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Scouting Watch

Bagworms are treatable at this time. Heavy populations have been reported from southern and central Illinois locations. Numbers tend to be low in northern Illinois, particularly in northeastern Illinois. Be sure to scout for caterpillars before treating, particularly in the northern two-thirds of the state where cold winter temperatures apparently caused local population crashes.

Green June Beetles are very numerous in the southern two-thirds of the state. Large numbers are being reported flying across turf. Green June beetle adults are about one inch long, heavy-bodied, and green with indistinct yellow stripes along the sides. They fly with a loud buzzing sound during sunny times of the day. They appear to seek out upright objects, including people, to fly into. There is no control for the adults. The larvae are a white grub that feeds on dead grass, so they are not a primary pest of turfgrass. However, they will feed on the dead grass in turf, and in the process, loosen the roots of live turf, causing dieback.

Emerald Ash Borer parasitic wasps are being released in Evanston and Chicago, both in Cook County. *Oobius agrili* lays eggs into emerald ash borer eggs. The parasitoid larva feeds on the borer egg contents, killing the egg. The adult wasp

is tiny, being about one-half the size of the head of a straight pin. Being so small, it is unable to sting humans. In China, this insect reduces emerald ash borer numbers 50-60%. It was released last year in Michigan and has survived in that climate. It is too early to determine how effective it will be in controlling emerald ash borer in the U.S. This parasitic wasp was tested on many North American insects before release, and was found to be very specific to emerald ash borer.--*Phil Nixon, Fredric Miller, Hank Wilkinson*

Japanese Beetle

Japanese beetle adults are out throughout the state. They are very numerous in areas of southern Illinois. However, there appears to be only about one-quarter to one-third as many beetles as is usual in central and northern Illinois. In central Illinois, this reduction is occurring not only in the Rantoul to Charleston area that had smaller numbers last year but also in the Springfield area, which had high beetle numbers.

We are assuming that this drop in numbers in the northern two-thirds of the state is due to deep soil freezing over the winter. Most Japanese beetle larvae overwinter about eleven inches below the soil surface. Although they can tolerate being frozen during this

time, they start to die after being frozen for three weeks. With the seasonably cold temperatures that we experienced last winter, colder than it had been for several winters, and the reduced snow cover during much of this time, the soil froze deeply and stayed frozen for several weeks. In northern Illinois, the soil froze in many areas 18-24 inches deep and stayed frozen for 6-8 weeks. In central Illinois, the soil froze to about 14 inches deep and stayed frozen for 5-6 weeks. This was deep enough and long enough to kill many of the overwintering Japanese beetle grubs. The soil did not freeze deeply in southern Illinois, so the overwintering grubs were not severely affected.

Even with a reduced number of beetles in much of the state, individual plants within these areas are being heavily damaged and control efforts are warranted. Certainly in southern Illinois, damage is very heavy in many areas. Japanese beetle adults prefer to feed on smartweed, rose, linden, crabapple, birch, willow, ornamental cherry, and many other trees and shrubs. They prefer to feed on the upper side of leaves at the top of the plant in full sun, chewing holes into the leaves or eating away all but the lower leaf surfaces, causing them to turn brown.

Adult Japanese beetles fly to new hosts every three days, but are strongly attracted to hosts that have already been damaged by other Japanese beetles. For this reason, it is important to get control early in the six-week heavy flight period. The insecticide spray applications are effective for about two weeks. If you are limited to only one application, applying it early is most effective.

Insecticides recommended for control are carbaryl (Sevin), clothianidin (Arena), cyfluthrin (Tempo, Bayer Advanced Multi-Insect Killer), permethrin (Astro, Eight Insect Spray), and dinotefuran (Safari). Removal of the beetles by hand is most effective during later afternoon and evening. Disturbed beetles will drop from the plant into a jar held under them containing rubbing alcohol or soapy water and be killed.--
Phil Nixon

White Grubs

The consistent rainfall that we have been receiving across Illinois this year is reducing the need for white grub control efforts. In typical years with reduced rainfall from the second half of June through August, Japanese beetle adult females seek out irrigated turf to lay their eggs, laying few eggs in dormant, brownish, unwatered turfgrass. This concentrates the eggs and resulting larvae in these areas, resulting in heavy turf damage from root feeding. Also, with the northern two-thirds of Illinois experiencing a reduced adult Japanese beetle emergence, the need for grub control is reduced even further in that area of the state.

Southern and northern masked chafers are important white grub species, but also prefer to lay their eggs in moist soil. Masked chafers tend to be more tolerant of dry soil than Japanese beetle, so they are able to compete where Japanese beetles are numerous by depositing eggs and their larvae surviving in drier soil.

There are two general types of white grub insecticides based on their longevity. One group of insecticides lasts

for three months or more and commonly takes three weeks or so to kill white grubs. These are generally applied preventatively in July and include halofenozide (Mach 2), imidacloprid (Merit, Allectus), clothianizine (Arena, Aloft), chlorantroniliprole (Acelepryn), and thiamethoxam (Meridian).

The other group includes trichlorfon (Dylox) which is short-lived, about five days, but kills the grubs within three days. Dylox is applied only when grubs are present due to its short longevity. All insecticides labeled for grubs are more effective on smaller, younger grubs. Water the insecticide application into the root zone with at least one-half inch of irrigation. Halofenozide and thiamethoxam are more water soluble and can be watered in with at least one-quarter inch of rain or irrigation within three days after application.

This year, it is best to wait on grub control applications until treatable grub numbers are found. You can scout for white grubs by cutting through the turf with a heavy knife and peeling it back to expose the grubs. In well-watered turf, the grubs will be primarily at the root-soil interface. They may be three to four inches deeper in dry soil. Those can easily be exposed by tilling the soil with the knife. Ten to twelve grubs per foot square is a good threshold to determine whether treatment is needed. Scout for grubs in the first half of August when the grubs have hatched, but they are not yet big enough to cause visible turf injury. Later, off-color turf with an increased percentage of brown grass blades is a sign that there may be a damaging number of white grubs and scouting that area is warranted.

Once grubs are located and the threshold has been reached or there is turf injury from them, treat with any of the above insecticides. Because Dylox kills the grubs in three days, it is preferred if the clientele is likely to do their own checking for live grubs. Although it commonly takes three weeks for the other insecticides listed above to kill the grubs, they will usually stop eating soon after the insecticide is applied. As a result, damage ceases even though the grubs are still alive.

In a high rainfall year like this one, there will be spots in turfgrass areas that will experience damage and will warrant treatment, but most areas will not. In the Illinois River Valley, such as the area around Dixon, Monmouth, and Peoria southwest to St. Louis, be particularly watchful for white grubs or consider widespread preventative insecticide application in areas where grubs have been numerous in previous years. That portion of the state tends to experience grub damage even in lower beetle years with adequate rainfall. --*Phil Nixon*

Witchhazel Blight

If you investigate diseases that occur on witchhazel, generally you will find the statement that there are "none serious". I agree with that statement. This spring and summer, however, the statement has been challenged by the occurrence of some more severe blighting from this pathogen. The disease occurs in Illinois every year, but it appears more frequently and more severely in years with a wet spring. 2009 has provided necessary environmental conditions for infection.

Witchhazel blight is caused by a fungus, *Phyllosticta hamamelidis*. The fungus causes brown lesions bordered by darker brown margins. As the disease progresses it causes blighting of entire leaves. Literature reports that this fungus can cause leaves to die and can cause some stem tip dieback, but not death of the entire plant. The image shows a Plant Clinic sample of witchhazel blight submitted this summer. The second image shows the black fruiting bodies of the fungus embedded in the leaf tissue. The corner of a straight edge razor is in the picture for scale. The razor was used to remove some of the fruiting bodies to be examined with a microscope.

Fungicides are not listed in Illinois pest control manuals. I thought that this was possibly because the disease is minor in most years. As it turns out, I have searched the labels of products and find nothing that says it is cleared for witchhazel and controls *Phyllosticta*. It is best to find a fungicide that has a general ornamental label for leaf spot fungi. Maryland extension recommends Mancozeb (Dithane) or Cleary 3336 (thiophanate-methyl) which should offer control of this disease when applied in the spring as leaves first emerge. If you have the problem now, mark your calendar to consider spraying next spring. Meanwhile, rake and remove fallen leaves to reduce fungal inoculum. Prune surrounding plants to force more rapid drying of foliage. Make certain the label allows use on witchhazel.

Some work at the University of Maryland and presented through Maryland Extension shows differences in resistance of witchhazel cultivars to

this pathogen. Results were published in the *American Nursery Magazine*, January 2006. Suggested resistant cultivars were *Hamamelis mollis* 'Early Bright' and 'Princeton Gold', *H. x intermedia* 'Primavera', *H. vernalis*, *H. x intermedia* 'Jelena' and 'Luna' and *H. virginiana*.--
Nancy Pataky

Ash Yellows

In a recent conversation with a friend I realized that some people think that if they see a declining ash in Illinois, then it must be caused by Emerald ash borer. This is far from accurate. We have been seeing problems with ash trees declining for at least 30 years in Illinois without the help of Emerald ash borer. One disease that may look much like a tree infested with Emerald ash borers (or other borers) is a disease called ash yellows.

Ash yellows disease primarily affects white and green ash in the north central and northeastern parts of the United States. It is definitely a problem in Illinois, but one that is difficult to quantify, because its presence is difficult to confirm. The disease looks like other problems and testing is expensive.

Ash yellows disease is caused by a phytoplasma (formerly called mycoplasma-like-organism or MLO). These pathogens are somewhat like virus particles, cannot be cultured in a lab, and are limited to the phloem tissue of the tree. Phytoplasmas are spread by phloem feeding insects.

This disease is characterized by loss of plant vigor over a period of 2 to 10 years before the tree dies. Symptoms include

short internodes (poor growth) and tufting of foliage at branch ends. Leaves become pale green to chlorotic (yellowed) and might develop fall colors prematurely. The tree may or may not defoliate, but the canopy generally appears sparse. Cankers form on both branches and the trunk, causing twigs and branches to die back. Witches' broom sprouts of growth might appear on some branches, but are more common on the trunk near the ground as seen in the image from the US Forest Service. Cracks in the trunk may appear in this area as well. It is rare for an ash tree to recover from ash yellows.

A great percentage of the ash trees in Illinois landscapes are green ash. They do not show ash yellows symptoms as clearly as white ash. It is very likely that this yellows disease is more common than we realize because the typical witches' brooms and yellowing are not always seen with green ash, even when the disease is present. Instead we see only the cankers and stem dieback, conditions which suggest ash decline (second image) or *Verticillium* wilt or even Emerald ash borer.

The ash yellows phytoplasma cannot be cultured in a laboratory on artificial media like fungal or bacterial pathogens. One method of proving the presence of a phytoplasma is to find a lab that offers PCR (polymerase chain reaction) testing for phytoplasmas. AGDIA, Inc, a private company in Indiana, has such a service. They offer a nested PCR test for phytoplasmas in general. The cost is currently about \$190.00 for the first sample and much less for each additional sample. If you want to know the specific phytoplasma you can add about \$50.00 more for a gene sequence

to obtain the specific phytoplasma. You will want to contact your testing service of choice before sending a sample because the type of sample needed (leaves, roots, bark, etc.) depends on the time of year. It is obvious why this disease has not been confirmed frequently in Illinois.--*Nancy Pataky*

Root Rot of Herbaceous Plants

Root rots of herbaceous plants are caused by fungi that live in the soil. Sometimes the fungi are brought to your garden on plants or soil you place there. In other cases the fungus may have been present but inactive as long as plants were vigorously growing. Root rots are generally more likely to occur in wet areas of the garden and early in the season when tissues are tender. In many areas of Illinois, rains have set the stage for problems with root rots.

Plants that have small, off-color leaves, are stunted, low in vigor, slow growing, or those that wilt easily on a warm day may be infected with a root rot. Diseased roots cannot absorb water and nutrients needed for growth. Many factors that affect root growth could cause the same symptoms as root rots. These might include factors such as flooding, drought, fertilizer injury, cool temperatures, excess shade, chemical injury, etc. Root rots may also cause the foliage to turn yellow to brown and drop prematurely, usually starting with the older leaves and moving up the plant. The severity of the root rot will depend on the fungal pathogen, the susceptibility of the host plant, and the soil and moisture conditions. In fact, dry conditions following infection by a root

rot pathogen will cause a more rapid decline of plants.

To confirm a root rot problem, carefully remove an affected plant from the soil, place it in a bucket of water and gently move the plant around in the water to wash off the soil. If roots are washed too vigorously, all of the rotted tissue will be washed away, often leaving the remaining white interior that appears healthy. A healthy plant has numerous fibrous white roots. It will even have visible white root hairs. Roots of a diseased plant appear water-soaked and usually brown or black. The discolored roots are often soft and mushy, while healthy roots are firm. The image shows rotted roots of my *Gypsophila* (baby's breath) that I planted this spring in a soil with high clay content. The disease is Pythium root rot.

There are many root rot pathogens, but the major root rot fungi that will be encountered on herbaceous plants in Illinois landscapes are *Rhizoctonia*, *Fusarium*, *Pythium*, and *Phytophthora*. In a very simplified scheme we can group the first two fungi as those causing dry rot, often with a reddish pink cast to affected roots. *Pythium* and *Phytophthora* can be grouped as the types causing a soft, brown-to-black rot of roots.

Control of root rots should be aimed at prevention. Use only healthy transplants. Weak plants may be diseased and you certainly won't save time or money in the end if you use weak plants. Since poor drainage usually goes hand in hand with root rot, proper site preparation to provide good water drainage away from roots is imperative. *Pythium* and *Phytophthora* are problems

on wet sites, requiring moisture to infect. Use a balanced fertilizer if desired, but keep rates low on new transplants. Rotate annual plantings in the garden every 2 or 3 years with unrelated plants to help prevent the buildup of pathogens in one area. This is extremely helpful in preventing *Fusarium* and *Rhizoctonia*. Remove crop residue at the end of the season to help reduce pathogen survival.

Even if all of the above practices are followed, root rot may still occur. In the case of my rotting *Gypsophila*, the problems were soil that did not drain as well as needed and about 5" too much rainfall. Fungicides are available to help control the pathogens discussed here. Fungicides will protect plant stems and roots not yet affected but will not magically revive dead plants. Fungicides are most useful in cases where a root rot is discovered in a flower bed and the goal is to preserve remaining healthy plants to the end of the season. Affected plants are removed and nearby plants treated with the appropriate fungicide. Many fungicides are specific to particular pathogens, so treatment relies on accurate diagnosis of the root rot pathogen. Often root rot pathogens are cultured on agar in the lab. ELISA (enzyme linked immunosorbant assays) offers quicker and more accurate testing. The second image shows *Rhizoctonia* root rot on vinca alongside the blue ELISA test wells showing a positive reaction for *Rhizoctonia*. Specific chemicals are listed by host crop in the *Illinois Commercial Landscape and Turfgrass Pest Management Handbook* or the *Home, Yard, and Garden Pest Guide*. Consult RPD No. 615, *Damping-off and Root Rots of House Plants and Garden Flowers* for

more details on root rots. This publication is on the internet at <http://www.aces.uiuc.edu/~vista/abstracts/a615.html>.--Nancy Pataky

Controlling Kudzu (or at least slowing it down a little)

Legumes can be easily spotted across the state of Illinois this time of year. Typically, soybean is the legume that comes to mind but we have another that you should be on the look out for. Kudzu (*Pueraria lobata* or *P. montana*) is a perennial, trifoliolate vine that is native to Asia. It was promoted widely in the 1930's for erosion control, fodder for livestock, and shade. Unfortunately, other plants are often shaded and killed by this plant, as were the livestock that fed upon it. OK, so the latter may or may not be true. I am merely speculating here. Though I think it is a slight understatement to simply call this plant "aggressive". A source I read calls it "rampantly-growing" and "high climbing". One shouldn't take too lightly a plant that is capable of girdling trees or breaking tree branches from its sheer weight alone. Another problem it poses is that it serves as a host for soybean rust.

Kudzu is not even listed in my 1981 edition of *Weeds of the North Central States*. This "vine that ate the south" used to be thought of as a problem in the southern U.S. only. Then in the 1990's, southern Illinoisans really began to take notice of this weed. A few years ago, kudzu made it as far north in Illinois as Evanston. There have been kudzu populations (105 reported in 2001) across the state including the one in Peoria that made the news a few years

back. This past winter I was telling a class about Kudzu and a man sitting in the front told me that he had this plant growing at his house near Kenny, Illinois. He appeared quite alarmed upon learning the plant's identity. Of course, his next question was that of control. Kudzu is a Noxious weed in Illinois and its control is required by law. Just to be on the safe side, law makers also included it in the state's Exotic Weed Act to help prevent the spread of this plant by man. It is illegal to plant or sell Kudzu in Illinois. I'm not sure who would sell this plant or who would buy this plant, but I digress. There are various reported uses for the plant. Over the years I've been told of baskets woven of the vines, flour ground from the roots, quiches made with the leaves, and remedies made for alcoholism. One such ad claims you can "end your embarrassment from excessive drinking" with kudzu. Perhaps this is accomplished by hiding behind the vines, but I have seen kudzu pills for sale. Unfortunately, these diverse uses don't seem to be able to keep the kudzu population in check.

Kudzu can spread by seed, fragmentation of vines, and root expansion. The vine is quite aggressive in its growth and it is capable of growing up to a foot a day! In the south, the vines cover roads, crops, trees, utility poles, etc. Kudzu prefers open, sunny sites with well drained soils but it can tolerate a variety of growing conditions including severe winters which was once thought to keep kudzu from being a problem in this state. It can be found growing along roadsides, forest edges, and other undisturbed sites.

The leaves are comprised of 3 large, usually lobed, oval leaflets, with the center one on a longer stalk. Leaves are alternate on the stem and hairy when young. The flowers are reddish purple generally but can be white or pink. They are borne on spikes that emerge from the leaf axils. They are sweet smelling (almost grape scented) and appear August through September. Dark brown, hairy, flat, 2-3 inch seed pods are then produced. Vines become woody with age and older vines can be roughly 3 inches in diameter. The roots are tuberous and fleshy and can reach 12 feet deep.

For the last decade, the Department of Natural Resources, Illinois Department of Transportation, Natural Resource Conservation Service, U.S. Forest Service and the U.S. Fish and Wildlife Service have worked in cooperation to control known populations of Kudzu. Their kudzu fighting forces grew recently upon the creation of the River to River Cooperative Weed Management Area (CWMA). This is a partnership among 12 federal and state agencies, organizations, and universities including the University of Illinois that is aimed at coordinating efforts and programs for addressing the threat of invasive plants. To learn more about their fight against kudzu, go to: <http://www.rtrcwma.org/kudzu/>.

What about kudzu battles in the home garden? Cutting and mowing (close to the ground) may be used to slow the spread by weakening the plant, but be sure to clean mowers afterwards to prevent further spread into other areas. Goats, pigs, and sheep can be used for grazing in certain situations. Herbicides tend to be the conventional

method of control for kudzu. Home gardeners can use brush killers that contain triclopyr. Also effective are 2,4-D and dicamba. Glyphosate can be used but reports have shown it to be less effective than the previously mentioned herbicides. These are available at most garden centers.

Depending on where the kudzu is growing, it is possible that clopyralid (Stinger and Transline for example) may be used. This is actually the herbicide of choice by many for kudzu but it can't be used by just anyone just anywhere. Stinger is generally thought of as being the ag product, Lontrel is for turf and ornamentals, and Transline is used in rights-of-way situations, although, the labels list additional specific areas. Please note that Lontrel may not be used on residential lawns. Interestingly enough, kudzu is specifically mentioned on the Transline and Lontrel labels only.

- Stinger label: <http://www.cdms.net/LDat/ld02P012.pdf>.
- Lontrel label: <http://www.greenbook.net/Docs/Label/L47578.pdf>
- Transline label: <http://www.cdms.net/LDat/ld0B014.pdf>.

Your local agrichemical retailer may be able to order these products for you. Be sure however, that your application site is listed on the label and that the product is not for application by professional applicators only – unless of course you are one.

Carefully read and follow all label directions. Applications may be made to the leaves, stems, or cut stems. Refer to

the label for guidance. Bear in mind that complete eradication of kudzu is the goal and repeat applications will likely be needed as this is a difficult weed to control. Depending on the severity of the infestation, and the number of seeds in the soil, it could take several years to achieve eradication. The herbicides listed here are capable of damaging nearby sensitive plants. Glyphosate is non-selective and will kill or severely injure all plants that it comes into contact with. Applications need to be targeted and the wind speed should be between 3 and 10 mph to avoid herbicide drift to off-target plants.

Lastly, please report any kudzu populations to Jody Shimp with IDNR. He can be reached at 618-435-8138 ext. 127 or jody.shimp@illinois.gov. For assistance with weed identification, please contact your local University of Illinois Extension office.--Michelle Wiesbrook

Invasive Species Spotlight: Asian Longhorned Beetle

The Asian longhorned beetle is an exotic pest that threatens a number of hardwood trees in North America. It is believed that this insect arrived in North America in wooden packing material from China.

This woodboring beetle goes through four life stages: egg, larva, pupa, and adult. The eggs are laid by adult beetles on the bark of living trees. A single female can lay up to 90 a year with each egg being placed in its own site. Eggs are encased in a brownish protective secretion about ¼ inch in diameter. The larva emerges from this egg site in about

10 to 15 days and begins burrowing into the tree's bark. They begin by feeding on the sapwood around the tree but later feed on the heartwood and overwinter in there. In the springtime they continue feeding until they begin their pupal stage. This may last over a week as it begins transformation into its adult form.

Adults are generally present from June through October. They can range in size from 1 to 1 ½ inches long. They are black with white specks on its elytra (wing covers) and have long white and black banded antennae. Females tend to be a bit large than the males.

The greatest damage to trees is caused by the larva as they tunnel through the living tissues of the phloem and xylem. Ultimately the tree loses its ability to transport water and nutrients to its canopy and roots and dies. Because the ALB can be quite large it can also weaken the structural integrity of a tree.

Visual symptoms of an infested tree can include the accumulation of frass on tree branch collars below holes cause by exiting beetles. Exit holes can be quite large and distinct from other longhorned beetles; up to 1/2 inch in diameter and almost perfectly circular. Adult beetles can also be found chewing on the veins of leaves leaving the other leaf tissues intact. Egg sites can also be an important visual clue to their presence.

Asian Longhorned Beetles have a wide range of preferred host trees. Most studies show that they prefer maple trees of any species. Its other top choices include: birch, horse chestnut, poplar, willow, elm, ash, hackberry, sycamore,

mountain ash, and London plane tree as well as many others.

The Asian longhorned beetle was first identified in New York City in 1996. Two years later it was detected in a Chicago neighborhood and in 2002 in New Jersey. When entomologists and resource managers from numerous organizations first learned of the destructive potential of the insect they quickly made plans to try and eradicate it. The first steps were to survey for damage and then to establish quarantine zones. Surveys were done using aerial lifts and tree climbers to thoroughly inspect all tree parts. Infested trees were removed and destroyed. Non-infested trees within the quarantine

zones were treated with a systemic insecticide as a precautionary approach. After a long battle with this invasive insect, Illinois declared eradication in 2008.

Four months after the beetle was declared eradicated from the Chicago-land area it was found in Deerfield in August 2008. However, extensive survey efforts have not found any infestation or other signs of this invasive pest. If you suspect the Asian Longhorned Beetle anywhere in Illinois please contact: The Illinois Department of Agriculture at 1-800-641-3934.

Photos courtesy of www.bugwood.org
--*Kelly Estes*