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Scouting Report

Japanese beetle has emerged in central and northern Illinois. Thanks to Wayne Ladage, Alma Gaul, and Alice Cassens for their reports. Refer to issue number 7 of this newsletter for additional information. It is still too early to determine whether adult numbers are large enough to result in high white grub numbers in turfgrass. However, we have had enough hot, dry weather in most areas of Illinois to set us up for concentration of egg-laying and resulting high grub numbers in irrigated turf areas.

False spider mites have been found attacking hemlock. They also attack yews and other conifers. Damage appears as light areas on the leaves. The mites are reddish and found on the stems and leaf undersides.

Honeylocust mite and **oak mite** become damaging during hot, dry weather. Honeylocust mite causes the leaflets to turn yellowish. Leaves heavily damaged by oak mite will appear grayish on the upper surface. Both are close relatives of twospotted spidermite and control is the same. (*Phil Nixon*)

Twospotted Spidermite

Twospotted spidermites are being seen on a variety of both deciduous and evergreen broadleaf plants. They and

their relatives, including oak mite and honeylocust mite, thrive in the hot, dry conditions that we are experiencing in many areas of the state. In cooler, damper weather, fungi attack and kill them, keeping them under control.

Damage caused by twospotted spidermites initially appears as small, whitish areas on the upper sides of the leaves. These are caused by the spidermites sucking out the contents of several adjacent cells. This removes the chloroplasts which are green from chlorophyll, resulting in empty, whitish cells. These injured cells die and turn brown, causing the whitish areas to turn brown. From a distance, the damaged brown areas appear to be merged with the undamaged green areas of the leaves, giving a bronzish color to the leaves. Severely damaged leaves will curl and drop from the plant.

Spidermites are found primarily on the leaf undersides, although damage there is usually not apparent. The leaf underside will appear dirty if there is a heavy mite infestation. Closer examination with a hand lens reveals that the dirt consists primarily of cast mite skins. The tiny, eight-legged mites tend to stay near the leaf veins. With adults being one-fiftieth of an inch long, they are too tiny to be seen by most people without magnification. Spidermites are clear with red eyes. Twospotted spidermites commonly

have two large dark green areas that can be seen through the body wall, giving them their name. These dark areas are accumulations of body waste, so only older individuals have them.

Spherical, clear to yellow spidermite eggs are obvious on leaf undersides in heavy infestations. Eggs hatch into six-legged, clear larvae that molt to eight-legged protonymphs. These protonymphs molt to deutonymphs before molting to eight-legged adults. Fine, silk webbing may be seen on the leaf underside or between the petiole and stem, but this is usually blown away on outdoor trees and shrubs.

Scout for spidermites by holding a white sheet of paper below the branch, and then sharply striking the branch. This causes some of the mites to fall onto the paper where they can be seen. Spidermites will appear as greenish to grayish, slow-moving dots that streak green when smashed. Faster-moving red or clear mites that streak red when smashed are predatory mites that feed on the spidermites. If predatory mites are common, they are likely to control the spidermites without the need for miticides.

Although another name for twospotted spidermite is red spider mite, they do not turn red unless they develop during cool weather. They are commonly red in Europe and in areas of the northeastern U.S. It is rare to see red twospotted spidermites in Illinois. I have seen red ones a couple of times when we had unseasonably cool weather in August. Generally, red mites on foliage in Illinois are predatory mites.

Spidermites are controlled with two or three miticide sprays applied at five to

seven day intervals. Most miticides do not kill the eggs, so the repeated spray is meant to kill those that have hatched from the eggs before they become adults and lay more eggs. In hot weather, the mites grow up quickly, so a delay of only a day or two beyond a seven day spray interval is likely to require an additional spray application. Effective miticides include abamectin (Avid), acequinocyl (Shuttle), bifenthrin (Onyx, Talstar), etoxazole (TetraSan), hexythiazox (Hexygon), insecticidal soap, spiromesifen (Forbid), and summer spray oil. (*Phil Nixon*)

Hosta Petiole Blight

Hostas are an essential component to every shady garden. They are available in a wide variety of sizes, leaf shapes, textures and colors. They are also very easy to propagate, transplant and share with friends and family. This unfortunately can contribute to the spread of some nasty plant diseases. Two weeks ago our newsletter included information on Hosta Virus X, a severe disease caused by a viral pathogen. This week I spotted Hosta Petiole Blight in a local landscape. This is a devastating fungal disease caused by *Sclerotium rolfsii*. Under favorable conditions, the pathogen can rapidly take-over and defoliate an otherwise healthy hosta. It was previously named Hosta Crown Rot, but was renamed due to the fact that the pathogen attacks the petiole while the plant's crown remains unharmed.

This pathogen is particularly devastating because of its ability to survive in the soil and on the soil surface from several months to years. Survivability is attributed to the tough, mustard seed-

like overwintering structures, known as sclerotia. The pathogen becomes active during warm, humid weather at which point the sclerotia germinate and tufts of white mycelium fan out over the soil surface. When the fungus comes in contact with a host, it releases oxalic acids that break-down plant cells walls and tissues. On hostas, symptoms begin as wilting and discoloration of lower leaves. In a short time the upper leaves also wilt; and close inspection shows a soft, brown rot of the base of petioles. The entire leaf soon collapses above the site of infection.

Prevention and sanitation are important for disease control. The fungus is spread by sclerotia or by mycelium growing from the sclerotia. Contaminated nursery plants and exchange between gardeners has aided long distance spread of the disease. Closely inspect plants for signs of the disease before purchasing plants or accepting plants from friends and family. If you spot the disease in your landscape, remove all of the infected plant parts, placing them directly into a bag to remove them from the garden. Be careful not to spread any of the fungal mycelium or sclerotia. Do not compost diseased plants. Remove the top several inches of soil around the plant, again being careful not to spill any as you work. Unfortunately, no effective fungicides are currently available for home owners to use. Flutolanil is available for commercial applications. As with most fungicides, they will suppress but not completely eliminate the pathogen. Mulch may contribute to the overwinter survival of the pathogen. Pulling mulch back from the base of plants before winter may help to kill the fungus. There are differences in levels of susceptibility among hosta cultivars, but

nothing with high levels of resistance. Iowa State University has a very good publication on Sclerotium Blight: <http://www.plantpath.iastate.edu/files/SUL8.pdf> (Travis Cleveland)

Rose Mosaic Virus

Wherever there are roses, there is also the lurking threat of rose mosaic virus. This viral disease is distributed throughout the world and can infect a wide range of plants. Its causal pathogen, *rose mosaic virus* (RMV) has been associated with *Prunus necrotic ringspot virus* (PNRSV). However, symptoms that are similar have also been seen on roses with single or mixed infections of PNRSV, *Apple mosaic virus* (ApMV), and *Arabidopsis Mosaic virus* (ArMV). That is because the combination of PNRSV, ApMV and ArMV can induce similar symptoms to RMV. Therefore, ArMV, ApMV, and PNRSV separately or together have been reported to cause the range of symptoms on roses which is recognized as the disease rose mosaic.

The symptoms of RMV are hard to categorize because they can depend on the virus or combination of virus (ArMV, ApMV, and/or PNRSV) infection, host species, and environmental conditions. But, a chlorotic pattern of some sort on foliage can usually result from a RMV infection. This chlorosis can be present in a multitude of patterns ranging from irregular lines, ringspots, and mottling on leaves. If infected, the overall plant growth might suffer, resulting in stunted or dwarfed plants. Fortunately, flower production does not seem to be affected by the virus, though the plants can be unmarketable due to unappealing leaves.

In roses, this virus can be spread when growers perform bud-grafting, a process in which two or more plant parts are joined together in asexual propagation.

Management of the disease

Because the virus can cause unsightly plants, it is desirable to control the disease as soon as possible. When purchasing rose plants, only buy from credible sources where the rose stocks grew from disease-free nurseries and propagates. Once the symptoms appear on the rose plant, it cannot be used for further grafting and must be destroyed as promptly as possible. However, some buds can still be salvaged from these infected plants. These plants have to undergo heat treatment of 38 degrees Celsius for up to 4 weeks to obtain virus-free plant material.

How do you tell if your plant is infected with RMV?

It is very hard to determine rose mosaic virus from symptoms alone because the symptoms are not often visible. Serological tests such as enzyme-linked immunosorbent assay (ELISA) can be done to detect ApMV and PNRSV in rose. Detection of these viruses are best from young, succulent leaves or petals in the spring and fall. Immunocapture polymerase chain reaction (PCR) is even more accurate for identifying and differentiating the viruses that cause RMV. Another method is to 'bud' a RMV infected rose with a indicator plant. Some of the rose cultivars such as 'Queen Elizabeth' and 'Madame Butterfly' show very severe symptoms, and can be used as indicator plants.

Can the rose die from rose mosaic disease?

The virus itself does not kill the plant directly. However, it can weaken plant such that it is susceptible to other environmental factors and stress. For example, infected plants tend to have a low survival rate after transplanted and are subjected to winterkill.

For more information regarding rose mosaic disease, visit:

http://aces.nmsu.edu/ces/plantclinic/documents/rose-mosaic-virus-od-9_final.pdf

For more information regarding rose viruses in general:

http://web.aces.uiuc.edu/vista/pdf_public/632.pdf

(Stephanie Porter and Zu Dienle Tan)

The Rain (at my house) Falls Mainly on the Plantain

My yard is green. Sure it has its share of weeds but fortunately, they are green too. My nearest neighbor is ¼ mile away and we are both OK with the weeds in my yard--most of the time-- as far as I know. A majority of my weeds belong to the plantain family (Plantaginaceae) which includes buckhorn plantain (*Plantago lanceolata*) and broadleaf plantain (*P. major*). For the most part, these rosette forming weeds are low lying and not noticeable to the 60 mph traffic whizzing past. They are however most noticeable when the seed heads develop and stand tall, therefore making the yard look ragged. The grass may not quite be tall enough to warrant being mowed, but you can bet my husband will drag the mower out

just the same. Plantains have been cursed more than once at my house.

These cool-season perennials have a similar growth and tend to be found in meadows, pastures, waste areas, and lawns. Buckhorn plantain is common on drier sites, on neutral to basic soils, and in low-quality turf of low to moderate soil fertility. It can tolerate compacted soils and low mowing heights. Common buckthorn prefers fertile, moist soils but will tolerate some shade, low mowing, low fertility, compacted soils, and dry sites. I have found first hand that raising your mowing height can help shade out and kill the plantains.

There are several differences between these similar species. The leaves of buckhorn plantain are lanceolate (much longer than they are wide), dark green, up to 1 ½ inches wide and 8 inches long. They are also sharp tipped, prominently parallel veined, and sometimes twisted and curled. The leaves of broadleaf plantain are broadly oval, hairy or smooth, and dark green. They can be up to 6 inches wide and 10 inches long. They are prominently parallel veined, and the margins are entire or wavy. The petioles can be reddish in color. A very similar species to broadleaf plantain is blackseed plantain (Rugel's plantain). I have never been able to look at a plant and differentiate between the two species. According to "Weeds of the Midwestern United States & Central Canada", the stems of blackseed plantain can be purple rather than dark red and the seed spike can be larger. To me, they look very similar. Maybe I'm more of a lumper than a splitter though. Both plants can be found in flower summer-long well into the fall. Buckhorn plantain has many small

whitish-tannish flowers that are tightly clustered at the end of a 6 to 30 inch long, hairy stalk. In contrast, broadleaf plantain produces numerous, inconspicuous flowers that are borne in dense clusters at the upper ends of 8 to 20 inch tall leafless, flowering stalks. These are similar in appearance to fingers or rat-tails. Both plants spread by seeds. Buckhorn plantain has a long sturdy taproot with lateral branches while broadleaf plantain has a short taproot with fibrous roots.

Plantains can be controlled without chemicals by simply maintaining turf density and health through proper culture. Fertilization practices should be evaluated. Mow as high as the use and appearance will allow to shade out weeds. These weeds can be hand-pulled or mechanically removed. Apply postemergence herbicides in mid spring to early summer and/or mid to late autumn when weeds are growing actively. Preemergence herbicides can be applied before seed germination. The herbicide 2,4-D has shown in the past to provide adequate control of plantains. Be sure to read and follow all label directions carefully in order to reduce the risk of off-target spray drift to sensitive ornamental plants.

My husband broke down and sprayed part of the lawn last summer. It went against our "as long as it's green, who cares" beliefs, but we have had fewer plantains this summer. A neighbor stated that he has seen more of it in his yard this year than in the past. New to our yard this year are rabbits. I've read that they love to eat plantain leaves. Maybe there is a correlation there. I'm not really sure which pest is worse. *(Michelle Wiesbrook)*