the summer. This will dislodge eggs and the motile life stages (larvae, nymphs, and adults). The removal of plant debris and weeds eliminates overwintering sites. In addition, many broadleaf and grassy weeds are hosts for twospotted spider mites.

Pest control materials with miticidal activity recommended for regulation of twospotted spider mite populations outdoors include abamectin (Avid), acequinocyl (Shuttle), bifenazate (Floramite), etoxazole

(TetraSan), hexythiazox (Hexygon), potassium salts of fatty acids (M-Pede), and petroleum or neem-based oils (horticultural or summer oil). Be sure to read the label and make applications before twospotted spider mite populations are extensive and causing aesthetic injury. In addition, when using pest control materials there are two points to consider: first, rotate compounds with different modes of action in order to avoid twospotted spider mite populations from developing resistance, and second, be sure to thoroughly cover all plant parts with spray applications; especially when using pest control materials with contact activity. Furthermore, if possible, try to target "hot spots" or localized infestations of twospotted spider mites, which will also reduce the potential for the development of resistance.

It is important to note that many pest control materials used to suppress other insects such as plant-feeding beetles and caterpillars may be harmful to the natural enemies of twospotted spider mite, which could lead to an inadvertent increase in twospotted spider mite populations.

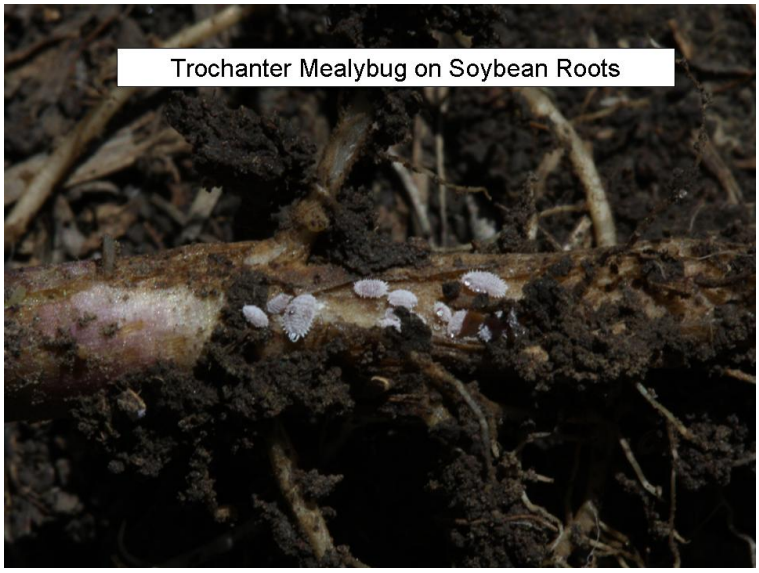
Raymond Cloyd

Skippers and Mealybugs in Soybeans

Just a "heads up", we found a silver spotted skipper larva in a soybean field in Marshall County on 22 June (see photo). This would probably not warrant any attention if it were not for numerous reports last year. These larvae caused much concern last year (See Newsletter #22, 9 Sept: http://www.entomology.ksu.edu/doc4910.ashx as they were relatively common in north central counties in August and September and did some defoliation. So, there may be more of these in soybeans in August/September again this year.

Silver Spotted Skipper Caterpillar

Trochanter mealybugs, *Pseudococcus sorghiellus*, were positively identified from a soybean field in Marshall County, near Marysville, on 22 June (see photo). This field had previously been in alfalfa for about 11 years. These mealybugs have a wide range of hosts including many legumes, such as alfalfa, red clover, white clover, and soybeans. However, they have also reportedly been collected from corn, Johnson grass, and sorghum. This is the first time this insect has been documented by K-State in Kansas and, at this time, this appears to be an isolated case. However, if growers notice soybeans showing signs of potassium deficiency (yellowing leaves), examine the roots and if the small whitish insects are found, please contact GotBugs@ksu.edu or (785) 532-4739.



Soybeans showing signs of Potassium deficiency

Chinch Bugs in Sorghum

Chinch bugs continue to be problematic in dryland sorghum. There are significant populations of chinch bugs throughout south central and north central Kansas and their numbers are increasing. Coupling their feeding (they suck the juice from the plants) with the continuing hot/dry conditions will add much stress to these plants. Insecticide treatments can control chinch bugs on small sorghum plants but if the heat and drought continue, the benefits of spraying should be carefully evaluated against the effects of continued stressful environmental conditions.

Jeff Whitworth *Holly Davis*

Report from the Kansas State University Insect Diagnostic Laboratory:

The following samples were submitted to the Insect Diagnostic Laboratory from June 21st to June 28, 2012.

June 21 – Reno County – Carpet beetle in home
June 21 – Shawnee County – Flea beetles on arugula
June 21 – Saline County – Click beetles, family Elateridae on Elm
June 21 – Neosho County – Green lacewing larvae feeding on aphids on sunflower
June 22 - Shawnee County – Acarid mites on people
June 22 – Rice County – Cynipidae galls on Bur oak

June 22 – Marshall County – Trochanter mealybugs and silver spotted skipper caterpillar in soybean
June 25 – Unknown – Northern mole cricket
June 25 – Sedgwick County – False chinch bug nymphs around lawn, home and garden
June 25 – Sherman County – Common house spiders in home
June 25 – Coffey County – Lecanium oak scale on oak
June 25 – Geary County – Virginia creeper sphinx moth around home
June 25 – Johnson County – Leafhoppers in lawn
June 26 – Cheyenne County – Praying mantid ootheca on oak tree
June 26 – Riley County – Northern black widow
June 27 – Douglas County – Yellownecked caterpillars on Apple

If there are any questions regarding these samples or about the identification of any arthropod please contact the Insect Diagnostician at (785) 532-4739 or GotBugs@ksu.edu.

Holly Davis

Sincerely,

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