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## CLINIC NEWS

Issue 14, May 30, 2016

This bulletin from the Cooperative Extension Plant Health Clinic (Plant Disease Clinic) is an electronic update about diseases and other problems observed in our lab each month. Input from everybody interested in plants is welcome and appreciated.

### Hosta

Hostas are arguably our most popular shade perennial. They are available in sizes and color to fit any garden. Given good soil and adequate moisture, they usually have few problems. However, they are susceptible to half a dozen or so viruses. The virus that has received the most attention the last few years is Hosta Virus X (HVX). Other viruses identified infecting hostas are Tomato ringspot virus (ToRSV), Impatiens necrotic spot virus (INSV), Tobacco rattle virus (TRV), Cucumber Mosaic Virus (CMV), and several that have not been identified. Symptoms of HVX vary widely depending on the variety. The most common symptom is bleeding of color along veins and blue or green mottling on the leaf surface. Ringspots, zipper-like mottling along veins and necrotic spots may also be present. This is a sap transmitted virus. Plants may become infected through propagation from infected mother plants, or by trimming or dividing infected plants, and then handling other hostas without washing hands and disinfecting tools. Hosta Virus X only infects Hostas. Infected plants should be removed from the planting as viruses are not curable.

### Hosta Virus X (HVX)



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### Pear

Damage to pear trees in unsprayed orchards can be severe during outbreaks of the Pear Blister mite, *Eriophyes pyri*. Blister mites causes brown blisters on the undersides of leaves and depressed russet spots on fruit. Heavily damaged fruit may become deformed and distorted. The blisters begin as small green pimples on the lower leaf surface. As the blisters age, they become reddish, then brown in color. The mite is an extremely small sausage-shaped mite that overwinters at the base of buds or under outer bud scales. In spring, when buds begin to swell, females penetrate deeper into buds and lay eggs on the tissue. Development from egg to adult requires approximately 20 to 30 days during the spring. The feeding activity of the mites causes blisters on developing leaves. As the blisters form, leaf cells near



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the center of the blisters die and pull apart as surrounding cells enlarge, creating a hole. Several generations develop within blisters during a growing season. Subsequent generations require only 10 to 12 days to fully develop. Fruit damage is caused by feeding injury to buds before bloom. Overwintering blister mites are found beneath the outer bud scales in October and November. Begin scouting after harvest. Collect one shoot from the top and one from eye level from 20 healthy trees in a block. When three or more shoots show damage, fruit damage can be expected the following spring if treatments are not applied either postharvest or during dormancy. In early spring young leaves that are still furled will show light green to red rough spots where the mites have been feeding. Oils or applications of sulfur during the dormant season are control options.

### Pear Blister mite-*Eriophyes pyri*



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### Tomato

Tomatoes have high phosphorous requirements. Phosphorous encourages healthy root development in seedlings and strong stems and leaves in developing plants. Phosphorous promotes fruit development and boosts the nutritional content of ripening tomatoes. The most obvious sign of phosphorous deficiency is a purple discoloration first on the undersides of leaves and later on the tops. In severe cases the entire plant becomes purple with curled leaves. Stunting and failure to thrive are common in phosphorous deficient plants. One of the most common causes of phosphorous deficiency is cool garden soil. Tomato plants require soil temperatures of 60°F or more to properly uptake phosphorous. Soils that are too wet also prevent adequate phosphorous uptake. Having a soil pH either too acidic or too alkaline also prevents the plant capability to access available phosphorous. Soil pH for tomatoes should fall between 6.5 and 7.0. Soil testing should be done at least every two years and amendment recommendations followed. Arkansas has planting, care, and fertilization recommendations for tomato in our extension publication FSA6017 <http://www.uaex.edu/publications/PDF/FSA-6017.pdf> :

**Prior to planting, fertilize with a complete fertilizer at the rate of 1 pound per 100 square feet of row. Apply 8 ounces of a starter fertilizer solution (1 tablespoon of 20-20-20 per gallon) when transplanting. Hoe or cultivate shallowly to keep down weeds without damaging roots. If you wish to maintain your plants for full-season harvest, consider mulching with black plastic or organic materials.**

**Water the plants thoroughly every two to four days during dry periods. Plants in containers need daily watering. Side-dress with nitrogen fertilizer at the rate of 1 pound per 100 feet of row or 1 tablespoon per plant after the first tomatoes have grown to the size of golf balls. Make two more applications three and six weeks later. If the weather is dry following these applications, water the plants thoroughly. Do not get fertilizer on the leaves.**

### Tomato phosphorous deficiency



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### Tomato/Pepper/Cucurbits

**Blossom End Rot** is a physiological disorder of tomatoes, peppers, and cucurbits caused by a calcium imbalance within the plant. Excessively wet or dry soil, too much nitrogen fertilizer, roots damaged by cultivation, very high or low pH, or soils high in salts can prevent the roots from taking up enough calcium. The result is a water-soaked spot at the blossom end of the plant that enlarges, turning dark brown and leathery. Rot may set in at the spot as saprophytic fungi colonize the decaying tissue. Blossom end rot is common when plants grow rapidly in the beginning of the season, then set fruit during dry weather. Fluctuating levels of soil moisture is usually the culprit. As little as 30 minutes of water deficiency at any time can cause blossom end rot. Garden soils should be tested at least every two years for pH and nutrient levels. Vegetables tomatoes, pepper, and squash do best at a pH of 6.5-7.0. Good mulching practices helps maintain even soil moisture. A



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quick fix for blossom end rot is a liquid calcium supplement applied to the foliage and as a soil drench. Most garden supply stores carry such products under names such as "tomato saver" and "end rot".

### **Tomato Blossom end rot- Calcium deficiency**



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### **Squash Blossom end rot- Calcium deficiency**



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### **Request for help from Dr. Robbins:**

**Root knot nematode populations are needed for our Arkansas species study. I am a nematologist in the department of Plant Pathology in Fayetteville. My student and I are trying to amass populations of as many species of Root knot nematode (*Meloidogyne* sp.) as possible for species identification using molecular techniques. At present no root knot species in Arkansas have been identified using molecular technology. We are interested in receiving populations from home gardens, shrubs, flowers, trees and grasses. For samples we need about a pint of soil and feeder roots in a sealed plastic bag that is plainly identified by plant host, location (City County, physical address, collector and date of collection). Please send samples to us at the follow address:**

**Dr. Robert Robbins  
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Phone 479-575-2555  
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Email: rrobbin@uark.edu**