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Scouting Watch

White grub infestations continue to be few and far between. Any damaging infestations are likely to be spotty in occurrence. When high grub numbers are found, scout to determine the extent of the infestation. It is likely that only one portion of the lawn will have high numbers of grubs. Only that area will need to be treated. Any of the grub insecticides will still be effective, but trichlorfon, sold as Dylox, will be the quickest acting as it kills the grubs within three days.

Magnolia scale crawlers should be hatching in central and southern Illinois. Also check for their presence in northern Illinois. These first-stage nymphs, or crawlers, are oval and gray, with a reddish brown ridge running down the back. Each crawler has two white, waxy spots, one on each side. Crawlers mass on the undersides of 1- and 2-year-old twigs for the winter. From the time that they emerge from the female until they molt to the second nymphal instar in late April or early May, they are vulnerable to insecticide sprays. An insecticidal spray of acephate (Orthene), insecticidal soap, or summer spray oil controls the crawlers.
--*Phil Nixon*

Pine Engraver

We have had several reports this summer of bark beetle damage to Eastern white pine. This is apparently caused by the pine engraver, *Ips pini*. This bark beetle also attacks other pine species in Illinois. Damage appears as brown sawdust-like material (frass) at pinhead-sized holes with pitch running from them down the trunk. The tree is usually in decline with browning needles.

When a pine tree goes into decline, it is commonly attacked by bark beetles. A declining tree emits chemical compounds that the bark beetles can detect, and they fly to the tree. However, bark beetles that attack pines commonly attack the healthy trees on either side of the one in decline. In the process, they transmit blue stain fungi to the healthy trees which can cause those trees to die. In stepwise fashion, the bark beetles and fungi can kill an entire row of trees after several years. For that reason, it is commonly suggested that a pine tree in decline in a row be removed promptly to help keep the trees on either side from being attacked.

Bark beetle adults emerge through pinhead-sized holes from March to October. There are usually three to four generations per year. If the tree shows

symptoms of decline between March and October, one can assume that the healthy trees on either side were attacked and removing them is usually a good practice. Spraying for bark beetles is tenuous at best. They are difficult to control because they emerge at various times through the growing season. That would require several sprays per year, with limited likelihood of success. --*Phil Nixon*

Moles

The eastern mole, or common mole (Scalopus aquaticus), is the most numerous and has the widest range of all North American moles. Moles are covered with soft, gray to brown fur and are about seven inches long with short tails. They have naked, pointed snouts and shovel-like front feet. Moles feed primarily on earthworms, beetle grubs, ants, and various other small animals found in the soil. A smaller portion of their diet consists of various seed and vegetable matter. But they usually do not eat bulbs or the roots of trees, shrubs, or other plants.

Moles can be destructive pests in lawns, gardens, nurseries, parks, golf courses, and cemeteries. During their burrowing activities, they produce mounds and ridges that disfigure lawns and sometimes dislodge plants or injure roots. Although tunnels under trees and shrubs can injure roots and expose them to drying air, causing those roots to die, too few roots are affected to impact the health of the trees or shrubs – even in heavy infestations. Thus, moles do not warrant control except for aesthetic effects on turfgrass. Home ranges are usually one-fourth to one-half acre in size, although male moles can have ranges of over four acres.

Shallow tunnels in which elongated ridges of turf are pushed up are created during the growing season. Feeding tunnels typically wind with several curves and dead-end. The mole created this tunnel while feeding on earthworms or insects. Once the mole had eaten enough or food became scarce, it turned around in the tunnel and went back to the rest of the tunnel system. These winding, dead-end, feeding tunnels are usually not revisited by the mole.

Straight tunnels which join other tunnels are used almost daily by the mole in getting from one part of the tunnel system to another. Recent research indicates that these straight tunnels are also earthworm traps. Earthworms encountering these tunnels when burrowing through the soil tend to turn and crawl down the tunnel rather than proceeding through to the other side. The mole inspects these tunnels regularly, eating the earthworms crawling down them.

Mounds of loose soil are indicative of a deep tunnel. These cone-shaped mounds are usually four to six inches high and about one foot in diameter. They are usually present in pairs, with each mound being six to twelve feet apart. Beneath each mound is a vertical tunnel that extends five to eight inches below the surface to a horizontal tunnel. Being deeper within the soil, these tunnels do not result in a ridge on the soil surface. The horizontal tunnel runs to the vertical tunnel beneath the adjacent mound.

Deep tunnels are used by the moles for bearing and rearing young. Thus, the presence of mounds usually indicates the presence of a reproducing pair of moles. Generally, mole pairs locate in more natural areas that provide a more constant food supply than do lawns. Thus, mounds are usually found in forested areas, areas near streams and rivers, old fields, and pastures. They are commonly seen in fence rows rather than in mowed areas.

Occasionally, the soil type is not conducive to surface tunneling. Under these circumstances, feeding occurs deeper under the surface and the mounds can represent the end of one of these deeper feeding tunnels.

Moles mate in late winter, resulting in young being born 24 to 48 days later in late February to June. Litter size is typically four young. Young are born only once per year, and the young stay with their mother through the summer. Those that near maturity in late summer or early fall due to an early litter or abundant food are expelled by their mother. Others resulting from late litters or slower growth are not driven from the home range until early spring when their mother is about to bear another litter.

It is these adolescent moles striking out on their own that typically venture into lawns and other maintained turf areas. Damage to turf is normally seen in spring and again in fall based on when they are driven from their mothers' range.

Years ago, moles were driven from turf areas by applying a grub control insecticide. It was thought that if you controlled the grubs, the moles would leave. This belief has persisted through the years. However, this same technique has rarely worked in recent years. Currently recommended insecticides typically kill 90-95% of the grubs whereas those used earlier typically killed 40-60% of the grubs. However, current insecticides used for grub control are relatively odorless compared to chlorpyrifos (Dursban), diazinon, and other organophosphates used for grub control during the 1970's and 1980's. Many of the organochlorine insecticides used for grub control during the 1950's and 1960's were also odorous. With mammals possessing excellent senses of smell, it may be that the moles were driven out of turf areas by smell rather than loss of prey.

Their continued presence in areas treated with insecticides is a testimony to their ability to rely on earthworms for food. It also illustrates the relatively low mortality caused to earthworms by currently recommended grub control insecticides.

Moles are primarily controlled with harpoon or choker traps set across straight tunnels that intersect with other tunnels. The tunnel is mashed down, and the trap is set on that area. As the mole comes down the tunnel, it tries to rebuild the destroyed tunnel springing the trap, killing the mole. In heavy soils, it is useful to spring the trap once or twice to create openings where the harpoon or jaws can travel.

Bromethalin, sold as Talprid, is also available for mole control. The pesticide is sold in a plastic worm. A hole is made in the top of a straight tunnel, the "worm" is dropped into the tunnel, and

the hole is repaired. This limits the exposure to pets and other non-target animals.--*Phil Nixon*

Crabapple Scab Update

Crabapple scab has been more severe in Illinois this year than in any year in the last two decades. This disease has caused severe and early defoliation of most crabapples in the state. Only the most resistant varieties or those protected by fungicides have escaped the effects of scab this season. We discussed this disease in issue 5 this year, so refer to that article for details on scab.

Initial infection of the scab fungus each spring is via ascospores produced by the overwintering structures. These initial infections occur as leaf buds open in wet periods. Most of this initial infection is completed by 3-5 weeks after petal fall. Cool, wet spring weather always results in more scab infections.

Secondary infections are caused by a different type of spore, known as summer spores or scab conidia. These spores continue to infect as long as there are wet periods in the summer and in the autumn. Secondary infection is usually minimal under typical Illinois summer conditions. For much of Illinois the 2009 season provided frequent rain events and cool temperatures. The result was continual infection of new growth. Report on Plant Disease no. 803 discusses apple scab. You can access this report on line at http://www.aces.uiuc.edu/~vista/abstracts/a803.html. Tables in that report show the wetness period for scab infection at different temperatures. The time period is less in cool weather.

Two crabapple scab images are attached. The first photo shows a typical sparsely foliated crabapple branch as a result of multiple scab infections. The leaves that remain attached do not show typical scab infection like those on the ground under the tree. It is easy to see why the scab fungus might not be identified as the cause of defoliation. The second image shows a row of infected crabapple trees nearly completely defoliated by early September. You can see the deciduous trees behind this row of crabs are still fully leafed.

We do not know the ultimate effect of this severe scab year. We do know that susceptible crabapple trees show injury year after year and still survive. They are thought to be weakened by repeated infection and prone to injury by other diseases and insects. We have several suggestions. Remove fallen leaves this fall because the fungus is known to overwinter on fallen leaves. Remove dead wood (easily snaps when bent) as it appears. Water infected trees in extended periods of drought. Consider a balanced fertilizer in late fall or early spring to help tree vitality. --*Nancy Pataky*

Brown Spot Needle Blight on Scotch Pine

The Plant Clinic at the University of Illinois has received several samples of Scotch pines infected with brown spot in recent weeks. The disease is caused by a fungus called *Scirrhia acicola*; imperfect stage is *Mycosphaerella dearnessii***.** Pine

hosts include Scotch, Ponderosa, Austrian, and Eastern white pines, but Scotch is the most commonly infected pine in Illinois.

Symptoms first appear as brown spots on the needles, sometime with yellow bands. Eventually the needles turn brown from the tip back. Often they are covered with gummy pitch. By October and November, entire needles turn brown. Fruiting bodies form in the dead portions of the needles, as shown in the image (courtesy Travis Cleveland, Plant Clinic). Infection is often concentrated on the lower branches. The spores of this fungus help to confirm and distinguish this needle blight from Dothistroma or Lophodermium needle blights.

The brown spot fungus overwinters as fruiting bodies (ascocarps and pycnidia) in dead needles, or as fungal mycelium in infected needles. In the spring, spores are released during wet weather, and spore production increases until late summer. Spores are vectored by rain, animals, and pruning activity.

Once this disease is identified on your pines, follow cultural practices outlined in report on plant disease no. 624, *Needle Blights and Needle Casts of Pines*. The report is available on line at http://www.aces.uiuc.edu/~vista/abstracts/a624.html. Fungicides may be used to help prevent infection. Sprays are made when needles are half-grown and again 30 days later. In rainy conditions the spray interval may need to be shortened. Home growers can use chlorothalonil, copper, copper sulfate, and mancozeb products. A few more products are available for commercial applicators. Refer to the Illinois *Commercial Landscape and Turfgrass Pest Management Handbook* for a complete list of registered products. --*Nancy Pataky*

Pine Wilt Suspects Easy to Spot

Pine wilt is a disease caused by the pinewood nematode. Infected trees are currently very easy to spot. This vascular disease causes mature pines to die within a season. The pathogen is not a fungus, virus, or bacterium. A nematode is the cause of vascular plugging, wilt and death of the trees. Refer to issue 5 of this newsletter (2009) for details.

The 2009 season has produced some very distinct cases of Pine Wilt. As you can see in the image of infected Scotch pines, infected trees clearly stand out amid the healthy trees nearby. Frequent rain events have resulted in lush green foliage on most trees and shrubs. Possibly the stark contrast between lush, healthy trees and brown, pinewood nematode infected trees explains why these trees are easy to spot. Regardless, use this fact to your benefit. Infected trees need to be removed to prevent further spread of the pinewood nematode by the Sawyer beetle vector. If you have pines like those in the image, consider removing them as soon as possible. If you prefer to have the wood tested for the presence of the nematode, refer to issue 5 for details on how this is done. Still, a dead pine is not going to recover, so do not waste time in removing the tree. Waiting could allow the nematode to be spread to other nearby, healthy trees.--*Nancy Pataky*