



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.

Zinnia

Nothing says summer like a cheerful bed of zinnias. They come in an enormous array of sizes, colors, and petal forms. Zinnias don't require much in the way of care except for average fertility, adequate soil moisture, and six hours of sun per day. In spite of their easy care requirements, they can be bothered by several fungal diseases during humid, warm, weather. *Cercospora* leaf spot, caused by *Cercospora zinniae*, produces nearly round, reddish-brown or dark purple spots with white or light gray centers. Leaves that are heavily infected turn brown and dry. *Alternaria* leaf spot, caused by *Alternaria zinniae*, produces nearly identical symptoms, but may also infect the stems, petioles, and flowers. Ornamental fungicides such as those containing chlorothalonil or Maneb, give good control if applied at 7-10 day intervals at the first sign of disease. Watering the plants at ground level instead of by overhead irrigation also helps greatly to control diseases.

Zinnia *Cercospora* leaf spot



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Powdery mildew attacks a wide range of annuals, perennials, vegetables, field crops, shrubs, and turf. Lilacs, Crape myrtles, Dogwoods, tall garden phlox, **zinnias**, Columbine, Monarda, Roses, and cucurbits, are just a few species vulnerable to powdery mildew. Powdery mildew attacks zinnias in late summer as nights start to cool. Plants with too much shade and poor air circulation are the hardest hit. Symptoms are gray to white powdery growth on leaves and flower buds, distorted buds, and yellowed leaves. Powdery mildew seldom kills zinnias, but it is ugly and can weaken the plants. The most important preventative measure is planting resistant cultivars. Fortunately, there are many resistant varieties to choose from. Fungicides don't cure, but can suppress powdery mildew. Products such as Spectracide Immunox, or Fertilome Liquid Systemic Fungicide, or Bayer Advanced Garden-Disease Control for Roses, Flowers, Shrubs help control Powdery Mildew.

Zinnia Powdery mildew



Jim Robbins University of Arkansas Cooperative Extension



Columbine powdery mildew



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Oak powdery mildew



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Oak

Oak wilt is a fatal disease of oaks caused by the fungus *Ceratocystis fagacearum*. Infected trees die when they respond to the fungus by producing defensive compounds that shut off the water supply. All species of oak are susceptible to Oak wilt. The red oak group is **highly** susceptible and red oaks do not recover once infected. White oaks, however, have some resistance to Oak wilt. Several species of sap beetles of the family *Nitidulidae* spread the disease from tree to tree. The beetles feed on spore mats produced on trees killed by the fungus the previous season. The mats form between the wood and bark on wilted trees. They produce a scent that is highly attractive to sap feeding beetles. When the beetles move to uninfected trees to feed on sap from wounds, they deposit the fungus that has stuck to their feet. It can also be spread by roots from infected trees forming root grafts with roots of trees of the same species. Symptoms in red oaks are rapid wilting of leaves in the upper crown of the tree. The wilt usually spreads downward from the crown. Leaves wilt from the tip to the bases with the edges turning pale green, then light tan or brown. Many of the fallen leaves will still have a green base. Once these symptoms are noticed the red oak will generally be completely wilted in a couple of weeks. When white oaks become infected, they usually wilt very slowly, dying one branch at a time. The leaf discoloration sometimes resembles autumn leaf color. It can take 1 to 20 years to kill white oaks or occasionally they may recover. Prevention of Oak wilt starts with taking care not to wound trees during the growing season when sap beetles are active. Although, the clinic does not generally recommend pruning paints to treat wounds, it is advisable when a red oak has been wounded to prevent sap feeding beetles from transmitting Oak wilt. Once a tree has become infected, trenching between the affected tree and nearby oaks prevents the disease from spreading via root grafting. Trenches should be 60 inches deep and a minimum of 4 inches wide. This only works if the trenching is done before the infected tree is removed. There has been some success with injections into root flares with the systemic fungicide propiconazole.



Oak wilt



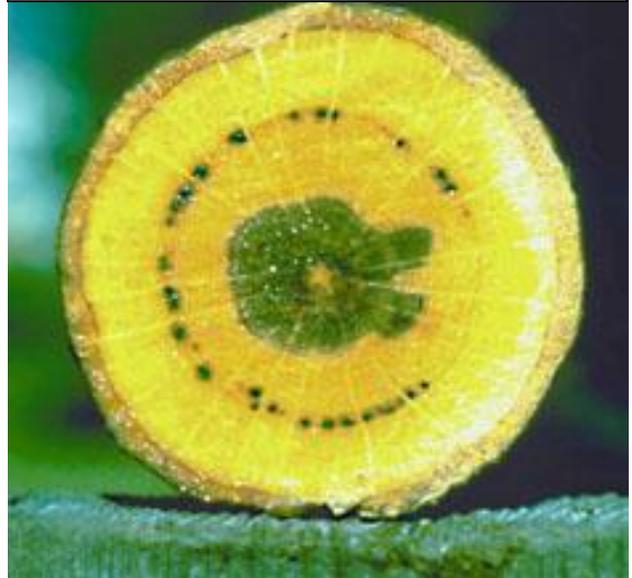
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Oak wilt spore mat



Joseph O'Brien, USDA Forest Service, Bugwood.org

Oak wilt vascular symptoms



D. W. French, University of Minnesota, Bugwood.org

Trenching to control Oak wilt



Ronald F. Billings, Texas Forest Service, Bugwood.org



Walnut

Walnut anthracnose, caused by the fungus *Gnomonia leptostyla*, seldom kills trees, but can cause serious losses. Lesions can appear on all green plant parts, petioles, leaves, young shoots, and husks. The lesions are black to brown with fading centers, with or without a chlorotic halo. Spots may merge, blighting large areas of the leaf, usually at leaf tips or margins. Lesions on petioles and shoots become elongated and sunken. Severe infections result in fruit and leaf drop. The best control is achieved with fungicide sprays in spring and early summer. Abound and Quilt are labeled for anthracnose.

Walnut anthracnose



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