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Southern Plant Diagnostic Network
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Arkansas Plant Health Clinic Newsletter

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Strawberry

Many species of plants are susceptible to phytoplasma diseases. Phytoplasmas are specialized bacteria that invade plant phloem tissue and cause disease. Sap-sucking insects transmit phytoplasma from plant to plant. Four families of plant hoppers and two genera of psyllids, as well as leafhoppers are known to be vectors of phytoplasmas. The bacteria enter the insect's body through the stylet when feeding on an infected plant. From there, they move through the intestine, and eventually colonize the salivary glands. When the insect feeds on an uninfected plant, the bacterium is transmitted to the plant. Phytoplasmas may also be transmitted by parasitic plants such as field dodder. Symptoms include leaf yellowing, smaller than normal leaves, stunting, witches' broom, dieback, poor root growth, and sometimes plant death. A very common symptom is phyllody, the production of leaf-like structures in place of flowers. Plant susceptible to phytoplasma infection include ornamentals, and weeds, fruit and vegetables crops. Asters, cannas, chrysanthemums, delphiniums, flax, phlox, veronica, zinnia, gladiolus, marigolds, cosmos, coneflowers, peaches, strawberries, sugarcane, coconuts, lettuce, carrot, onion, celery, anise, broccoli, cabbage, cauliflower, celeriac, chicory, dandelion, dill, endive, escarole, white mustard, New Zealand spinach, onion, parsley, parsnip, potato, pumpkin, radish, salsify, shallot, spinach, squash, and tomato are susceptible, among others. There is no cure for plants with phytoplasma infection. Plants with symptoms should be destroyed. Good weed control and the use of insecticides where warranted help control the insect vectors.

Strawberry Fruit phyllody- *Phytoplasma candidatus*

Photo by Shelly Garth, University of Arkansas Cooperative Extension

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Strawberry Fruit phyllody-*Phytoplasma candidatus*

Photo by Terry Kirkpatrick, formerly, University of Arkansas Cooperative Extension

Coneflower phyllody-*Phytoplasma candidatus*

Photo by Isaiah Smith

Blackberry

Anthracnose, caused by *Elsinoe veneta*, can occur on leaves, petioles, pedicels, flower buds, fruit, and canes. On canes reddish purple circular to elliptical spots occur on primocanes in the spring. As the spots age, they enlarge and the centers become sunken, turning buff or ash gray, with purple margins. The lesions may merge, forming irregular blotches that girdle the cane. The cane may crack and die at that spot. Tip dieback may occur. The first signs of infection on the leaves are minute purple spots that later develop white centers. The center of the holes may later drop out, giving a shot hole appearance. Infected fruit are small, pitted, and slow to ripen. Control measures include the avoidance of excessive rates of nitrogen, and overhead irrigation. Plants should be spaced and thinned for good air circulation. Weed control should be a priority as weeds reduce air movement in the planting. All pruned canes should be removed from the planting and destroyed as the fungus overwinters on both dead and live tissue. Liquid lime sulfur applied when the plants are breaking dormancy to when there is no more than 15mm (1/2 inch) of green tissue showing. Note that Lime sulfur has become hard to obtain. Sulforix may be used instead: Both Lime sulfur and Sulforix controls anthracnose and mites. CANEBERRIES: (Blackberries, Boysenberries, Raspberries, and other Caneberries) POST HARVEST TREATMENT - Blackberry Mite - Use 3 gallons per 100 gallons of water. Apply after old canes are removed. Spray again in early spring. EARLY SPRING (DELAYED DORMANT) TREATMENT - Red Berry Mite, Leaf Spot,

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Cane Blight, Blackberry Mite, Anthracnose, Yellow Rust - Use 3 gallons of SULFORIX per 100 gallons of water. Apply as a delayed dormant spray. NOTE: Spray again in Fall as leaves turn color. SECOND SPRAY- Use 2 quarts of SULFORIX per 100 gallons of water. Apply when fruiting arms are about 1 foot long, before blossoms have opened. Captan, Pristine, and Switch are also labeled for anthracnose on blackberry.

Blackberry Anthracnose-*Elsinoe veneta*

Photo by Sherri Sanders, University of Arkansas Cooperative Extension

Blackberry Anthracnose-*Elsinoe veneta*

Photo by Sherrie Smith, University of Arkansas Cooperative Extension

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Blackberry Anthracnose-*Elsinoe veneta*

Photo by Sherrie Smith, University of Arkansas Cooperative Extension

Blackberry Redberry Mite

Redberry mites belong to the Eriophyidae mite family. They are tiny, microscopic carrot-shaped mites with two pairs of legs. They cause a condition known as Redberry where blackberry fruit infested with Redberry mites, Acalitus essigi, do not develop normally colored drupelets. The signs can be dramatic, with affected drupelets remaining hard with a green or bright red color while the rest of the drupelets on an affected berry ripen normally. Crop losses of more than 50% have been recorded. The damage results from a toxin injected by the mites while feeding. Traditionally, applications of sulfur or horticultural oils have been used for control. Oils cause less damage than sulfur. Apply horticultural oil after green fruit or first pink fruit stage in four consecutive applications spaced 2 or 3 weeks apart. For blackberry varieties that retain a leaf canopy through the winter, begin sulfur applications at bud break and continue at 3-week intervals up to 12 days before the start of harvest. Sulforix is labeled for blackberries and can be used both during dormancy and during the growing season. For blackberry varieties that naturally defoliate over the winter, apply lime sulfur before buds break dormancy.

Blackberry Redberry Mite-*Acalitus essigi*

Photo by Sherri Sanders, University of Arkansas Cooperative Extension

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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.

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