BUCKEYE YARD AND GARDEN LINE 2013-24
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Buckeye Yard and Garden Line (BYGL) enhanced with photos and links is available online at: [http://bygl.osu.edu]. Become a fan of the BYGL on Facebook at [http://www.facebook.com/OSUBYGL] or follow the BYGL on Twitter at [http://www.twitter.com/OSUBYGL].

This is the 24th 2013 edition of the Buckeye Yard and Garden Line (BYGL). BYGL is developed from a Tuesday morning conference call of Extension Educators, Specialists, and other contributors in Ohio.

****BYGL READER SURVEY NOTICE: Starting next Monday (September 16), we will be doing a short electronic survey to learn about the impact of the BYGL, how the BYGL is used, and how we can improve the BYGL for next season. If you receive a special e-mail message with a hotlink to the survey, please take a few minutes to complete the survey. Your participation is voluntary and you will help us make the BYGL better for you and others next season.

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1. PLANTS OF THE WEEK.

*ANNUAL - ORNAMENTAL PEPPER (Capsicum annuum). Ornamental peppers are great plants for adding a burst of bright color in the garden during the fall. Fruits range in color from white, yellow, orange, red, to black. Peppers ripen at different stages so one plant can have multiple colors providing more visual impact from just one plant. Another cool feature is that the fruit of this plant is borne upright
and typically sits above the foliage. Due to recent breeding efforts there are many cultivars available. A common question that people ask is whether or not the peppers are edible. The peppers are indeed edible, but some cultivars are extremely hot, so proceed with caution! Some interesting cultivars include, 'Sangria,' a mounding plant with orange, yellow, and red fruit; 'Calico,' a green, cream and purple variegated foliage variety; and 'Medusa,' a compact plant that has twisted fruits with yellow, orange to red fruit. These plants can withstand most soil conditions, but they need full sun.

*PERENNIAL - ASTER (Aster spp.). Aster is a genus containing over 600 species and cultivars of flowering plants. Plants are sun-loving and bear daisy-like flowers in late summer. Asters are easy to grow perennials that will do well in average soils, but they need full sun. Asters flowers come in blues, purples and a variety of pinks. All Asters are yellow in the center of the flower. They are daisy-like in appearance, even though they are a member of the sunflower family (Asteraceae).

Many garden centers are well stocked with asters in September and October. Aster 'Wood's Pink' only grows 12 - 18" tall, making it a nice, compact plant for the fall garden. Daisy-like flowers appear in September and last into late October. Flower colors in the 'Wood's' series include blue and purple.

*VEGETABLE - BOK CHOY (Brassica rapa var. chinensis). Bok choy, also known as pak choi or bok choi, is a cool season crop that belongs to the cabbage family (Brassicaceae). It grows in full sun to part shade and prefers well-drained soil with consistent moisture. Fall crops are easier to grow versus spring crops because plants may bolt in the spring due to the warm-up in weather. Plant bok choy by direct seeding in mid to late August in 1/4 - 1/2" deep rows, 18 - 30" apart. Thin the seedlings to 6 - 12". Bok choy is excellent in salads and stir-fries.

*WOODY - DAWN REDWOOD (Metasequoia glyptostroboides). The dawn redwood is an ancient conifer that is well represented in the fossil record extending back to the time of the dinosaurs; it is sometimes called a "Living Fossil." Until the 1940's, it was thought to be extinct. This ancient species was once represented by millions if not billions of trees growing throughout much of the Northern Hemisphere; however, it was nearly wiped out by glaciers and cold temperatures that spread from the northern polar region during colder periods in Earth's history.

In the early 1940's, the surviving dawn redwoods were discovered in a remote, isolated valley in central China. At the time, there were only a few hundred trees remaining. After its discovery, seeds were collected and distributed widely in North America and Europe. Its closest living relatives are the California redwood (Sequoia sempervirens) and the baldcypress (Taxodium distichum).

In modern times, it is considered to be a native of China. Like baldcypress, dawn redwood is deciduous, dropping its feather or fernlike, fine-textured needles on an annual basis. Before the needles drop in the fall, they turn a unique pinkish tan to reddish bronze color. The needles (0.5" long, linear, flat leaves) are held on branchlets that are oppositely arranged on the stems of the tree. This tree can reach 100' in height and around 25' across. The bark on the trunk appears shredded and is reddish brown in color. It is one of its attractive features, especially in the winter. The trunk itself develops a buttressed appearance, however less so than baldcypress.

Dawn redwood is a good specimen tree for use in parks, golf courses, campuses, lawns, or as a screen along streets and long drives. However, because of their potential size, they need space to grow. It is labeled for zones 5 - 8 with some exceptions growing well in zone 4. It prefers well-drained, slightly acidic soils and grows best in full sun. In an appropriate site, dawn redwood has a relatively fast growth rate. Some cultivars to check out are: 'Jack Frost' (leaves are white and green), 'Emerald Feathers' (bright-green foliage) and 'White Spot' (splashes of white scattered among the green leaves).
*WEED - WINGSTEM (Actinomeris alternifolia). This tall (6 - 13') native perennial is a member of the Aster family (Asteraceae). It prefers alluvial soils and is usually found growing along the edges of woods and in protected fence rows, particularly near streams or dry stream beds. The wingstem's alternating, lanceolate, toothed leaves flow into longitudinal wing-like structures on the stems, thus the common name. The main stems are green, nearly hairless, and mostly unbranching. Wingstem's showy yellow flowers appear in late-summer to early fall and occur in clusters at the ends of the stems. The daisy-like flowers reflex backwards causing the almost mop-like flower head to radiate in all directions. Wingstem is commonly used in naturalized areas and in landscape designs highlighting native plants. It is highly prized for its size and late season showy flower display.

2. HORT SHORTS.

A. DIGGING DEEPER. SCORCH-LIKE APPEARANCE EVIDENT ON SOME RED OAKS.

BYGLers had a lengthy discussion regarding their observations of red oaks (Quercus rubra) with scorch-like symptoms on the leaves. While a diagnosis was undetermined, there were plenty of "what-ifs" and the conversation lead to this article and the hopeful mining of additional information and experiences from our BYGL readers.

BYGL Reader Input is being requested:
While the BYGL is meant to be interactive and we encourage feedback from readers, this week we are taking this to the next level. We would like you to share your thoughts and observations via a survey tool designed to gather everyone's input including photos if you have them - [https://www.surveymonkey.com/s/bygl_red_oak]. Additionally, if you have photos that you would like to share with the BYGLers on this issue, they can be uploaded at [https://osu.app.box.com/files/0/f/1145424443]. Questions about either the survey or the photo upload site can be directed to Amy Stone at [stone.91@osu.edu].

Symptom Challenges and Possible Causes:
If you type in "scorch" and "red oak" in an internet search, your top hit would likely be "bacterial leaf scorch". Bacterial leaf scorch is caused by the bacterium Xylella fastidiosa that is spread by leafhoppers and treehoppers and has a wide host range including oaks. The University of Kentucky has a factsheet on Bacterial Leaf Scorch [http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-OR-W-12.pdf] written by John Hartman. Symptoms include premature leaf browning, marginal necrosis, and defoliation. The Ohio Department of Natural Resources, Division of Forestry, has surveyed for bacterial leaf scorch and in 2010, of the 61 samples collected, 8 tested positive for the bacterium.

With that said, plant sleuths could soon realize that the photos and descriptions associated with bacterial leaf scorch don't really fit the scorch-like symptoms that they were seeing. The "other" scorch-like symptoms that people are noticing will be the focus of the remainder of this article and can be looked at as pieces to a puzzle. Some pieces may fit, while others may not be part of the big picture or even be present in every situation. Here are some tree and site observations that were discussed by the BYGLers:

* Brown tissue is present along the outside leaf margins. The severity can vary greatly (see photos on the web version).
* In severe cases where most of the leaf tissue is brown, the main veins remain obvious and usually green.
* Symptoms can be present year after year.
* Some trees have been exposed to high levels of deicing salts during the winter months.
* Some trees have noticeable girdling roots.
* Some trees may have been hit by lighting.
Trees have been observed in a variety of growing conditions – streetscapes, landscapes, woodlands, and natural areas.

Some oak samples that have been submitted to the Plant and Pest Diagnostic Clinic (PPDC) were exhibiting symptoms which included interveinal necrosis and downward curling of the younger leaves from the base to tip and from edge to edge. The samples were evaluated for evidence of a disease or insect problem; however, no causal agents were found.

Clinic professionals suspected that the symptoms could have been the result of a nutrient deficiency. Nutrient deficiencies may result from a wide range of horticultural issues including: lack of nutrients in the soil or nutrient imbalances; high soil pH; loss of roots from construction activity or root rots; too much water interfering with root function, or too little water to support nutrients being dissolved in solution to be taken-up by trees; low temperatures interfering with root function; and anything that may disrupt vascular flow within the tree.

For example, as the pH increases iron and/or manganese become increasingly insoluble and unavailable for absorption by the tree's roots. These nutrients are also less available when soils are cold and waterlogged. Manganese is mobile in the soil and can be leached during periods of heavy rainfall. Also, if the ratio of iron and manganese absorption is out of balance and the tree absorbs 'too much' iron it will be less able to utilize manganese. A soil test, coupled with a foliar analysis, can provide useful information. The soil test can determine if the site is nutrient deficient or if the pH is so high that nutrients cannot be absorbed. The foliar analysis will determine the actual levels of these nutrients in the tree and could provide information on the corrective courses of action to be undertaken.

An article posted on the Washington State University Extension's "The Garden Professor" website several years ago [https://sharepoint.cahnrs.wsu.edu/blogs/urbanhort/archive/2011/02/14/girdling-roots-the-source-of-all-evil-in-the-world.aspx] provided some insightful information regarding a study at Michigan State University (MSU) that was reported on at ArborCon - a conference of the Arboriculture Society of Michigan in 2011. The article included information illustrating the importance of looking beyond girdling roots in assessing tree problems. Phillip Kurzeja was the presenter, and Bert Cregg posted the information on the website. The situation being studied on the MSU campus at the time involved several locations where oaks had been suffering from severe leaf scorch.

The following information was taken from the web post. "In some cases virtually 100% of the leaves on the trees are affected and growth has been severely affected. Examination of the trees by a pathologist ruled out bacterial leaf scorch, suggesting that the problem may be abiotic. The researchers looked at a battery of variables including degree of leaf scorch, number of girdling roots, planting depth, soil compaction, foliar nutrition, leaf water potential, and leaf photosynthetic function. Most importantly, they looked at these traits on trees without scorch as well as trees with scorch."

"This study concluded that trees with mild or severe scorch leaf scorch had girdling roots. At this point one might have leapt to the conclusion that the girdling roots were responsible for the leaf scorch. But girdling roots were also found in trees that did not have any leaf scorch. In fact, in some cases the healthy trees had more severe girdling roots than trees with the worst leaf scorch. So, what factors differed between trees with scorched and un-scorched leaves? The researchers are still working on the analyses but the most obvious differences were that trees with leaf scorch were consistently planted deeper and had lower levels of foliar manganese than healthy trees."

So, as you can see, there are some thoughts about the situation, but still a lot to learn and understand. Thank you in advance for sharing your observations and experiences through our survey mentioned
above. Your input will be valuable as we sort through this diagnostic challenge on red oaks. Stay tuned to future editions of the BYGL.

3. BUG BYTES.

A. ORANGESTRIPPED OAKWORM UPDATE. In BYGL 2013-16 (07/18/13), Amy Stone reported that orangestriped oakworm (*Anisota senatoria*) moths were laying eggs on their namesake hosts in northwest Ohio. This week, Amy noted that she is seeing heavy defoliation (greater than 75%) by the caterpillars in Wildwood Preserve Metropark located just west of Toledo. Several Toledo parks experienced a significant orangestriped oakworm outbreak in 2011 (BYGL 2011-22, 09/02/11). While the caterpillars may be found on all species of oaks, as well as some other hardwoods, they have a distinct preference for oak species that belong to the red oak group. Indeed, in 2011, the red oaks in Oak Openings Metropark were nearly 90% defoliated while the white oaks were almost untouched.

Mature orangestriped oakworms are black caterpillars with eight narrow orange or yellow stripes that run the length of the body. There is a pair of curved spines or "horns" behind the head. The abdominal spines are relatively small. The caterpillars feed in groups until the final instar stage. Early instars feed as skeletonizers, usually confining their feeding to only a few leaves. As the caterpillars mature, they eventually consume the entire leaf except the main veins. Groups of caterpillars will often consume all the leaves on a branch before moving to a new feeding site.

Mature caterpillars are about 1 1/2" long. The last instar caterpillars become solitary and will eventually crawl down from infested trees to become a significant nuisance pest if large numbers begin to climbing buildings, wandering about on the ground or on hiking trails, or crawling across roads. Eventually, the mature caterpillars will burrow 3 - 4" into the soil to pupate and overwinter. There one generation per season with caterpillars beginning to appear in late-July. Much of the feeding damage occurs during August with the most obvious defoliation occurring in late-August to early September. Thus, the impact on the health of oak trees is considered minimal since the damage is confined to the end of the growing season.

B. MORE OAK GALLS. Curtis Young thrilled participants in the Ohio Plant Diagnostic Clinic held last Wednesday at Secrest Arboretum (OARDC) with two fascinating galls found on burr oak: OAK LOBED GALLS produced by the wasp, *Cynips strobilana* (family Cynipidae), and OAK BULLET GALLS produced by another cynipid wasp in the genus *Disholcaspis*. Oaks can host over 800 gall-makers with over 700 belonging to the wasp family Cynipidae. While their sometimes dramatic galling handiwork may cause alarm, the vast majority the galls on oak cause little harm to the host. So, controls are not necessary. Gall-maker populations also tend to rise and fall from year-to-year meaning a tree that is heavily galled one season often has few galls the next season.

There are several types of "oak lobed galls" and they range in color from burgundy, to reddish-brown, to golden-brown. The galls are composed of tight clusters of wedge-shaped "kernels." They vary in their overall size and shape based on the wasp species and the plant tissue that is being formed into the gall structure. The lobed gall produced by *C. strobilana* arises from twig buds and multiple clusters of galled buds may produce an elongated mass measuring 3 - 4" long. The gall vaguely resembles a pine cone and is sometimes called the "pine cone oak gall." A much smaller ball-shaped lobed gall that is produced by the wasp *C. nigricens* grows from the midvein on the upper leaf surface.

As with the lobed galls, there are also several types of oak bullet galls. They measure around 1/2" in diameter and vary in color from light green, to reddish-green, to light brown. Some bullet galls are covered in very fine, short hairs, while others are completely smooth. Many types of bullet galls have
secretory cells on their surface. The cells ooze nectar-like sugary substances that are utilized by a number of organisms. It is not unusual for the surface of the galls to become covered with black sooty mold giving the galls a mottled grayish-black coloration.

The sugary material is also highly attractive to wasps; it could be described as "wasp candy." Indeed, Curtis described how he collected the galls at great risk; the tree was buzzing with wasps including YELLOWJACKETS (Vespula spp.) and BALDFACED HORNETS (Dolichovespula maculata). Apparently, the close attention by these stinging insects prevents the helpless immature gall-making wasp larvae located within the galls from receiving the unwanted attention of predators and parasitoids. The wasps are highly protective of the galls as Curtis learned first-hand!

C. TUSSOCK TIME. Joe Boggs reported coming across some interesting "tussock" moth caterpillars at last week's Ohio Plant Diagnostic Clinic and at this week's Southwest Ohio BYGLive! Diagnostic Walk-About. The caterpillars included: BANDED TUSSOCK MOTH (Halysidota tessellaris); Sycamore TUSSOCK MOTH (H. harrisii); and WHITE-MARKED TUSSOCK MOTH (Orgyia leucostigma).

"Tussock" means "tuft," and the name refers to conspicuous tufts of hairs on the caterpillars. As with many common names that refer to prominent morphological features; both the tussock name and the feature are not always correlated to taxonomy. While the three tussock moths belong to the same moth family (Erebidae), banded and sycamore tussock moths belong to the subfamily Arctiinae (Tiger and Lichen Moths), and white-marked tussock moth belongs to the subfamily Lymantriinae (Tussock Moths). Another feature shared by these caterpillars are the types of hairs covering their bodies; they are urticating hairs (stinging hairs) that can cause a skin rash on individuals who are highly sensitive to the irritation.

The banded tussock moth and sycamore tussock moth caterpillars are covered in tight clusters of short, bristly hairs (setae) which arise pincushion-like from small bumps (tubercles). Both also have long, pencil-like tufts of hair projecting from their posterior and anterior ends; these pencil tufts of hair are responsible for the "tussock" in their common names. The short setae on the banded tussock caterpillar vary in color from off-white to pale brown. A faint line of slightly longer darker brown setae runs down their back. A single black pencil tuft extends tail-like from their back end and 6 pencil tufts extend from their front end: 2 black tufts point upward; 2 black tufts point forward; and 2 white tufts extend laterally from their body. The caterpillars may grow to 1 1/2" long and can be found feeding on a wide range of hosts including alder, ash, birch, blueberry, chestnut, elm, grape, hackberry, hazel, oak, walnut, willow, and many others. However, caterpillar populations are seldom high enough to cause significant defoliation.

Sycamore tussock moth caterpillars feed exclusively on their namesake host as well as London planetrees. The short clusters of setae covering the caterpillars are white to slightly off-white. Two white pencil tufts extend v-shaped from their posterior end and 4 pencil tufts extend from their anterior end; 2 reddish-brown tufts point upwards and 2 white tufts point laterally. Additionally, their reddish-brown head capsule is surrounded by shorter pencil tufts of white and reddish-brown hairs. Mature caterpillars are around 1 1/2" long. As with banded tussock moth caterpillars, sycamore tussock caterpillars seldom occur in outbreak numbers.

This is not the case with white-marked tussock moth caterpillars. This caterpillar has a history of occasional outbreaks in Ohio causing significant defoliation. The caterpillars may be found on a wide range of host trees including apple, basswood, elm, maple, oak, pear, plums, poplars, redbud, rose, sycamore, walnut, and willow. Early instar caterpillars feed as leaf skeletonizers and older caterpillars consume the entire leaf leaving behind the larger veins.
The striking looking caterpillars can grow to a length of around 1 1/2" long. The caterpillars have red to reddish-orange head capsules and their bodies have a black stripe running the length of the back bounded by two cream-colored longitudinal stripes and then two grayish-green stripes. The caterpillar's most conspicuous features include a row of four brush-like tufts of white to tannish-white hairs arising from the top of the back near the front, two long tufts of black pencil hairs extending forward flanking each side of the head, and one long tuft of lighter hairs extending from the back of the body.

There are at least two generations per year in Ohio. While the caterpillars can cause significant localized defoliation, heavy leaf-loss seldom causes long-term harm to the health of established trees. Populations typically cycle dramatically from year-to-year meaning that years with high populations are followed by years with no caterpillars. So, healthy affected trees recover over time.

However, the defoliation of newly planted trees (first 1 - 3 years) can cause concern since the trees lack the same resources to re-foliate compared to established trees. Early instar caterpillars can be controlled with products based on the naturally occurring bacterium bacillus thuringiensis (Bt) (e.g. Dipel or Thuricide); however, Bt produces only kill small caterpillars. Larger caterpillars require the use of other insecticides such as pyrethroids (synthetic), pyrethrums (naturally occurring), or spinosad products (e.g. Conserve, Captain Jack's Dead Bug Brew, etc.).

D. WOOLLY BEARS ON THE MOVE. Dave Shetlar reported that he recently observed numerous "woolly bear" caterpillars crossing a two-lane highway in central Ohio. So why did the woolly bears cross the road (grown!)? It's simply in their nature. This is the time of the year when woolly bear caterpillars start their annual crawl-abouts in search of sheltered locations such as under plant debris where they will spend the winter. They may be found on sidewalks, on the walls of homes and buildings, and on roadways where they may be found laminated onto radial tires.

The woolly bears are the caterpillar stage of medium sized moths known as tiger moths (family Erebidae; subfamily Arctiinae). In the spring, the overwintered caterpillars will feed briefly before spinning a cocoon into which their hairs are incorporated, pupating, and eventually becoming a moth. There are eight or more species of woolly bears in the US. Four of the most common species found in Ohio are the BANDED WOOLLY BEAR (Isia (formerly Pyrrharctia) isabella); the YELLOW WOOLLY BEAR (Spilosoma virginica); the SALT MARSH CATERPILLAR (Estigmene acrea); and the GIANT LEOPARD MOTH (Hypercompe (formerly Ecpantheria) scribonia).

The course hairs of the banded woolly bear are black at both ends and reddish-brown in the middle. The adult is called the Isabella moth. This is the woolly bear species mentioned in winter-prediction folklore, which claims the longer the black is at the ends of the body, the more severe the coming winter. Research has debunked this legend by showing the amount of black varies with the age of the caterpillar and the moisture levels in the area where it developed.

The yellow woolly bears are highly variable in color. The fine hairs covering the body vary from beige or yellow to dark reddish-brown. The adult is called the Virginian tiger moth. Likewise, the color of the salt marsh caterpillar is also highly variable ranging from blond, to yellow, to black. The adult moths carry the same name as the caterpillar. The giant leopard moth caterpillar is the largest of the four with some reaching a length of 4'. The bristles on this caterpillar are jet black projecting outward from black bands on the skin with red bands of hairless skin between the black bands. The adult moth of the same name is white with multiple black rings on the front wings.

The banded woolly bear, yellow woolly bear, and salt marsh moths have 2 generations of caterpillars each year, the largest usually occurring in the fall. The giant leopard moth has 1 - 2 generations per year. All four species will feed on a wide range of plants; the caterpillars chew large irregular holes in foliage. The
significance of their feeding damage depends upon the host and the size of the caterpillars. Few would notice their holes in soybean leaves whereas the giant holes produced by late-instar caterpillars in canna leaves are very noticeable.

Vermilion, Ohio, has held an annual Woollybear Festival for more than four decades; it is billed as the largest one day festival in the state of Ohio. The 41st Annual Woollybear Parade & Festival will be held on Sunday, October 6th, 2013. For details, visit the Vermilion Chamber of Commerce website at: [http://vermilionchamber.net/festivals/woolybear/].

E. WHEEL OF MISFORTUNE. Curtis Young noted that WHEEL BUGS (Arilus cristatus) have completed their development and adults of these large, unusual looking bugs are now lurking among the leaves of trees and shrubs in Ohio in search of prey. Although caterpillars and sawfly larvae are favored table fare of this impressively large predator, they will not turn their beaks up at other arthropod meat morsels. Indeed, they will even nail the probing fingers of uniformed gardeners!

These bugs belong to the Hemipteran family Reduviidae which is represented in North America by over 160 different species. Members of this family are collectively known as assassin bugs; a name that clearly describes how these stealthy hunters make a living. Wheel bugs get their descriptive common name from a peculiar morphological feature that rises from the top of the bug's thorax. The structure looks like half of a cog-wheel, with the gear teeth clearly visible. Wheel bugs are big, measuring over 1 1/4" long, and their color varies from light gray to bluish-gray to grayish-brown.

As with all predatory bugs, wheel bugs are equipped with piercing-sucking mouthparts that are used to inject paralyzing and pre-digestive enzymes into their prey. They then suck the essence-of-insect from their hapless victims. While these are beneficial insects, they should not be handled. All members of the family are capable of delivering a painful bite to people. The pain of a bug bite has been described by those who have suffered the wheel of misfortune as being equal to or more powerful than a hornet sting, and the wounds may take over a week to heal.

F. CICADA MANIA CONTINUES. Several BYGLers reported that ANNUAL DOG-DAY CICADA (Tibicen spp.) populations are once again heavy this season in many locations in Ohio and their "singing" has continued almost unabated since they first emerged earlier in the season (BYGL 2013-13, 06/27/13). We have been reporting "unusually" high populations of dog-day cicadas for so many years; it appears the unusual has become usual (BYGL 2012-20 (08/16/12); 2010-17 (7/29/10).

Indeed, the cicada's loud singing generated calls earlier this season from concerned Ohioans asking if their part of the state was under siege by 17-YEAR PERIODICAL CICADAS (Magicicada spp.). Of course, there was no emergence of periodical cicadas in Ohio this year and periodical cicadas emerge early in the season, usually around mid-May, whereas dog-day cicadas emerge much later in the season ... during the dog-days of summer.

Annual dog-day cicadas develop underground just like their periodical cousins. The annual cicadas also leave their tannish-brown shed skins behind on tree bark after the adults have emerged. However, dog-day cicadas are much larger than periodical cicadas and they are black with green markings while periodical cicadas are black with orangish-red markings. Although it takes 2 - 3 years dog-day cicadas to complete their development, some adults emerge every year due to overlapping generations.

Dog-day cicada males sing to attract females, just like periodical cicadas; however, annual cicadas never emerge in apocalyptic numbers so their songs are typically heard as mild, sporadic buzzing in landscapes and woodlots rather than the thunderous synchronous chorus that produces 17-year cicada madness. However, this season's chorus of large numbers of dog-day cicadas may seem unusually loud.
On a bright note, we have also been reporting large numbers of the nemesis of dog-day cicadas; the CICADA KILLER WASP (Sphecius speciosus). An abrupt halt in the buzzing of a cicada, often punctuated by a high-pitched screech, usually means a cicada killer has committed an insecticidal act. Of course, the shriek of a doomed cicada could be music to the ears to some Ohioans! BYGLers had no explanation for the high cicada populations other than to speculate that conditions below ground must have once again been particularly conducive for the survival of the nymphs.

4. DISEASE DIGEST.

A. WALNUT ANTHRACNOSE MAY CAUSE CONFUSION WITH TCD. Joe Boggs and Cindy Meyer reported joining Ohio Department of Agriculture (ODA) staff in meeting with University of Tennessee Plant Pathologist, Mark Windham, and Entomologist, Jerome Grant last week at the THOUSAND CANKERS DISEASE (TCD) site in Butler County, Ohio. TCD is caused by a fungus (Geosmithia sp.) that is vectored by the WALNUT TWIG BEETLE (Pityophthorus juglandis). Ever since TCD was confirmed in Knoxville, TN, on August 5, 2010, Mark and Jerome have been working to conduct research and support educational outreach on TCD; they make a highly effective team! They have also been generous with offering their time, expertise, and insights in helping Ohio to deal with our TCD challenge. Indeed, their visit was just the first step in developing a Tennessee - Ohio partnership on TCD.

A significant point that was discussed during their visit was how walnut anthracnose symptoms could be confused with TCD symptoms. This is particularly important since the annual dropping of walnut leaflets and leaves due to anthracnose is well underway in southwest Ohio. Walnut anthracnose is caused by the fungus, Gnomonia leptostyla, which is specific to walnut. Unlike some of the other anthracnose diseases, walnut anthracnose is characterized by small dark brown spots rather than the larger irregularly shaped necrotic lesions seen with ash or oak anthracnose. From a distance, the leaflet discoloration and defoliation symptoms caused by walnut anthracnose could be mistaken for other problems, including TCD. However, an up-close inspection will reveal the tell-tale leaf-spot symptoms that are characteristic of this anthracnose disease. TCD causes leaflets to turn yellow (= chlorotic), wilt, and drop from infected trees; however, it does not produce leaf-spots.

The dark brown spots on the walnut leaflets can be 1/16 - 1/4" in diameter and are usually surrounded by a yellow halo. Initially, the lesions are seen only on the underside of the leaflets, but they eventually cover both leaflet surfaces as the season progresses. Infected leaflets turn yellow and drop individually, or the entire compound leaf drops. Severe infections can defoliate a tree by early to mid-August. Trees in good health can tolerate the leaf loss; however, repeated defoliation of trees that are in poor health can kill the trees, or leave them susceptible to other insect or disease problems. Infection of walnut husks can result in incomplete nut development and a reduction in the quality of the nut meat.

The fungal spores overwinter on fallen leaves and infections occur on the new growth in the spring. The fungus needs to have 12 or more hours of continued leaf wetness to infect the plant. These first lesions produce spores to create more infections throughout the season. Control may be impractical on large trees and in forest plantings. Control in landscape or nursery situations can be achieved with fungicide sprays during the primary infection period in the spring and through the early growing season. Removing fallen leaves from the area will also reduce the infections of next year's leaves.

5. TURF TIPS.
A. CHECK FOR GRUBS. Dave Shetlar reported spotting patches of turfgrass that had been pulled-up. The symptoms looked a bit like skunk or raccoon grub-foraging damage; however, Dave noted that further observations revealed the true culprit: crows! He found that the crows were indeed going after MASKED CHAFER (*Cyclocephala* spp.). A close examination further revealed that about 50% of the chafer grubs were in the 2nd instar stage and the remaining 50% had reached the early 3rd instar stage.

White grubs feed voraciously at this time of the year in order to accumulate fat to survive the winter. They can rapidly damage turfgrass, particularly on lawns suffering from poor cultural practices such as a thick thatch layer (greater than 1/2"), poor soil conditions (e.g. compaction), or poor fertilization. White grubs shear-off turfgrass roots, so their damage may mimic drought stress; a condition that has recently become common in many parts of Ohio. Dave noted he expects that skunks and raccoons will soon join crows, if they haven't already, in revealing high grub populations.

Long-term grub management strategies should focus on implementing good turfgrass cultural practices. This includes proper fertilization to support root re-growth and core aeration to reduce thatch, loosen soil, and enhance oxygen, water, and fertilizer infiltration. Insecticide applications should be viewed as a short-term grub management activity. Dave recommended for lawns that require an insecticide rescue treatment, the organophosphate trichlorfon (e.g. Dylox) and the neonicotinoid clothianidin (e.g. Arena) should provide an effective knockdown of grub populations.

6. INDUSTRY INSIGHTS.

A. BLACK VINE WEEVIL LANDSCAPE CHALLENGE. Dave Shetlar reported that he is seeing heavy black vine weevil (BVW) (*Otiorhynchus sulcatus*) infestations going ignored in Ohio landscapes. Although BVW has less of an impact on established plants in landscapes compared to plants in nurseries, the occurrence of this non-native weevil in landscapes may present several pest identification and management challenges. First, adults feed at night and hide during the day in the duff beneath infested plants. Second, although the weevil is most commonly associated yews and rhododendrons, the adults can feed on over 100 different plant species. Landscape managers should examine multiple plant species for the characteristic leaf-notching damage caused by the adult weevils.

The adults are approximately 1/4" long. They have a narrower head and relatively short snout when compared too many other weevils. Their thorax is rounded and their abdomen is oblong-shaped. As their common name indicates, they are black; however, their color is slightly muted by pits and deep striations as well as small patches of yellow hairs on their wing covers. Their wing covers are fused which means the adults cannot fly. When disturbed, the adults feign death by remaining motionless and holding their legs against to their body.

BVW larvae also present a number of diagnostic and management challenges. The larvae live out-of-sight in the soil where they consume roots. Their feeding damage mimics symptoms caused by other root problems such as moisture stress (too little, or too much water), root-rots, and vole damage. Landscape managers should excavate and examine the root systems of wilting plants for BVW larvae and/or larval feeding damage. The creamy-white larvae have brown, bulbous head capsules and they are C-shaped causing them to superficially resemble white grubs; however, BVW larvae are legless. The larvae are capable of consuming entire root systems and girdling plant stems below the soil line.

The most effective BVW management option in landscapes is to avoid the problem by inspecting plants before they are installed. Since the adults cannot fly, their primary means of long-distance dispersal is by hitchhiking on infested plants. Other management options include making insecticide applications earlier
in the season that target adults before they lay eggs, or insecticide applications that target early instar larvae before they cause significant damage.

A mid-to-late August soil drench application of imidaclorpid (e.g. Merit) targets a "bottleneck" in the life-cycle of the weevil. At this time of the year, a high percentage of the weevil population is in the first instar stage; they are much easier to kill compared to late instar larvae. Also, by eliminating early instar larvae in late summer to early fall, landscape managers may avoid the extensive root damage caused by the much larger larvae in the spring. Entomopathogenic nematodes such as *Steinernema* spp. and *Heterorhabditis* spp. have been successful in controlling BVW larvae in containerized plants; however, results have been highly variable on landscape plants. On the bright side, Dave noted that fall is the best time of the year to attempt to use nematodes for BVW control in landscapes.

B. BAGWORMS IN THE BAG FOR SEASON. In BYGL 2013-20 (08/15/13) we reported that Curtis Young and Joe Boggs were observing common bagworm caterpillars (*Thyridopteryx ephemeraeformis*) in northwest and southwest Ohio, respectively, that were tying their bags to anchorage points and closing the bags' openings in preparation for pupation. This week, Joe and Dave Shetlar noted that they had observed male bagworm pupal skins hanging from the tips of the male bags in the southwest and central parts of the state, respectively. This means the caterpillar feeding season (and damage) has come to the end for this year, and the bagworms have entered the breeding phase of their life cycle.

Bagworms are somewhat unique in their adult development compared to most moths. Male adult bagworm moths superficially resemble dark colored flies; they have wings that lack scales and are very capable flyers. The males also have large antennae that they use to detect and track the "scent of the females."

The adult females never develop into a moth-like insect. They remain inside their bags and develop into something that looks more worm-like than moth-like. The mature bagworm female moths have no wings, no apparent mouthparts, no antennae, and three pairs of very short, dysfunctional legs. Her body is creamy-white with only a few areas that are sclerotized (colored and hardened) and a band of tan colored hairs around her body toward the end of her abdomen. Her abdomen terminates in an ovipositor (egg laying structure) used for depositing and packing her eggs into her pupal case which is her main function in life.

The mature females emit a chemical attractant (sex pheromone) that draws-in the males; mating occurs with the females remaining in their bags. Soon after mating, the female produces overwintering eggs that are laid snug inside of their mother's old bag. Thus, removing and destroying the bags during winter will destroy the eggs and reduce bagworm populations.

C. ASIAN LONGHORNED BEETLE (ALB) UPDATE. Last week (September 6, 2013), the Ohio Asian Longhorned Beetle Cooperative Eradication Program distributed a media update with the latest numbers quantifying eradication efforts here in Ohio.

- 642,525 trees have been surveyed since July 1, 2011.
- 10,193 trees infested with ALB have been confirmed as of August 31, 2013.
- 9,893 infested trees have been removed between November 14, 2011 - August 31, 2013.
- 5,814 high risk host trees have been removed between May 1 - August 31, 2013.
- 13,232 high risk host trees have been treated in 2013.

The area under regulation is 61 square miles. A map of the area can be viewed at - [http://www.agri.ohio.gov/TopNews/asianbeetle/docs/ALB_ohio_quarantine_082112.pdf](http://www.agri.ohio.gov/TopNews/asianbeetle/docs/ALB_ohio_quarantine_082112.pdf).
To stay updated on the ALB situation, BYGLers recommend the following websites:

USDA ALB information site: [http://www.AsianLonghornedBeetle.com]
ODA ALB information: [http://www.agri.ohio.gov/TopNews/asianbeetle/]
Firewood Outreach and Education: [http://dontmovefirewood.org/]

D. GET YOUR GREEN INDUSTRY FIX WEBINAR: OCTOBER 9. We had a great Webinar session in September with a review of a number of insects and Armillaria fungi. Next up: Wednesday, October 9, 8:00 - 8:50 a.m. Join OSU Buckeye Yard and Garden Line (BYGL) experts for this Ohio Nursery Landscape Association's Green Industry Webinar then. If you have questions about registering, contact ONLA at 614-899-1195 or 800-825-5062.

7. WEATHERWATCH.

A. WEATHER UPDATE. The following weather information summarizes data collected at various Ohio Agricultural Research Development Center (OARDC) Weather Stations spanning the dates from September 1 - 11, 2013, with the exception of the soil temperatures which are readings from Wednesday, September 11, 2013 at 11:20 p.m.

Temperatures in the 90s were recorded earlier this week, with a cool down predicted over the weekend. BYGLers all used the word "dry" in their reports - at least once. Amy Stone was the only one to mention receiving any measurable rain early in the week. Curtis Young reported that it had been over 4 weeks since his area received any precipitation. Of the five weather stations listed below, all are running at a month-to-date deficit in the area of precipitation.

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<tbody>
<tr>
<td>Ashtabula</td>
<td>NE</td>
<td>75.7</td>
<td>56.2</td>
<td>0.54&quot;</td>
<td>1.7&quot;</td>
<td>72.59/76.97</td>
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<tr>
<td>Wooster</td>
<td>NE</td>
<td>79.6</td>
<td>55.6</td>
<td>0.12&quot;</td>
<td>1.2&quot;</td>
<td>75.33/75.23</td>
</tr>
<tr>
<td>Hoytville</td>
<td>NW</td>
<td>83.0</td>
<td>56.9</td>
<td>0.02&quot;</td>
<td>0.9&quot;</td>
<td>76.77/76.16</td>
</tr>
<tr>
<td>Columbus</td>
<td>Central</td>
<td>83.8</td>
<td>60.4</td>
<td>0.00&quot;</td>
<td>1.0&quot;</td>
<td>78.84/78.46</td>
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<tr>
<td>Piketon</td>
<td>South</td>
<td>84.8</td>
<td>58.1</td>
<td>0.38&quot;</td>
<td>0.5&quot;</td>
<td>76.81/77.34</td>
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For a link to the OARDC Weather Stations, visit: [http://www.oardc.ohio-state.edu/centernet/weather.htm].

8. COMING ATTRACTIONS.

A. DIAGNOSTIC WALKABOUT FOR THE GREEN INDUSTRY. Diagnostic Walkabout for the Green Industry series is once again occurring around Ohio this summer. ONLA, AGI and OSU Extension will be hosting 1 more event in 2013: September 26, Sunset Memorial Park, North Olmsted. Pre-registration is required and class size is limited to 30 per class. ODA, ISA and OCNT credits available. For registration, location and pesticide credit information see: [http://www.onla.org].

B. FARM SCIENCE REVIEW. This year's Farm Science Review takes place September 17 - 19, 2013 at The Ohio State University's Molly Caren Agricultural Center outside London, OH. Participants can peruse 4,000 product lines from 600 commercial exhibitors, and capitalize on educational opportunities
from Ohio State and Purdue University specialists. Farm Science Review pre-show tickets are $7.00 at all OSU Extension county offices, many local agribusinesses, and also online at [http://fsr.osu.edu/visitors/tickets]. Tickets are $10.00 at the gate. Children 5 and younger are admitted free. Hours are 8 a.m. - 5 p.m. September 17 - 18 and 8 a.m. - 4 p.m. September 19, 2013.

C. CHESTNUT WORKSHOP. Before the blight, American chestnuts were majestic forest trees, sometimes called "the Redwoods of the East." A keystone species, one in four trees of the eastern US forest was a chestnut. These huge trees were highly valued since the golden hardwood resisted rot, and its crop of sweet nuts fed abundant wildlife and generations of Americans. Learn how to bring back the chestnut through a morning workshop, followed by lunch and tours to three nearby chestnut sites. Participants will also receive at least one pure American chestnut seedling, and seeds to grow next spring in your garden, farm or woodland.

The workshop starts at 10:00 a.m. on September 21, 2013 and will be held in NW Ohio at the Swanton Public Library, 305 Chestnut Street, Swanton, Ohio. The cost of the workshop is $25.00. The Fulton County Soil and Water Conservation District is handling the workshop registration. They can be contacted at [kbowles@fultoncountyoh.com], or by calling 419-337-9660.

The workshop presenter is Penn State University Researcher, Sara Fern Fitzsimmons. She is also the Regional Science Coordinator of the American Chestnut Foundation. Sara will share chestnut history, planting and growing methods; common diseases and pests; and leaf and wood identification. The workshop is co-sponsored by Lange Tree Farm, Lucas and Fulton Soil & Water Conservation Districts, Wild Ones-Oak Openings Region, Metroparks of the Toledo Area, OSU Extension-Lucas County, Owens Community College, ODNR Maumee State Forest, Black Swamp Conservancy, and the Oak Openings Green Ribbon Initiative.

D. NAME THAT TREE WORKSHOP. Join fellow tree IDers on September 27, 2013 at the Secrest Arboretum of Ohio State University's Ohio Agricultural Research and Development Center in Wooster, Ohio. We will be conducting a Name That Tree Workshop sponsored by the OSU Extension Woodland Stewards and Nursery Landscape and Turf Teams, combining tree ID from both sides now, from woodland species to landscape cultivars. You can register online at woodlandstewards.osu.edu. It will be a full day of indoor and outdoor sessions at the Jack and Deb Miller Pavilion and the Arboretum plantings. Cost is $35. Also check out all the other great Woodland Stewards programs listed on the site.

E. WHY TREES MATTER FORUM. The annual Why Trees Matter Forum, after a year's hiatus, returns to Ohio State and Wooster, Ohio this autumn on Wednesday, October 16, 2013. Details will be forthcoming regarding registration, but you will be sure to learn a great deal about the multiple benefits of trees and the practice of learning and teaching about these benefits. We will discuss the latest on i-Tree benefits, the OSU Arbo-Charrette Program, the Tree Campus USA program of the College of Wooster, updates on the pervasiveness of invasiveness in our urban and woodland forests (including the new Great Lakes Early Detection Network smartphone application). We will also highlight wildlife and trees, in a much-anticipated talk by Marne Titchenell of the OSU School of Environment and Natural Resouces. Green ink your calendar.

F. THE ArborEatUm EDIBLE LANDSCAPE WORKSHOP. The date for this workshop is changed to Wednesday, October 9, 2013 (5:00 - 8:00 p.m.) at Secrest Arboretum. It is not too early to plan for this, as Laura acknowledged with her morning cooking. From file gumbo with its ground up young sassafras leaves to Chef Paul Snyder and his International Ornamental Crabapple Society-renowned Malus Mo Mas Magnifico Meatball Munchies this event will be a true celebration of hort cuisine. It is for everyone who loves landscape plants and good eats, it will include walks, talks and good eats, and there will be few rules other than table manners.
Did you actually grow the landscape plants used in the dish you bring, is the plant common or just occasional in Ohio landscapes? Not to worry, no horticultural or food police will be on hand. Though there will be a judging of sorts. That is because the cost of the program will be on a sliding scale: $25 if you just attend, $20 if you bring an edible landscaping recipe, $15 if you bring the actual dish to share of that recipe, and $10 if your recipe is selected by attendees for the ArborEatUm Cookbook fundraiser for Secrest Arboretum during Plant Discovery Day next May 10.

So try your hand at blueberry buckle (blueberries grow well in acid soils in northeast Ohio and have great fall color as an ornamental), corneliancherry dogwood jelly or cider, serviceberry pie from berries frozen earlier this summer (are you listening Bill Hahn, City of Akron Arborist) or wherever your Landscape Kitchen imagination lands. One recipe to share now:

*Mike Lee's Nearly World Famous Dolgo Crabapple Butter*

Start with 8 lbs of crabapples. Wash in a large kettle and cover with water. Heat to a boil. Simmer until fruit softens. Drain, then process through a mill. To the sauce add 3 lbs of sugar, two quarts of cider, one tablespoon of cinnamon, and a teaspoon of cloves. Simmer under low heat or use a large crock pot for 2 - 4 hours. Stir occasionally. As Mike notes, the house will then smell great. Pour off hot Dolgo butter into jars. Process in a hot water bath or freeze. Man oh man!

Check out registration details at [http://go.osu.edu/chatfield](http://go.osu.edu/chatfield).

9. **BYGLOSOPHY.** "Two-legged creatures we are supposed to love as we love ourselves. The four-legged, also, can come to seem pretty important. But six legs are too many from the human standpoint." - *Joseph W. Krutch*

**APPENDIX - ADDITIONAL WEBSITE RESOURCES:**

Ask a Master Gardener Volunteer (Consumer Gardening Questions)
[http://mastergardener.osu.edu/ask](http://mastergardener.osu.edu/ask)

Buckeye Turf
[http://buckeyeturf.osu.edu](http://buckeyeturf.osu.edu)

Emerald Ash Borer Information
[http://ashalert.osu.edu](http://ashalert.osu.edu)

Growing Degree Days and Phenology for Ohio
[http://www.oardc.ohio-state.edu/gdd/](http://www.oardc.ohio-state.edu/gdd/)

Hungry Pests Website

Ohio State University Department of Horticulture and Crop Science Plantfacts
[http://plantfacts.osu.edu/web/](http://plantfacts.osu.edu/web/)

Ohio State University Extension Master Gardener Volunteer Program
[http://mastergardener.osu.edu](http://mastergardener.osu.edu)
The C. Wayne Ellett Plant and Pest Diagnostic Clinic (CWEPPDC)
http://ppdc.osu.edu/

USDA APHIS Beetle Buster Website (Asian Longhorned Beetle)
http://www.beetlebusters.info/

USDA APHIS Beetle Detective Website (Asian Longhorned Beetle and Emerald Ash Borer)
http://beetledetectives.com/

Following are the participants in the September 10th conference call:  Joe Boggs (Hamilton); Cindy Meyer (Butler); Dave Shetlar (Entomology); Any Stone (Lucas); Curtis Young (Van Wert); and Randy Zondag (Lake).

BYGL is available via email, contact Cheryl Fischnich [fischnich.1@cfaes.osu.edu] to subscribe or to unsubscribe. Additional fact sheet information on any of these articles may be found through the OSU FactSheet database [http://plantfacts.osu.edu/web].

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BYGL is available online at: [http://bygl.osu.edu], a website sponsored by the Ohio State University Department of Horticulture and Crop Sciences (HCS) as part of the "Horticulture in Virtual Perspective." The online version of BYGL has images associated with the articles and links to additional information.

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