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Phosphorus Law Reminder for Illinois Turf Managers

Are you an applicator for hire who applies fertilizer to lawns? Does the fertilizer you use contain phosphorus? If so, you need to be aware of legislation that can affect you. In 2010, Illinois Legislature passed a bill that restricts any applicator for hire from applying phosphorus-containing fertilizers to a lawn unless a recently conducted soil test indicates a phosphorus (P) deficiency. Notably, homeowners are exempt from this requirement. Also exempt are commercial farms, lands classified as agricultural lands, and golf courses.

An Illinois Department of Agriculture Inspector noted that two applicators were found to be in violation in one week alone recently. Violators can find themselves charged with a penalty of \$250 for the first violation. Penalties increase to \$500 and \$1,000 for second and subsequent violations, respectively.

Bagged fertilizer for lawns commonly contains phosphorus so it's important to be mindful of this law. Phosphorus is needed for plant growth, but when applied in excess, run-off can occur. High levels of phosphorus in lakes and streams can lead to toxic-algae blooms. A dozen or so states have similar laws.

Look on the bag to see what the N-P-K ratio is. The "P" stands for phosphorus. It

should be 0 if the product is to be applied to established turf. However, as stated before, applications may be made if soil test results justify the need. For more information on the standards for P fertilization for lawn turfs in Illinois, consult this article by Dr. Bruce Branham:

http://web.extension.illinois.edu/ipr/i7514_829.html#107588.

According to the rule, the required soil test shall be conducted no more than 36 months before the intended application. The Lawn Care Products Application and Notice Act (commonly referred to as the Lawn Care Act) can be found here:

<http://www.ilga.gov/legislation/ilcs/ilcs3.asp?ActID=1597&ChapterID=36>

Section 5a discusses fertilizer application restrictions.

Certainly, P may be applied at the time of establishment without a required soil test. Perhaps any large stocks can be utilized in this manner. Please keep in mind that in accordance with the Lawn Care Act, phosphorus can be used on newly established lawns for a maximum of 2 growing cycles. Then a soil test would be necessary. (*Michelle Wiesbrook*)

Rain and Plants

Plants need water to grow, but too much water can be as bad as too little, and in

some cases, maybe even more problematic. Several things occur when there's too much moisture for plants.

The biggest negative is the lack of oxygen around the roots, which need as much air as leaves. While not big photosynthetic powerhouses like leaves, roots do breathe, and it's important to have oxygen present. When a plant receives too much rain or is overwatered, the large soil pores, called macropores, fill with water, preventing roots from exchanging gases.

Typically, the macropores drain quickly, usually before the smaller micropores. However, if there is nowhere for the water to go, the pores stay filled and roots start suffocating and dying. Of course, without roots, the plants start wilting, which is rather ironic considering the cause.

Some plants are adapted to soggy soils. Many of the bottomland plants including alders, birches, pin oak, swamp white oak, silver maple, and many of the poplars are adapted to flooded conditions and aren't adversely affected. It's the upland plants that suffer. The more a plant can tolerate drier conditions, the less likely it's adapted to excess moisture.

Soils that drain quickly such as sandy ones have fewer problems. Heavy clay soils, which typically is what's left in an urban environment, have fewer macropores, and thus retain more moisture, leading to more plant death.

Excess moisture can also lead to disease such as Phytophthora Root Rot, one of the leading causes of rhododendron death. In poorly drained soils, the fungal pathogen multiplies quickly, causing roots to turn

black. Stems and crowns may also develop black streaking. Plants immediately start wilting, which leads many homeowners to water more. Typically once a plant is infected with *Phytophthora*, it's next to impossible to control.

Excess moisture also keeps roots from seeking deeper soil levels. As stated above, the roots need oxygen, and stay closer to the soil surface. This becomes problematic for two reasons.

First, when it does get hot and dry, roots dry out quickly as the top inches of the soil dry out faster due to the heat. With some heat stress, they will eventually start heading deeper, but maybe not fast enough to avoid wilting. Getting a deeper root system helps plants overcome excessive heat and dry conditions.

This is the reason horticulturists promote long infrequent waterings instead of a little bit every day. Roots sense deeper, cooler, and moister soils and grow down. If the soil is constantly moist in the top few inches, the roots will stay there.

Second, without deep roots, the plant doesn't have as much structural support. Corn needs brace roots in order to support itself once the ears start filling out and the plant becomes top heavy. Trees need the same. Without deeper roots to hold the plant erect, strong winds (or ice and snow storms this coming winter) can topple a plant easily. Staking may help initially and should be considered, but after a season's worth of growth, staking provides little benefit.

Increasing drainage by positioning downspouts away from sensitive plants, installing French drains to channel wa-

ter away from plants, and planting sensitive plants on berms or in raised beds may help. (David Robson)

Last Weekly Issue

This is the last weekly issue of the Home, Yard, and Garden Pest Newsletter for 2015. We will continue to publish issues every other week through September. We reduce the frequency of issues during July, August, and September due to typically lower rainfall resulting in fewer disease problems and reduced weed growth. Insect and disease damage is less harmful to plant health due to reduced energy production by leaves after July 1. As always, we appreciate information from our readers on pest situations they encounter. (Phil Nixon)

Fourlined Plant Bug

Fourlined plant bug, *Poecilocapsus lineatus*, is a pest each year on a variety of herbaceous plants. Damage appears as contorted leaves with brown to black spots. Frequently, the spots are numerous enough to coalesce into large areas that may consume half or more of the leaf. Plants that are attacked include mint, chrysanthemum, coreopsis, dahlia, veronica, Artemisia, salvia, astilbe, cranesbill geranium, black-eyed Susan, and penstemon.

Close observation reveals the red nymphs hiding in the leaf axils. They grow to about 1/4 inch long. They molt into 1/4-inch-long adults that are greenish yellow, with four black stripes running the length of the body. The adults are very active runners and fly readily when disturbed. They are obvious on

the plants because they do not hide. By the end of June, they will have mated and inserted their eggs into plant stems where the eggs will remain until hatching next spring.

Insecticide sprays are effective against these insects, but good coverage is essential. Avoid spraying when the plants are in flower to avoid killing pollinating insects. Acephate (Orthene), bifenthrin (Talstar), carbaryl (Sevin), and cyfluthrin (Tempo) are effective. Insecticidal soap will also be effective with very good coverage and is probably the only option if the bugs are on mint used in food. Because the eggs overwinter in the stems, removing plant debris in early spring should reduce their numbers. (Phil Nixon)

Yellow Poplar Weevil

Yellow poplar weevil, *Odontopus calceatus*, also known as the sassafras weevil, magnolia leafminer, and tuliptree leafminer is numerous this year. Keep an eye out for it in southern Illinois.

Commonly referred to as flying ticks, adults are black, hard-shelled, and about one-eighth inch long. They emerge in the spring and fly to yellow poplar, other magnolias, and sassafras to feed on the buds and leaves. Damage appears as oval holes in the leaves that are about one-quarter inch long. Frequently, they eat only through the lower epidermis and mesophyll, leaving the clear upper epidermis of the leaf which dies and turns brown.

Eggs are laid in midribs on leaf undersides. The hatching larvae feed as leafminers, causing leaf tips to turn

brown. Fully-grown larvae in the mines are legless, white, and are less than one-twelfth inch long. There are usually several larvae per mined leaf. They pupate to emerge as adult beetles in July. Although these adults cause some additional feeding damage, it is light compared to the spring. They crawl under fallen leaves and debris beneath the tree, emerging the following spring.

Neither the adult nor larval damage seriously harms tree health, but both are aesthetically obvious. Adults can be controlled with sprays of acephate (Orthene). Some larval control is also likely. Do not spray trees in bloom to avoid pollinator harm. (*Phil Nixon*)

Magnolia Scale

Magnolia scale, *Neolecanium carnuparvum*, is common this year in northern and central Illinois. It attacks star magnolia, *Magnolia stellata*; cucumbertree magnolia, *M. acuminata*; saucer magnolia, *M. soulangiana*; and lily magnolia, *M. quinquepeta*.

Magnolia scale females can be very large for scales, about 1/2 inch in diameter, but are usually smaller. They range from yellowish to brownish, from oval to a roundish blob. Magnolia scale produces large amounts of honeydew, resulting in shiny, sticky leaves, as well as sticky sidewalks and cars underneath infested trees. Black sooty mold grows on the honeydew, resulting in black branches, foliage, and sidewalks. Soft scales consume great quantities of sap, separate out much of the water and nitrogen, and excrete most of the remainder as the concentrated sap, or light syrup, called honeydew.

Mature females produce living young in late September to early October. 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. In early June, they molt again to the third-instar nymph stage and are deep purple.

Heavily infested twigs and branches appear purple and rough from the high scale numbers. The nymphs then produce white, powdery wax that covers their bodies, causing twigs to appear whitish in high infestations. As they mature to adults, the white wax wears away, being heaviest on the edges of the scale. There is one generation per year.

An insecticidal spray of acephate (Orthene), insecticidal soap, or summer spray oil in late September into October controls the crawlers. Injection of acephate (Lepitect) should also control them at that time. The same treatments at bud break in the spring are also effective. With the insecticidal soap and summer spray oil, be sure to get good coverage, particularly on the twig undersides, where the crawlers will be most numerous. As these are contact insecticides, insects not hit directly with the soap or oil spray will probably survive.

There is little control that can be achieved at this time of year. There have been some reports of success with imidacloprid (Merit, others) and dinotefuran (Safari), but the results have been in-

consistent. A summer spray oil application may also provide some control, but be careful in its application. Do not increase the rate or spray when temperatures are above 80 degrees F to avoid leaf burn. Let me know your results if you try summer control. Realize that dead scale will not fall off of the tree. Summer control is determined easiest by the lack of honeydew production. (Phil Nixon)

Verticillium Wilt of Woody Ornamentals

So far this year we've had 5 confirmed cases of Verticillium wilt in woody ornamentals at the University of Illinois Plant Clinic. Four were Japanese maple trees, and the fifth was a redbud. Verticillium wilt is fairly common in Illinois. This fungal disease is usually lethal to the host, and it unfortunately boasts a huge host range. The fungus can survive in the soil for several years, making control difficult.

There are over 300 hosts for Verticillium wilt, though that includes both woody and herbaceous plants. Common woody hosts in Illinois include maple, ash, elm, redbud, smoke tree, tulip tree, and oaks in the red oak group. There are a number of species of *Verticillium* which cause the wilt disease, with different species or strains of the pathogen exhibiting distinct host plant preferences. This is important to know; if a redbud in your landscape succumbs to Verticillium wilt, that doesn't spell immediate doom for your maple (though it is something to be aware of).

The fungus invades the plant tissue, usually through the roots. Once inside,

the fungus colonizes the vascular system, restricting water movement within the host plant. This leads to wilting, decline, and eventually death. The disease is most severe in Illinois during cool to warm weather, and less prevalent in hot weather. A common symptom in woody hosts is flagging, where the foliage on an individual branch suddenly wilts and dies. Also common is the wilting of foliage on only one side of the tree or shrub. Wilting symptoms are usually seen in Illinois starting in early July, though they may begin as early as March and continue through November when the leaves drop from the trees. An overall yellowing of the leaves may precede the wilting, while some hosts (such as ash) may defoliate while still green without any yellowing or wilting.

Environmental factors influence severity of the symptoms. Plants under stress due to drought, flooding, nutrient deficiencies, or salt toxicities are often more susceptible to the pathogen, and decline more rapidly. With the several years of environmental stress we've experienced (drought followed by difficult winters followed by flooding), it's been no surprise when a sample tests positive for this pathogen.

Management for Verticillium wilt includes improving host vigor by mulching the base of the plant lightly, watering during periods of dryness lasting more than a few weeks, pruning out dead wood, fertilizing when appropriate, and scouting for and responding to other pest problems. These steps can all be taken as preventative measures. If a tree or shrub begins to display symptoms of Verticillium wilt, a sample can be sent to the Plant Clinic for testing. Because the disease is often lethal, some people

question the necessity for testing. We recommend testing because if the plant is indeed infected with Verticillium, that will restrict your options for replanting. Once a plant has succumbed to Verticillium wilt, we recommend replanting that area with non-susceptible species. Apple, pear, crabapple, ginkgo, sycamore, walnut, willow, rhododendron and azalea, and oaks in the white oak group are some woody plants that are considered non-susceptible to Verticillium wilt. In addition, all conifers are considered resistant to Verticillium wilt.

To test for the presence of Verticillium wilt, collect a sample of a symptomatic branch (one with yellowing or wilting leaves that are not completely dead). The branch should ideally be 8-10 inches long and approximately 1 inch in diameter. Once the sample arrives at the Plant Clinic, we culture the inner branch tissue to check for the presence of the fungus. For a more complete list of non-susceptible plants, please contact the Plant Clinic at plantclinic@illinois.edu and request a copy of our new Verticillium Wilt fact sheet. (*Diane Plewa*)