



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.

## Hydrangea

Powdery mildew of hydrangea caused by *Erysiphe poeltii*, formerly *E. polygoni*, is a disfiguring, but non-lethal disease of many species of hydrangea. The first signs of powdery mildew are small circular white patches with feathery edges on the lower surfaces of the leaves. The leaf and stem tissue may develop yellow or purple blotches beneath the white colonies. The foliage becomes stunted and yellowed. Flowering may be greatly reduced. Warm days, cool nights, and light rainfall favor the disease, particularly in the spring and fall. However, we also see it in the summer months when leaf surfaces are dry, temperatures are warm, and relative humidity approaches 95 percent. Spacing to improve good air circulation, good sanitation, and the use of fungicides control powdery mildew. With plants with a history of the disease protective sprays are best before disease development. Spectracide Immunox or green Light Systemic Fungicide is a good choice.

### Hydrangea Powdery mildew- *Erysiphe poeltii* (*Erysiphe polygoni*)



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## Coneflower

Phytoplasmas are specialized bacteria that are obligate parasites of plant phloem tissue, and some insects. The disease caused by phytoplasmas is known as Aster Yellows. Over 300 species of plants in 38 families are susceptible, including aster, coxcomb, marigold, zinnia, petunia, cosmos, coxcomb, coneflower, gladiolas, carrots, potatoes, onions, tomatoes, celery. Many common weeds are also susceptible, including plantains and dandelions. A common sign of Aster Yellows is the



production of leaf-like structures in the place of normal flower parts. Diseased plants may also suffer yellowing, vein clearing, stunting, sterility, loss of flower pigments, and the proliferation of side branches (witches'-broom). Aster Yellows is vectored by the Aster leafhopper, *Macrostelus quasrilineatus*. Leafhoppers are sap feeders. They feed by inserting their stylet (straw-like) mouth part into a plant cell and extracting the contents. If the plant is infected with Aster Yellows, the leafhopper acquires the phytoplasma as it feeds. After an incubation period inside the insect, the phytoplasma moves into the salivary glands. The next time the insect feeds on a plant the phytoplasma is injected into the new host. Visual symptoms on the infected plant show 8- 18 days after infection, depending on temperatures. There is no cure for Aster Yellows. Infected plants should be removed. Many insecticides are labeled for control of leafhoppers including products containing bifenthrin, or carbaryl, or cyfluthrin, or permethrins.

### **Aster leafhopper- *Macrostelus quasrilineatus***



Whitney Cranshaw, Colorado State University, Bugwood.org

### **Cosmos Aster Yellows (witches'-broom)-*Phytoplasmas***

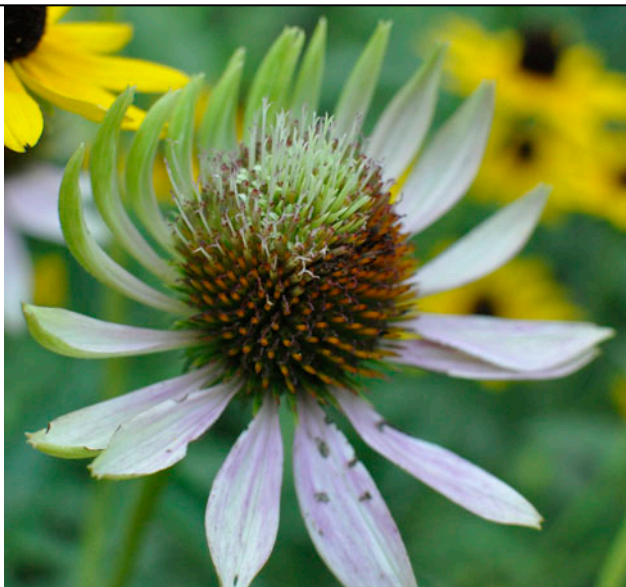


Photo, courtesy of Isaiah J. Smith (Sherrie Smith garden)





## Coneflower Aster Yellows (phyllody)-*Phytoplasmas*



Photo, courtesy of Isaiah J. Smith (Sherrie Smith garden)

## Tomato Early blight-*Alternaria solani*



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### Tomato

**Early blight** of tomato, caused by *Alternaria solani*, is a destructive disease of tomatoes wherever they are grown. Symptoms usually begin on leaves at the bottom of the plant. Small brownish-black lesions form. As the lesions enlarge concentric rings may be observed. Numerous lesions cause the leaf to yellow and fall from the plant. In severe cases the entire plant may be defoliated. Fruit and stems may also develop lesions with concentric rings. Fruit becomes infected, usually through the calyx or stem attachment. This can happen at any stage of fruit development. Losses of 30-50% of fruit may occur. Stem lesions may completely encircle a stem killing the plant entirely. Proper sanitation, crop rotation, and the use of fungicides are necessary for good control. Commercial growers may use fungicides containing chlorothalonil, or pyrimethanil, or mancozeb, or azoxystrobin, or pyraclostrobin, or trifloxystrobin. Home owners may use products labeled for tomatoes containing chlorothalonil or mancozeb or maneb,

### Tomato

**Spider mites** on tomato have been a real problem this season. The hot, dry conditions have been ideal for infestation. Spider mites attack many fruit, vegetable, and ornamental crops. They are sap feeders, feeding off the contents of individual plant cells. Their feeding activity produces a white to yellow stippling across the surface of the plant tissues they are feeding on. Serious infestations can kill the entire leaf and eventually the plant. Leaves become washed out, turn yellow, then brown and curled. In heavy infestations, small webs may be observed. It's important to recognize the problem before leaves start dying. Commercial growers may use Agri-Mek 0.15 EC, or Brigade 2 EC, or Dicofol 4E, or



Oberon 2 SC. Homeowners may use Malathion, or pyrethrin EC, or insecticidal soaps.

### Tomato Spider mite damage



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### Tomato Spider mite damage



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### Tomato Spider mite damage- webs



Photo courtesy of Don Plunkett, former staff chair Jefferson County