

DISEASES

Anthracnose – infected leaves develop tan to reddish brown lesions that are typically associated with leaf veins; leaves that have already expanded may become cupped and distorted with large areas of dead tissues. *Non-chemical control methods:* plant resistant species/varieties; rake and destroy fallen leaves; prune out dead or infected branches; mulch and water during dry periods. *Chemical treatment:* spray fungicide for small or high value trees. Fungicide applications will not be effective on large trees. *Common hosts:* shade and nut trees.

Apple Scab – lesions start on the lower leaf surface and later lesions may be on both leaf surfaces; early the lesions are small and olive green to reddish in color, and have unclear margins; older lesions become darker and more distinct in outline; lesions may appear more numerous closer to the mid-vein; heavily infected leaves become distorted and drop; disease can also appear on the fruit. *Non-chemical control methods:* plant resistant varieties; rake and remove infected leaves. *Chemical treatment:* spray protective fungicide from bud break to harvest. *Common hosts:* firethorn, apple, pear.

Black Spot – circular black spots on upper sides of leaves; spots usually have yellow halo around lesion; infected leaves usually turn yellow and fall early. *Non-chemical control methods:* plant resistant varieties; remove diseased leaves from ground; prune infected canes back to healthy wood; water in the morning; avoid overhead irrigation. *Chemical control methods:* apply fungicide treatment beginning in the spring as leaves begin to emerge and continue throughout the summer. *Common hosts:* rose.

Botrytis – infections on the fruit, leaf, stem or flower produce a grayish lesion that eventually turns black; lesion rapidly enlarges; becoming covered with gray mold; death of stem. *Non-chemical control methods:* remove all infect foliage; apply mulch; and improve drainage. *Chemical control methods:* apply soil and foliage drench in the spring and fall, needed during wet periods. *Common hosts:* primarily on herbaceous plants including aster and peony.

Canker – yellowing and wilting of leaves; leaves become brittle, dry, and drop from the plant; depressed areas on the stem; lesions may have a white edge. *Non-chemical control methods:* select proper planting location; avoid wound dressing; remove diseased branches at least six inches below infection; disinfect tools after each cut; prune in late winter. *Chemical control methods:* fungicide treatments cannot be effectively timed. *Common hosts:* xxxx

Cedar Apple Rust – orange gelatinous tendrils or "fingers" on the juniper in the spring; orange spots develop at the point of infection (leaves, fruit and occasionally twigs) on the rosaceous host. *Non-chemical control methods:* plant resistant varieties. *Chemical control methods:* spray protective fungicide spray from just before bloom until three weeks after petals fall on a 7-10 day interval. *Common hosts:* juniper/cedar and apple.

Crown Gall – formation of galls on roots and crowns; often located at pruning wounds; initially smooth on the surface turning to dark, hard, woody tumors with gnarled, irregular surfaces. *Non-chemical control methods:* remove infected area; purchase clean rootstock; avoid planting back into an area previously infested with the bacteria; avoid mechanical root and trunk damage. *Chemical control methods:* no curative fungicide product available. *Common hosts:* euonymus.

Fireblight – occurs on blossom, twig, and leaf; blighted branches and persistent blackened leaves that appear scorched as if by heat; infected blossoms first appear water-soaked, then wilt, shrivel, turn brown and remain attached; twigs and leaves quickly wilt and turn dark brown or black and adhere to blighted twigs. *Non-chemical control methods:* plant resistant varieties; prune and discard infected branches; prune only during the dormant season (6-12 inches below the visible canker); avoid over nitrogen fertilization. *Chemical control methods:* apply streptomycin just prior to flowering or apply copper sulfate just before bud break. *Common hosts:* cotoneaster, firethorn, hawthorn, mountainash, apple, serviceberry, and spirea.

Powdery mildew – white- to grayish-white or buff-colored patches or coatings on leaves, shoots and buds; infected leaves may yellow, curl and drop prematurely; tender, young foliage and shoots are most susceptible. *Non-chemical control methods:* plant resistant varieties; improve air circulation; increase sun penetration; avoid overcrowding plants; improve soil drainage. *Chemical control methods:* spray protective fungicide. *Common hosts:* many woody and herbaceous plants including lilac, viburnum, and turfgrasses.

Root Rot – unhealthy topgrowth; yellowing of foliage; dieback; poor root system. *Non-chemical control methods:* plant resistant varieties; improve drainage. *Chemical control methods:* spray a soil-applied fungicide. *Common hosts:* xxxx.

INSECTS, ETC

Aphids – soft-bodied insect; all aphid species have two cornicles (short or long tubes) on the back of their body; color depends on aphid species. Feed in clusters on new, succulent growth. *Non-chemical control methods:* remove weedy alternate hosts; introduce beneficial insects; spray strong stream of water toward infestation; prune out small infested areas; apply horticultural oil or insecticidal soap to infestations when temperatures are below 90°F; apply dormant oil spray to overwintering stages. *Chemical control methods:* use insecticides targeted toward the infestations on the undersides of the leaves or on stems. *Common hosts:* several woody and herbaceous plants including peony, honeysuckle, oak, spruce.

Bagworms – larvae is enclosed in cone-shaped bag made from silk strands and plant foliage; females are brownish-black and stay in the bag. *Non-chemical control methods:* hand-remove mature bags over the winter and destroy (drop in soapy water and dispose); use Bt against small larvae in June-July. *Chemical control methods:* use insecticide on bags when they are small. *Common hosts:* arborvitae, juniper/cedar, spruce.

Borers – description varies by borer species; larval stage produces damage to woody stems. *Non-chemical control methods:* maintain healthy, actively growing trees/shrubs; avoid bark damage; remove and destroy affected stems/branches. *Chemical control methods:* apply insecticide to stems/trunk to point of runoff. Timing is important and depends on species. *Common hosts:* several woody trees and shrubs including ash, oak, lilac, cottonwood.

Leafhoppers – *Non-chemical control methods:* apply insecticidal soap to reduce immatures. *Chemical control methods:* thorough insecticide application to infestation; may need multiple applications. *Common hosts:* several woody trees and shrubs including honeylocust, linden, maple, rose.

Leafminers – description varies by leafminer species; larval stage produces damage; damage appears a light trail through leaves. *Non-chemical control methods:* cut back infested herbaceous plants. *Chemical control methods:* treatment often not needed; apply contact insecticides against adult leafminers; use systemic insecticides for larvae within leaf mines. *Common hosts:* columbine, cottonwood, hackberry.

Scale – adults are small and immobile; have threadlike mouthparts that feed on plant sap; color and shape varies by scale species. *Non-chemical control methods:* maintain healthy, actively growing plants; prune back highly infested branches; apply horticultural oil sprays before bud-break to kill overwintering stages and during growing season when temperatures are below 90°F; thorough coverage is necessary. *Chemical control methods:* apply insecticide to crawler stage. Timing depends on scale species. *Common hosts:* several woody plants including euonymus, oak, pine, spruce.

Spider mites – unlike insects, spider mites have eight legs and only one body part; very small; soft bodied; damage appears as stippling on leaves. *Non-chemical control methods:* avoid drought stress on plants; remove infested leaves; spray strong stream of water toward infestation; apply horticultural oil to small infestations when temperatures are under 90° F; apply dormant oil in late winter. For extreme cases, if possible, prune plant to base or remove entirely. *Chemical control methods:* apply miticide when infestation is high, thorough coverage is necessary and multiple treatments probable. *Common hosts:* several woody and herbaceous plants including butterfly bush, spruce, hackberry.

Snail/slug – *Non-chemical control methods:* trap using wet burlap, cardboard, etc.; remove by hand; avoid overwatering; increase sun and air penetration. *Chemical control methods:* use baits containing a molluscicide. *Common hosts:* hosta and other herbaceous plants.

White fly – small, white insect; damage appears as yellow, stunted growth. *Non-chemical control methods:* remove weedy plants; remove leaves infested with immature stages; create a barrier (fine-mesh screen). *Chemical control methods:* apply insecticide to underside of leaves, use aerosol sprays to knock down adults, or treat with systemic insecticide.

White grub – *Non-chemical control methods:* maintain a healthy turf; avoid overwatering. *Chemical control methods:* make a preventive or curative insecticide application. *Common hosts:* turfgrasses.

WEEDS

Annual bluegrass – short, fine textured grass that flowers at extremely low mowing heights; winter annual. *Non-chemical control methods:* increase mowing height; reduce watering frequency/amount if excessive; correct drainage problems maintain healthy dense turfgrass stand through proper management practices. *Chemical control methods:* preemergence herbicide application in the fall.

Broadleaf plantain – broadleaf; perennial. *Non-chemical control methods:* xxxx. *Chemical control methods:* postemergence herbicide application in the fall.

Buckhorn plantain – broadleaf; perennial. *Non-chemical control methods:* xxxx. *Chemical control methods:* postemergence herbicide application in the fall.

Chickweed – broadleaf; winter annual. *Non-chemical control methods:* increase light penetration and correct drainage problems. *Chemical control methods:* pre-emergence herbicide application in the fall.

Crabgrass – grass; summer annual. *Non-chemical control methods:* increase mowing height within recommended height range; maintain 2-3 inch woodchip mulch layer in landscape beds; pull. *Chemical control methods:* make preemergence herbicide application in the spring; make postemergence herbicide application when the grass is small.

Dandelion – broadleaf; perennial. *Non-chemical control methods:* pull using a special tool or when the soil is moist enough to get the entire taproot. *Chemical control methods:* postemergence herbicide application in the fall.

Henbit – broadleaf; winter annual. *Non-chemical control methods:* maintain 2-3 inch woodchip mulch layer in landscape beds. *Chemical control methods:* pre-emergence herbicide application in the fall.

Nutsedge – sedge; perennial. *Non-chemical control methods:* pull before mid June. *Chemical control methods:* post-emergence herbicide application.

Oxalis – broadleaf; perennial. *Non-chemical control methods:* xxxx. *Chemical control methods:* postemergence herbicide application in the fall.

Purslane – broadleaf; summer annual. *Non-chemical control methods:* hand-pull and remove from landscape; maintain 2-3 inch woodchip mulch layer in landscape beds; pull and discard– rerooting may occur if plant pieces are left on the soil. *Chemical control methods:* pre-emergence herbicide application in the spring.

White clover – broadleaf; perennial. *Non-chemical control methods:* increase nitrogen fertility. *Chemical control methods:* make postemergence herbicide application in the fall.