Sudden Oak Death—Oregon

Oregon imposes SOD quarantine. Ore. Dept. of Ag. imposed an emergency quarantine on Columbia County nursery growers after *Phytophthora ramorum*, the sudden oak death pathogen, was found on a small number of rhododendrons at a single nursery in the county. The quarantine affects host plants and will mean increased inspections and testing for nurseries in the county. Oregon Assoc. of Nurseries estimates Columbia County accounts for $16 million of the state’s annual $725 million in nursery sales.

Businesses with a nursery license (not nursery dealer) need to make sure they have submitted a renewal form for the license year July 1, 2004 – June 30, 2005.

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Pests susceptible to control based on degree day forecasts (°=Degree day ranges

- Taxus mealybug (1800-2100)
- Black vine weevil (500-2100)
- Euonymus scale (900-2100)
- European elm scale (900-1200)
- Fall webworm (1800-2100)
- Japanese beetle (900-1200)
- Leaf crumpler (1800-2100)
- Lecanium scale (900-1200)
- Locust borer (1800-2100) apply final spray
- Peach tree borer (1800-2100)
- Pine needle scale (1600-1700)
- Round headed apple tree borer (500-1700) apply final spray
- San Jose scale (500-2900) repeat applications because of overlapping generations
- Scaryf scale (1300-1500)
- Spruce bud scale (1500-2100)
- Two-spotted spider mite (900-2100)
- White marked tussock moth (1800-2100)
- Willow aphid (1600-2900)
- Yellow-necked caterpillar (1600-2200)

Landscape Plant Damage Can Be Caused by Excess Water

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Pine tortoise scale on scotch pine

Spruce bud scale

Willow aphid

Leaf crumpler larva

White-marked tussock moth caterpillar

Maple shoot borer damage

Maple shoot borer gallery (hook shape)

Willow aphid

Leaf crumpler larva
Landscape Plant Damage Can Be Caused By Excess Water
John Hartman, Department of Plant Pathology, Plant University of Kentucky

High rainfall levels in some parts of Kentucky during late May resulted in high soil moisture levels which may cause symptoms to appear in June on some landscape plants. Prolonged soil saturation and localized temporary flooding which occurred in some regions of Kentucky would reduce soil oxygen levels, causing roots to function abnormally, thus stressing plants.

It has been our experience that when excess soil moisture is present in landscapes due to frequent, heavy rainfall, landscape plants can show symptoms of damage caused by excess water. Extension agents, landscape professionals and homeowners can be looking for symptoms which may include:

- chlorosis - particularly on plants such as flowering crabapple that don’t normally get chlorosis from iron deficiency
- edema - many plants such as day lily, euonymus, holly, and spruce can show edema
- red or purple coloration - euonymus and kousa dogwood sometimes show this, but be aware that flowering dogwoods with powdery mildew may also show purple coloration
- marginal leaf browning or sunscald - can occur on some plants
- Wilt—sometimes the wilt is associated with Phytophthora root rot, but excess water alone can cause wilt
- twig dieback - again canker-causing pathogens, active on flood-stressed plants, can be involved
- plant death - Phytophthora root rot, especially on hemlock, taxus, and rhododendron is likely to be associated with excess soil moisture
- Epinasty (downward bending of leaf petioles), stem swelling, and leaf drop are also symptoms of excess water damage to plants

Some trees and shrubs show symptoms or die if only flooded for a few days during the growing season. Local short-term flooding and soil saturation have certainly occurred in many instances these past several weeks in some low-lying regions Kentucky.

Roots in flooded or waterlogged soils often die of anoxia (oxygen deficiency). In flooded soil, plant roots and microorganisms use up the available oxygen while adding to a buildup of carbon dioxide. As redox (chemical reduction and oxidation) potential decreases due to low oxygen levels, some mineral elements may be reduced to toxic forms. In addition, a variety of toxic organic substances can form in the soil. The metabolism of the tree is changed and adversely affects the tree by using energy less efficiently, producing toxic byproducts, inadequately taking up water and mineral elements, closing stomata, and depressing photosynthesis and translocation.

After the soil drains, plants with killed roots may subsequently suffer drought stress and death. For many of these plants, the only functioning roots are near the soil surface, and when dry weather follows wet, those surface roots quickly dry out. Plants enduring a flooding episode may also become abnormally susceptible to Phytophthora root rot or collar rot. Excess water promotes susceptibility of roots to this disease and aids the fungus in moving to new infection sites during its swimming phase. So, if the roots don’t die of anoxia, water molds such as Phytophthora are waiting for their turn to kill the plant by causing root and collar rot.

Information Concerning Insecticides and Miticides
Ohio State Bulletin 504

The following is a listing of insecticides and miticides labeled for ornamentals. It is important to remember when controlling pests, especially pests that reproduce quickly, to switch chemical classes. This will help to slow down the insect/mite’s ability to develop resistance to a particular pesticide.

Table notes: IGR = insect growth regulator, these chemicals interfere with the insect’s ability to develop properly. Molting accelerator = chemicals that cause the insect to molt prematurely.

Oral LD 50 = milligrams of material per kilogram (1 kg = 2.2 lbs) of body weight that it takes to kill 50% of test animals in one dose when ingested.
Dermal LD 50 = milligrams of material per kilogram of body weight that it takes to kill 50% of test animals in one dose when exposed to skin.
Fungus Gnats
Frank Hale, Associate Professor, Univ. of Tenn.

The fungus gnat has recently been recognized as an important pest in greenhouses. Although greenhouse plants are commonly attacked, house plants may also become infested. Several genera in the family Sciariidae are of economic concern, such as Sciara, Orfelia, Lycoriella and Bradysia species.

Damage
Damage is caused when the larvae, which feed in highly organic soils, infest the roots of African violets, poinsettias, carnations, Easter lilies, geraniums, cyclamens, bedding plants and foliage plants. Symptoms first appear as a loss in plant vigor. As the damage progresses, the plants may fade, begin to wilt suddenly and finally lose foliage.

Description and Life Cycle
The adult fungus gnat is about 1/8 inch long and is grayish-black. Its slender body with delicate, long legs and antennae resembles a mosquito. The adult has one pair of clear wings. In the winter and spring, this insect becomes most abundant in greenhouses. Fungus gnats complete development in moist, shady areas in decaying organic matter, such as leaf litter. The adults, which live for seven to 10 days, may deposit up to 150 eggs on the moist soil surface or adjacent to the plant stem. Eggs, laid in strings of three to 40, begin to hatch in four days.

The larvae or maggots have shiny black head capsules, threadlike white bodies and are up to 1/4 inch long. Larvae feed primarily on fungi and decaying organic matter. After their normal food supply is exhausted and/or populations become very high, larvae may begin to feed on fine root hairs or other tender tissues. Chewed roots and underground parts of the injured stem possess brown scars. Major problems occur when root rot organisms have begun to damage roots. Fungus gnat larvae will then begin to attack the rotting tissues and can greatly increase the amount of damage by their feeding. After 14 days, they construct a pupal case made of silk and debris in the soil.

The pupal stage lasts about three days. Adults are weak fliers and are normally seen running rapidly across the surface of the soil when disturbed. All stages of the life cycle may be present because of overlapping generations.

Control
Prevention and sanitation are two of the best control measures. Avoid overwatering, since fungus gnats prefer abundant moisture. Poor drainage and water leaks may also increase populations. Plants should be inspected carefully for signs of infestation before purchase. Sterile potting mix should be used to prevent introduction of fungus gnats. Houseplants taken outdoors when the weather is warm may become infested before being brought indoors. Inspect plants carefully, destroying those plants that cannot be saved. Old plant material and debris in and around the greenhouse should be removed.

Decoy pots of sprouting grain may be used to attract adult females, which lay their eggs in these pots. Afterwards, decoy pots should be submerged in boiling water every two weeks to destroy eggs and maggots.

Insecticides may be necessary if populations become unmanageable. For effective control, it is necessary to control both the adults and the larvae. Adult fungus gnats are easily killed with aerosols or sprays. To control larvae, soil drenches or coarse sprays should be applied to the soil surface. Make applications to moist potting media so that at least the top 2 inches of media are treated.

Control of Adult Fungus Gnats:
- acephate (1300 Orthene TR) — greenhouse
- cyfluthrin (Decathlon 20WP) — greenhouse and interiorscape
- beta-cyfluthrin (Tempo SC Ultra 1 SC) — interiorscape
- permethrin (Astro 36.8 EC) — greenhouse and interiorscape
- resmethrin (Resmethrin EC 26 Insect Spray) — greenhouse and interiorscape
- chlorpyrifos (DuraGuard 20 ME) — greenhouse and interiorscape
- chlorpyrifos plus cyfluthrin (PT Duraplex TR) — greenhouse and commercial garden center
- pyrethrin plus PBO (Pyreneone, Natural Pyrethrin Concentrate) — greenhouse and interiorscape

Control of Fungus Gnat Larvae:
- cryomazine (Citation 75 WP) — greenhouse and interiorscape
- kinoprene (Enstar II) — greenhouse and interiorscape
- fenoxycarb (Precision 25 WP) — greenhouse and interiorscape
- diflubenzuron (Adept 25 WSP) — greenhouse
- pyriproxifen (PYRIGRO 1.3 ME) — greenhouse and interiorscape
- Steiner nematode (X-GNAT, Nemasys) — greenhouse and interiorscape
- Bacillus thuringiensis subsp. israelensis (Gnatrol) — greenhouse and interiorscape
- azadirachtin (Azatin XL Plus 0.265EC, Ornizin) — greenhouse and interiorscape
Gypsy Moth Trapping-2004

Placement of 10,000 gypsy moth traps began the first week of June 2004. These traps are placed along Kentucky’s roadides using a grid pattern of either one trap per one square mile (1X1) in urban areas and one trap for four square miles (1X4) in rural areas. The traps are “baited” with a synthetic sex pheromone that lures the male moth into the trap.

Kentucky does not have any known populations of gypsy moth, however, Ohio, West Virginia and Virginia all have populations that are continuing to approach our borders.

The European Gypsy Moth was deliberately introduced from Europe at Medford, Mass. in 1868 or 1869 by Leopold Trouvelot (he made a living as an artist, painting mostly portraits, but he had an amateur interest in entomology). Trouvelot hoped to raise this moth for silk production. Unfortunately, some of his moths escaped. Trouvelot understood the potential magnitude of this accident and notified local entomologists but no action was taken. By 1889 the Gypsy Moth was doing heavy damage in certain parts of the Boston area; it is now a serious pest throughout much of the Northeast and is expanding its range.

As a caterpillar, the gypsy moth has a voracious appetite and has been known to completely defoliate forests. The caterpillars feed on about 500 different species of plants. The most preferred host is oak followed by apple, cherry, hawthorn, hickory, maples, sassafras, sweet gum and willow. Only the caterpillar stage feeds. When fully grown, the caterpillar is about 2 inches long, very hairy and has five pairs of blue dots followed by six pairs of red dots along its back. The larval stage lasts about seven weeks.

Gypsy moths are spread in two different ways. Natural spread occurs when newly hatched larvae are dispersed by blowing wind. Over the past 10-15 years, gypsy moths have moved long distances on outdoor household articles such as cars and recreational vehicles, firewood and other items. It has been estimated that 85% of new infestations have been through the movement of outdoor household articles. Once established, gypsy moth numbers can fluctuate widely from year to year. Seasons with light damage can be followed by seasons with severe damage. In periods of heavy outbreaks, gypsy moth caterpillars crawl on walls, across roads, crumpling leaves of maples in May and early June. Adults occur from March through late August. Apparently the caterpillars feed on some other kind of tree or shrub later in the season. In nurseries, Orthene plus Tame or Talstar in mid-April when plants are with one or two pair of leaves is the best time to spray. Orthene alone is labeled for use on maples to control several kinds of caterpillar pests and it is safe for homeowners to use. Early treatment is important. After that, pruning may be needed for retraining the plant.

Maple Shoot Borer
Stephen Toth & Thomas Melton
North Carolina Pest News

One of the relatively common species of tip borer that attacks maples is Proteoteras aesculana (Riley). This pest has been found boring terminals and crumpling leaves of maples in May and early June. Adults occur from March through late August. Apparently the caterpillars feed on some other kind of tree or shrub later in the season. In nurseries, Orthene plus Tame or Talstar in mid-April when plants are with one or two pair of leaves is the best time to spray. Orthene alone is labeled for use on maples to control several kinds of caterpillar pests and it is safe for homeowners to use. Early treatment is important. After that, pruning may be needed for retraining the plant.

Spruce Bud Scale
James Schuster, University of Illinois at Urbana-Champaign

Spruce bud scale (Physokermes piceae) attacks mainly Norway spruce but it will attack other spruces. This scale is small and is often clustered in-groups of 3 to 8 at the base of new shoots. Their size and color often allows them to be over looked or mistaken as buds.

They are round and reddish-brown in color. Lower branches are more often attacked than higher branches. Severe infestations can produce sufficient honeydew to develop so that sooty mold will grow. In addition severe infestations can cause lower branches to die especially on trees that are already weak or stressed. There is only one generation per growing season. The immature will over-winter on the under side of the needles. In the spring the females move onto the twigs to complete their development. Crawlers usually appear in June.

Many products are labeled for control of scale crawlers. A few of these products include acephate, carbaryl, chlorpyrifos, Merit, oils, soaps, and Tempo. Caution: summer oils will turn blue spruces green
Leaf Crumpler
NC State University, Center for Integrated Pest Management

DESCRIPTION
Adult - The leaf crumpler moth has a wingspan of 15 to 20 mm. The forewings are light brown with a white patch on each wing and several black lines. The hind wings are lighter in color than the forewings.
Egg - The egg of this insect has not been described.
Larva - The larva of the leaf crumpler varies in size (14.5 to 17.5 mm long). Its head is pale reddish brown; the top of the body is grayish green with some purplish markings, particularly where the segments overlap; the underside is lighter in color than the forewings.
Pupa - Measuring about 7 to 9 mm long, the pupa is yellowish brown to reddish brown and slightly darker dorsally.

BIOLOGY
Distribution - Although it is generally found east of the Rockies, the leaf crumpler also occurs in California.
Host Plants - Apple, cherry, cotoneaster, crabapple, hawthorn, peach, pear, plum, prune, pyracantha, and quince have been recorded as hosts of the leaf crumpler.
Damage - Damage is caused by the feeding of the larvae and the tubes and clusters of leaves they form. Girdling of the twigs and feeding on the buds and fruit (probably caused by crowding) have also been reported.
Life History - In the southeastern United States there are two generations of leaf crumplers each year. Eggs are deposited on the foliage, and they hatch in 2 to 3 weeks. The larvae construct tubes that are attached to twigs of host plants. As the larvae mature, they expand their tubes with silk and leaf fragments. The sinuous tubes can be up to 6 mm wide and 30 to 40 mm long when the larvae are fully grown. In late July and mid-August, larvae seal over the ends of the tubes and pupate. Pupation lasts about 2 weeks. Leaf crumpers overwinter as partially grown larvae in the tubes on the host. In the spring in eastern North Carolina, the larvae become active and resume their feeding. These larvae pupate about the middle of May.

INSPECTOR FINDINGS

Emerald Ash Borer Update
Indiana Dept of Natural Resources website
April 22, 2004
After receiving lab results from the U.S. Department of Agriculture, Department of Natural Resources officials confirmed that the emerald ash borer had infected a tree in Steuben County. This is the first confirmation of the ash tree-killing pest in Indiana.

The ash tree-eating pest was discovered Monday at the Yogi Bear Jellystone campground on Barton Lake in Steuben County about 40 miles north of Fort Wayne.

The adult emerald ash borer is slender with a bright metallic coppery green color. It is about one-third of an inch long. The larval, or immature stage of the insect destroys live ash trees by eating the layers under the bark of the tree that supplies nutrients. After those layers are destroyed, the tree starves to death within a short time.

Infestations are most easily identified by tiny D-shaped holes that are visible on the tree’s bark. The bark may also develop lengthwise cracks or fissures.

To date, millions of ash trees have fallen prey to the emerald ash borer and a number of Michigan counties are under quarantine. The pest also has been found a few miles east of the Indiana border near Hicksville, Ohio and a few miles to the north in Quincy, Michigan.

New Japanese Beetle Treatment Option For Quarantine Compliance
For nurseries that ship into, or would like to ship into states that have a quarantine against Kentucky because of Japanese beetle, a new treatment option has just become available.

Discus (Imidacloprid + Cyfluthrin) has been granted approval for use as a soil treatment for Japanese beetle grubs. Treatments may be applied as a uniform band on either side of the row using a band width six inches wider than the actual root ball diameter to be dug. Do not allow the bands in adjacent rows to overlap. Use 17 fluid ounces per 1,000 feet of row. Treatments should be made May through July.

It is my understanding that Discus is a more economical product for nurserymen to use than Marathon.

Reminder: someone from our office must be present when the chemical is applied in order for us to certify nursery stock for shipment.
Clients this week have been finding small weevil-shaped bugs on their magnolias, accompanied by numerous rice-shaped holes. The culprit is the magnolia weevil, also known as the yellow poplar or sassafras weevil. The black, 1/8th-inch long beetles are sometimes mistaken for ticks and 'play dead' when handled. They do not bite.

Magnolia weevils over-winter as adults and lay eggs the following spring in newly expanding leaves. After egg hatch, the larvae mine the leaves producing a brownish, blotchy area. The weevils and damage observed now are from the subsequent (second) adult generation, which chews small crescent-shaped holes in the leaves of magnolias, tulip poplar, and sassafras. Damage appears most severe on magnolias (southern, sweet bay, etc.) that hold their leaves year-round. The injury does not seriously harm the tree, but the leaf holes are concerning and cosmetically unappealing to some clients.

Control of the leaf-chewing adults can be accomplished by spraying the foliage with Sevin or any pyrethroid insecticide (Talstar, Tempo (=Bayer Advanced Multi Insect Killer), Scimitar (=Spectracide Triazicide, etc.). Thorough spray coverage on upper and lower leaf surfaces is essential.