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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 a favorite shade garden plant. They suffer from only a few diseases as a rule. In recent years a new virus has been identified in hosta. The virus is called Hosta Virus X (HVX). The most common symptom is blue markings or mottling on a light colored leaf, usually following the leaf veins. Leaf tissue may be puckered, lumpy, and of a different thickness than normally colored tissue. Dried brown spots and twisted deformed leaves are another symptom. Some plants will show no symptoms unless the plant becomes stressed. This virus is not soil borne or spread by insects. It is passed by sap from an infected plant to a healthy one by wounding with a tool, or by plant propagation by division of an infected plant. Some people consider the virus quite attractive and seek out plants with the blue mottling. Because this virus is at present poorly understood, some experts recommend removing any plants with symptoms from the garden. Since it is not a soil borne virus, a new hosta may be planted in the same location as long as all tissue from the infected plant is removed. As with all plant viruses there is no treatment or cure.



Hosta Virus X

Rick Horowitz
http://www.inthecountrygardenandgifts.com/articles/hosta_virus_x

Symptoms on tomato vary according to cultivar and developmental stage. Bronzing, black spots, and necrosis of growing tips are common. Immature fruit have light green rings with raised centers; ripe fruit will have distinct orange and red discoloration patterns. Plants infected with virus are not curable. They should be pulled up and destroyed. Unfortunately this virus has a large host range with 176 plant species found to be capable of carrying TSWV. Field crops that are susceptible to TSWV include tobacco, peanut, tomato, pepper, potato, eggplant, lettuce, endive, celery, bean, cowpea, spinach, cucumber, and cauliflower. Most flowering annuals and many herbaceous perennials are also host to the virus. Common weeds such as amaranth, chickweed, lamb's quarters, burdock, morning glory, shepherd's purse, yellow clover, and many others serve as reservoirs for the disease. It is spread from plant to plant by the western flower thrip. A bad year for thrips often means a bad year for TSWV. The disease is spread only by adult thrips, but larvae pick up the virus within 15 minutes of feeding on an infected plant. Control of thrips is difficult as the eggs and larvae are found inside the flower buds where they are protected from many insecticides. Resistance to the virus has been bred into some cultivars. Amelia F1 has resistance to TSWV, Fusarium wilt, Root knot nematode, Gray leaf spot, and Verticillium wilt. The mountain series developed by North Carolina State University also have good resistance.



TSWV

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Tomato

The clinic continues to receive large numbers of tomato samples with tomato spotted wilt virus (TSWV).



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Forestry images, Whitney Cranshaw

Southern blight caused by *Sclerotium rolfsii* is another serious disease of tomato. It causes a sudden permanent wilt of affected plants. Plants wilt while still green. The damage occurs at the soil line when the fungus girdles the stem. A large irregular brown lesion occurs there covered with a white mycelial mat. Small spherical tan to orange fruiting bodies (sclerotia) may be seen on the lesion. This disease generally occurs on scattered plants in the field. The sclerotia are viable in the soil for several years. Chemical controls are not effective as a rule. Control consists of crop rotation, deep plowing, and good sanitation. All crop residues should be removed from the field and destroyed.



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Squash

Squash vine borer *Melittia satyriniformi* can be a serious pest of cucurbits. The borers are the larvae of a clear-wing moth species. They over-winter as pupae or larvae in the soil, emerging in late spring as adults. Eggs are deposited singly on the underside of vines. The larvae bore into the stem where they tunnel and feed. Mature larvae exit the stems to pupate and over-winter in the soil, thus perpetuating the cycle. Symptoms are wilting, holes in the stem, and oozing. White larvae (about an inch long) with brown heads may be seen when the stems are split open. The larvae may also tunnel into the fruit. Insecticides may be applied as soon as the vines start to run, pyrethrum, rotenone, methoxychlor, malathion, or carbaryl, applied as sprays or dusts. Apply every 7-10 days for 3-5 weeks. Wilted vines should be inspected for larvae and destroyed.



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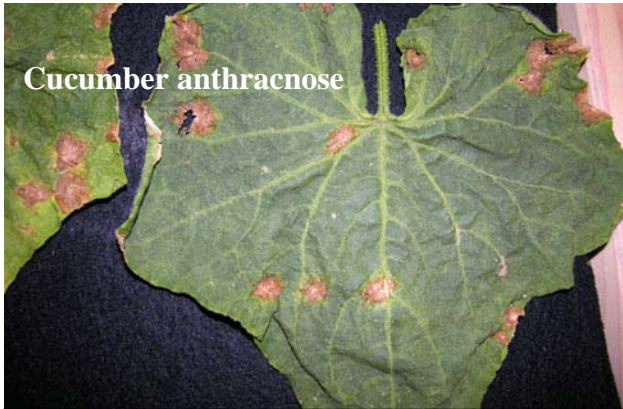
Cucumber

Anthrachnose on cucumbers is caused by *Colletotrichum obiculare*. It starts out as yellowish water soaked spots that turn brown to black. The spots enlarge and dry out. The centers fall out of the lesions giving a shot hole effect. Infected fruit have sunken circular black spots of different sizes. Crop rotation and destruction of old vines go a long way toward controlling this problem. Clorothalonil, mancozeb, or maneb every 7-10 days controls anthracnose.



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Cucumber anthracnose

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Bipolaris on turf

www.oznet.ksu.edu/path-ext/factSheets/Turf/tu

Melon

Watermelon came into the clinic last week badly infested with mites. Look for yellow chlorotic speckling or spots on the upper surface of the leaves. The mites are visible on the underside of the leaf with a hands lens.

Turf

Warm season grasses are susceptible to various diseases caused by *Bipolaris* and *Exserohilum* spp, including leaf spot, crown rot, and root rot. Small purple to black spots may appear on the leaves, stems, or crowns of bermudagrass. The centers of the spots turn brown and fade to tan with a purple border. Severely infected leaves die and appear straw colored. The overall pattern appears as brown fading out of different sized patches. The severity of the disease increases with temperature and humidity. A 78°F period of 8-10 hours with 100% humidity is all that is required for severe infection. Severity is greater when fertility is compromised by improper fertilization. Adequate nitrogen and potassium levels must be maintained. Avoid excess nitrogen. Do not allow turf to become extremely dry, but avoid evening irrigation. Irrigate only in the morning to allow turf to dry out. Good surface and root zone drainage is important. Fungicide applications may be needed every 7-10 to control severe outbreaks. See MP 154.

White Tip Nematode – Is It A Problem In Arkansas? By Ronnie Bateman

The rice white tip nematode (*Aphelenchoides besseyi*) is a seed-borne nematode that is widespread in the rice-growing region of the mid-South. The name white-tip comes from the characteristic symptoms this nematode causes on infected rice plants that include whitening of the leaf tip, giving the appearance of having been rolled between one's thumb and forefinger to squeeze out the water and then allowed to dry (Figure 1). White-tip was severe in Arkansas during the 1950s and 1960s, but was eventually controlled through cleaning up the rice seed supply and the development of newer rice cultivars with resistance, so this disease rarely causes damage in the state today.

In some rice-producing countries, particularly in climates with mild winters, white-tip is still common. The nematode can, in some situations, survive on weeds or on debris from the preceding rice crop, although survival in and transmission by infested seed is by far the most common means of spread. This nematode feeds on the youngest tissue of emerging plants and will move upward as the plant grows. It will eventually migrate to the developing panicle where it penetrates into the florets and then feeds on the ovaries, stamens, and embryos. The reproduction rate is high in the florets before anthesis. Reproduction declines after anthesis and then ceases in maturing grain when the nematode



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enters a long-term resting phase known as anhydrobiosis as the seed dries.

Yield losses in infested fields vary with the cultivar, temperature, year, and other variable factors. The average loss in heavily infested fields ranged from 10 to 30% in the past although losses up to 70% were reported. In addition to the characteristic white leaf tip symptom, other symptoms include necrosis and shredding of the leaves (Figure 2), twisted flag leaves, shortened panicles, lower grain yield, misshapen grains, sterile flowers, stunted plants, and late ripening and maturation.

For Arkansas rice producers, white-tip is a much greater concern from a marketing standpoint than for potential yield loss these days. Certain important export markets for Arkansas rice currently have a quarantine against this nematode. Any rough rice grain that is being shipped from Arkansas to any of these markets has to be accompanied by an official phytosanitary certification that the lot has been sampled by an official agency (usually either the State Plant Board or the Federal Grain Inspection Service) and tested for the presence of the nematode by an approved Nematology laboratory. In Arkansas, the Nematology laboratory is the Arkansas Nematode Diagnostic Clinic located at Hope, AR (870-777-9702, ext. 119 or ext. 128).

Is this nematode still a concern for Arkansas rice producers? Unfortunately the answer is yes. If nematodes are detected in a grain sample, that grain cannot be shipped to any markets that have quarantine on the white-tip nematode. As long as there is the possibility of detecting *Aphelenchoides besseyi* in Arkansas rice, there is a marketing concern for Arkansas rice growers. Fortunately, while a degree of concern still exists, the risk appears to be rather low according to a recent survey. This survey was sponsored by the Animal and Plant Health Inspection Service (APHIS), and conducted in 2005 jointly by Dr. Rick Cartwright, Dr. Chuck Wilson, and the Arkansas Nematode Diagnostic

Clinic. Only a single sample of 809 grain samples collected from commercial production fields statewide contained *A. besseyi*. It is important that producers and others in the rice industry continue to be alert for white-tip nematode in the state. Prevention is the most

effective and most easily accomplished management strategy for this nematode pest.



Ronnie Bateman, U of A CES



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