BUCKEYE YARD AND GARDEN LINE 2015-06
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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 6th 2015 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.

******HOW TO: BUCKEYE YARD AND GARDEN LINE SUPPORT. The Ohio State University (OSU) Buckeye Yard and Garden Line (BYGL) writers need your support to continue this newsletter. OSU puts a great deal of resources into this project and we do not receive funding necessary for full support. We know you like BYGL, as in the 2014 Reader's Survey respondents indicated BYGL saved them $2.45 million dollars, 96% indicated BYGL was useful in their jobs, and 87% indicated BYGL helped with their diagnostic skills.

Funds will support on-going work of the Ohio State University Extension Nursery Landscape and Turf Team in matters regarding preparation, compilation and travel for the weekly April-October BYGL e-newsletter. Expenditures will include but not be limited to equipment such as cameras, upgrades of computers and related devices, management of the website, editing and webinar costs, and travel reimbursements.

Here's how you show your support:

This is the direct link to the OSU giving site: [http://go.osu.edu/byglsupport].

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Go to [https://www.giveto.osu.edu/makeagift/OnlineGivingDonation.aspx?fund=315145] and click on "search," then enter the fund number into the box. The fund number is 315145 and the name is Buckeye Yard & Garden Support. The fund, its name and description will appear in a new, smaller box. Click "Select this fund."

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Also, if you would like to make a larger gift, please contact Jennifer Heller ([heller.4@osu.edu]), the Director of Development for the OSU College of Food, Agricultural and Environmental Sciences with your name and contact information. Jennifer's cell phone number 614.975.1317 and she will be more than happy to speak with you.

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1. PLANTS OF THE WEEK.

*ANNUAL - DIANTHUS or GARDEN PINK (*Dianthus chinensis*). This annual plant is perfect for early spring and fall plantings as it loves the cooler weather. Recent introductions are now available that actually tolerate a little warmer weather and flower later into the spring and early summer. Plant them in full sun or part shade, either in the ground or in containers. I like them in a part shade situation as this will allow them a little cool comfort in the heat of the summer, possibly giving you a longer season of color. Deadhead senescing blooms to encourage more flowering. Once they seem to have finished the first flush of blooms in the cool season, cut the plants back about half-way then wait for the cooler temperatures of fall to be rewarded by their flowers again. They sometimes reseed and come back again the next season.

The plants, depending on the cultivar, can grow between 6 - 18” in height. The taller varieties are great to use for cut flowers. Flower colors are usually in the pastel range and include white, pink, purple, and bicolor; there are also red flowers as well. Keep the soil moist (they don't tolerate dry soils) and well-drained. They can be planted in containers for early spring color and then transplanted into the garden for the rest of the season.

*Author: Pamela J. Bennett*

*PERENNIAL - BAPTISIA or FALSE INDIGO (*Baptisia australis*). Julie Crook reported that this plant was beginning to bloom at the Cincinnati Zoo and Botanical Garden and is one of her favorite perennials. This native (to Missouri, Kansas and south to Texas) plant does quite well in poor soils and drought conditions in Ohio gardens. The indigo blue flowers are quite showy and remind you of a lupine. They last around 2 weeks, appearing during May and June. After that, seed pods develop and eventually turn brown and hang on the plant until a freeze in the fall, giving it another season of interesting appearance. The seed pods are great for dried arrangements and will last for a while in an arrangement.

You can also find cultivars that have various colors and growth habits. ‘Purple Smoke’ is a hybrid of *B. australis var alberrans* and *B. alba* and has charcoal-gray to a dusty-purple flowers (looks like a puff of smoke rising above the plant). The ‘Prairieblues’ hybrid series was develop by Dr. Jim Ault at the Chicago Botanic Garden and are plants that have been crossed, ending up with flowers ranging from light periwinkle blue (Starlite), to deep violet-purple (Twilight), to deep blue-violet (Midnight), to a buttercup-yellow that fades to apricot, then to plum (Solar Flare).

False indigo grows to around 3 - 4’ tall and as wide with a rounded shrubby habit. It tolerates full sun to part shade; too much shade and it will become leggy and flop. Don't over fertilize this plant either as this will cause leggy growth and lead to a floppy habit. In fact, false indigo looks better if you shear it after
blooming to encourage a more compact growth habit. That said, if you do shear it, you will lose the seed pods and their fall-season effect. Or, be sure to stake it early in the season to prevent flopping. A final note, before you plant false indigo, make sure you locate a permanent home. It does not like to be divided and if anyone has ever tried to dig and divide, well, let's just say I tried it once and will never do it again!

Author: Pamela J. Bennett

*WOODY - KOREAN MAPLE (*Acer pseduosieboldianum*). Korean maple is also known as purple-bloom maple due to flowers with purple bracts. This native of China and Korea is a specialty small maple (15 - 25") with both delicate and spectacular features. In the spring, the new foliage is soft and covered with downy hairs. Flowers are hanging in clusters and give an appearance of finery paired with the new foliage. Leaves have about 10 lobes and are 4 - 5" across. The truly spectacular nature arrives in fall with bright oranges and purples as well as more subdued burnt oranges and bronzes. It is quite a show, though brief and later than many other maples color. Plant Korean maple in sun-dappled, partial shade or in full sun as long as roots are protected from hot, dry conditions. Korean maple has excellent hardiness.

Author: Jim Chatfield

*FRUIT - BLUEBERRY (*Vaccinium* spp.). Blueberries have many health benefits and are becoming more and more desirable to grow in the home garden, although in Ohio they are not as well-suited for our soils. By making some alterations to the growing area such as, using raised beds and/or containers to help increase soil drainage, utilizing elemental sulfur to lower pH (blueberries need a pH between 4.5 – 5.2), providing high organic matter (5 - 7%), and a consistent supply of water, growers can be successful with growing blueberries.

Many plants are commercially grown in southern Michigan in the sandy, well-drained soils that are found there. Highbush blueberries (*Vaccinium corymbosum*) are the primary type of blueberry grown commercially, although others such as southern highbush (*Vaccinium* spp.), rabbiteye (*V. virgatum*; syn. *V. ashei*), and lowbush (*V. angustifolium*) are also commonly grown. Some of the suggested blueberry cultivars for the home garden are ‘Bluecrop’, ‘Bluejay’, ‘Blueray’, ‘Duke’, ‘Draper’, ‘Herbert’, and ‘Elliott’.

Growing recommendations include, planting two different cultivars for cross pollination to boost yield as well as conducting a soil test to determine the soil pH. When planting, incorporate 30% (by volume) sphagnum peat moss into the garden soil to increase organic matter content. Cover the top of the rootball with 1" of amended soil. Mulch around the blueberry bushes with 4 - 5" of bark mulch, sawdust, or peat moss. Make sure that the mulch does not touch the blueberry canes at the crown level. Water blueberry bushes 2 - 3 times a week.

Author: Cindy Meyer

*WEED - JAPANESE KNOTWEED (*Polygonum cuspidatum*). Don't let the ornamental red stems and pretty small white flowers trick you into thinking this is a nice ornamental shrub. Japanese knotweed is an invasive weed that came to the US from eastern Asia as an ornamental in the late 1800s. It is also called Mexican bamboo, Japanese bamboo, and fleece flower and can grow to a 3 - 15’ tall multi-stem, bamboo-like woody shrub that overpowers other plants.

Japanese knotweed thrives in disturbed areas such as highways, streams and old farmsteads. This aggressive pest spreads by seeds and hardy underground rhizomes. New red shoots emerge in the spring from rhizomes. The adult plant has a hollow stem that resembles bamboo with green, oval leaves arranged alternately. Cornell Cooperative Extension provides multiple photos of Japanese knotweed in various stages of development at: [http://yates.cce.cornell.edu/environment/invasive-species/invasive-plants/japanese-knotweed](http://yates.cce.cornell.edu/environment/invasive-species/invasive-plants/japanese-knotweed).
Controlling Japanese knotweed is a challenge. Mechanical controls such as pulling, cutting, mowing, and digging are generally not effective because the rhizome spread makes it difficult to remove; even a small portion of rhizome will send up a new plant. Some control success has been reported with a combination of systemic chemicals and mechanical methods, but requires repeated applications for multiple years. With any herbicides, always read and follow label instructions and follow all precautions. Since Japanese knotweed may be near streams or rivers, care should be taken to use products safe for aquatic organisms.

Author: Denise M. Johnson

2. HORT SHORTS.

A. SPRING NEEDLE DROP ON YEW. The annual spring needle drop on yews (Taxus spp.) illustrates that "evergreen" is a relative term for both narrow-leaf and broad-leaf evergreens. The fact that shed leaves and needles are a common feature beneath healthy evergreens is evidence that these plants naturally jettison foliage. The time of year that an evergreen drops its needles or leaves is based on the age of the foliage and the plant species. Older foliage on most pines, junipers, and arborvitae take their leaf in late summer to early fall with white pines often providing the most dramatic display.

Hollies, southern magnolias, and yews shed their old foliage in the spring. Joe Boggs reported that the annual needle drop on yews is particularly evident this spring in southwest Ohio. Participants in this week's SW Ohio Diagnostic Walk-About were treated to a dramatic display of yellow-to-brown inner needles on yews making plants look like they were suffering some horrible malady. While the needle discoloration certainly affects the aesthetic appeal of the yews, it is a temporary condition. Of course, landscape managers should pay close attention to the age of the discolored needles: yews naturally discard three year old needles. Discoloration of younger needles singles that something unnatural is occurring and should be investigated.

Author: Joe Boggs

B. YOUNG TREES NEED TRAINING. The purchase has been made and the trees are in the ground. You may ask, "What is the next step?" In addition to immediate water and maintenance practices to deal with broken, rubbing or misshapen branches, the next five years is very important for both the establishment and training of the shape of the tree to come.

Pruning will establish the overall structure of the plant as it matures. This pruning begins while the tree is still in the nursery. Trees trained earlier tend to be stronger, healthier and less expensive to maintain as they mature. Wounds made for these cuts as the tree is young, are smaller in comparison to a mature tree and often less decay results.

The growth can be directed to improve structure and strength, and possibly correct some weaknesses that occurred including co-dominant leaders, crossing branches, and inward growing branches. A few cuts can go a long way! But don't reach for the pruners just yet. Years ago, there was the thought that newly planted trees should be pruned immediately to regain balance between the above and below ground portions of the plant. Rather, it is more important to not remove the leaves to aid in the establishment of the newly developed root systems. The tree will find that balance naturally.

Many communities, landscape crews, and residents schedule the first tree training in third year after planting. Late winter is a good time to prune unless you are concerned that you will be reducing the number of flowers that will be displayed in the spring or summer. Trees that are known for producing watersprouts are sometimes pruned after leaves have fully expanded in the spring.
A general rule of thumb is never to remove more than 25% of the canopy in a single year. Focus on the central leader and the spacing and distribution of the scaffold branches. Low branches can be removed to increase access and spacing between rows established.

So have your plan in place when it comes to training and maintaining young trees in the landscape or treescape. You will be happy as you and the trees grow old together.

Author: Amy Stone

3. BUGBYTES.

A. EASTERN TENT CATERPILLAR OBSERVATIONS. In BYGL 2015-02 (04/16/15), we reported that overwintered eastern tent caterpillar (ETC) (Malacosoma americanum) eggs had hatched in southwest Ohio. This week, Pam Bennett reported nests are “softball size” and larger in Clark County while Joe Boggs noted that the caterpillars are completing their development in Hamilton and Butler Counties. They are also beginning to abandon their nests located in branch forks. Populations of this native moth fluctuate dramatically from year-to-year with huge numbers and heavy defoliation occurring during "outbreak" years following by an almost complete disappearance of ETC. Populations are generally moderate in Ohio this season with only a few areas around the state experiencing noticeable defoliation.

This is not the case in parts of southern Pennsylvania, northern West Virginia, and western Maryland. While driving through those states to teach in a multi-state pesticide applicator recertification program near Hagerstown, MD, last week, Joe and Jim Chatfield observed heavy ETC populations producing 100% defoliation on cherry; their preferred host tree. The heavy defoliation was causing caterpillars to leave their nests to go on a crawl-about in search of additional food. Last instar caterpillars will also leave their nests to search for pupation sites. The movement of the caterpillars can create dramatic caterpillar displays such as waves of caterpillars crossing roads and huge collections gathering on the tops of fence posts; both were observed by Joe and Jim.

The caterpillars are covered in short, grayish-white hairs. They have a distinct unbroken white stripe down their back flanked by golden-brown lines and a row of oval black and blue spots running along their sides. The caterpillars construct dense, multi-layered silk nests in branch forks and lay down trails of coarse silk on the bark of twigs, branches, and trunks which they follow to foliage where they feed. They prefer to feed on trees in the family Rosaceae, particularly those in the genus Prunus, such as cherries. However, nests may also occur on other rosaceous trees including apple, crabapple, plum, peach, and hawthorn as well as maple. Once the caterpillars commence their walk-abouts, they may also appear on a wide variety of plants far outside of their usual cuisine. Joe and Jim observe a small amount of feeding damage on a sycamore. Fortunately, they do little damage to non-preferred hosts so the impact is inconsequential.

However, ETC was found to be responsible for some very serious collateral damage in 2001 when very high caterpillar populations occurred in the Lexington, KY, region. Over about a three week period during the spring of that year, 20 - 30% of the thoroughbred mares in the area suffered abortions. These foal losses were termed Mare Reproductive Loss Syndrome (MRLS). Ensuing research showed that the barbed ETC hairs (setae) inadvertently consumed by the horses could penetrate the lining of the horse’s gastrointestinal tract. Fragments of the setae which also carried bacteria could then circulate in the blood stream to eventually penetrate placental tissue which lacks an immune response capability. The subsequent bacterial infection caused the deaths of late-term fetuses. The estimated economic loss to the thoroughbred horse industry in central KY from MRLS was over $500 million.

Author: Joe Boggs

B. ANNUAL MAPLE LEAF-DROP COMMENCES. The annual leaf drop caused by MAPLE PETIOLE BORER (Caulocampus acericaulis) on sugar maples is well underway in southwest Ohio and beginning
to occur in the central part of the state. Although sugar maples are generally preferred, this sawfly will also occasionally infest other maples. Fortunately, while the number of fallen leaves beneath an infested tree may look dramatic, defoliation seldom exceeds levels that are considered detrimental to the overall health of the tree.

This non-native sawfly was introduced into the United States from Europe. It spends the winter in the pupal stage buried 2 - 3" in the soil beneath the affected tree. Adults emerge in the spring and after mating, the females use their saw-like ovipositors to insert a single egg into the petiole near the leaf blade. The resulting grub-like larva feeds by boring down the center of the petiole. The resulting damage causes the petiole to break near the base of the affected leaf; however, the larva remains in the portion of the petiole that remains attached to the tree. Eventually, this portion of the petiole will also detach and drop to the ground where the larva crawls into the soil to pupate. There is one generation per year.

The initial symptoms of a maple petiole borer infestation are highly variable. Some leaves may become wilted and discolored while still attached to the tree, with the petioles collapsing and turning brown just prior to leaf drop. Other infested leaves show no outward symptoms and appear perfectly healthy when they drop from the tree. However, all of the fallen leaves will retain only a very small portion of the hollowed-out petiole. Since larvae stay inside the portion of the petiole that remains attached to the tree, raking and destroying fallen leaves will not reduce the sawfly population. Fortunately, while the leaf drop may appear dramatic, the actual impact on the overall health of affected trees is minimal, so controls are not necessary.

Author: Joe Boggs

C. HYDRANGEA LEAF-TIER MOTH. Pam Bennett reported that participants in her weekly Master Gardener Wildflower Walk in Clifton Gorge were treated to the handiwork of the hydrangea leaf-tier moth (Family Tortricidae; Olethreutes ferriferana) on its native namesake host. Individual caterpillars apply silk along the edges of two newly expanding hydrangea leaves to cement or tie the leaves together creating an envelope-like structure surrounding newly developing leaves and flowers. The caterpillars then feed upon the leaves and flowers enveloped within these odd looking structures. The leaf structures created by this leaf-tier caterpillar tend to occur near the tips of plant stems and may be very obvious.

The two leaves tied together by the caterpillar fail to fully expand and become dark green, wrinkled and gnarled. The structure superficially resembles a plant gall. Opening the tied leaves will reveal the caterpillars housed within silk littered with dark green frass pellets. The light green semi-transparent caterpillars have shiny black head capsules and a black thoracic shield on top of the segment just behind the head.

Published records indicate that high populations may occasionally cause significant harm to wild and cultivated hydrangeas; however, it is more common for the caterpillars to be viewed as an oddity affecting plant aesthetics. If control is deemed necessary, the caterpillars may be eliminated by squeezing the leaf structures to kill the caterpillars. Unfortunately, the leaf structures shield the caterpillars from direct exposure to a topical insecticide and there is no data on the efficacy of systemic insecticides.

Author: Joe Boggs

D. BOWL AND DOILY WEAVER. Curtis Young thrilled BYGLers with some striking images of one of the more interesting sheetweb weavers found in Ohio; the bowl and doily weaver (Frontinella communis). The spider constructs a complex web structure consisting of distinctly bowl-shaped webbing suspended from plant stems by a crisscrossing array of silk threads; this is the "bowl" in the common name. The bowl is anchored below by a horizontal array of interwoven silk threads; the "doily." Flying insects drop into the web-bowl after bouncing in pin-ball fashion off the interlacing silk threads used to suspend the
web. Of course, when they drop into the web-bowl, they fall into the "arms" (and fangs!) of the awaiting spider!

There are over 600 species of spiders found in Ohio and most feed almost exclusively on insects. Ohioans may be surprised at the large number of spiders living in their landscaping when heavy morning dews reveal the gossamer creations of these important predators. The bowl and doily weaver belongs to the family known as the SHEETWEB WEAVERS (Family: Linyphiidae). Sheetweb weavers construct several types of webs depending upon the spider species. Some species spin flat or slightly curved webs that overlay vegetation and rival the sizes of webs spun by FUNNEL WEAVERS (Family: Agelenidae). However, there is no funnel in the web. The spiders hide beneath one edge of the web, or in plant foliage along the edge of the web, to await their prey.

Author: Joe Boggs

E. FOURLINED PLANT BUG DAMAGE SHOWING UP IN GARDENS. This common perennial and herb pest (*Poecilocapsus lineatus*) is showing up in gardens in southern and central Ohio according to Joe Boggs and Pam Bennett. The fourlined plant bug has been found to damage over 250 species of plants in 57 families. In the garden, they tend to go after plants in the mint family (mints, basil, and saliva) and the composite family (asters, sunflowers, mums and more).

The damage appears as little brown spots on the foliage, especially the newer growth. Upon closer inspection of the brown spots, you will see that the tissue in that area is sunken. The brown spots sometimes coalesce and become a big brown spot of dead distorted tissue. Damage is caused by the plant bugs inserting their mouth part (stylet) into the plant tissue and injecting saliva that dissolves the tissue. The plant bug then proceeds to suck out the liquefied plant tissue. The result is the sunken lesion that is circular or angular. Feeding on the new tender growth can result in severe distortion and cupping of the foliage.

The nymphs and adults can sometimes be found feeding at the same time; though in central Ohio, nymphs are still more prevalent. Take a close look at the leaves to find these fast moving plant bugs. The plant bug adult looks just like its name implies as it has 4 distinct black lines down its yellowish to greenish-colored back. The nymph is a reddish-orange color with black wing pads.

The good news about this pest is that it has only one generation per year and is active in the spring, at the same time new growth is going gangbusters. Once their feeding is completed, pruning or pinching the damaged growth takes care of the brown leaves and since it’s early enough in the season, new growth resumes and covers up any remaining damage. The plant bug inserts eggs in the host plant tissues by the fall, therefore, fall clean up and removal of dead stems helps to reduce the impact next season. You can also hand crush small populations of nymphs. If the damage is more than you can tolerate, you can use soaps and oil sprays on the nymphs. Be sure to hit the nymphs directly with the spray.

Author: Pamela J. Bennett

F. WINDSHIELD WIPES. BYGLers also ran into a number of other insect pests this week including:

* Curtis Young shared a very nice photograph of a FOREST TENT CATERPILLAR (*Malacosoma disstria*) that he took in central Ohio; he only found the single caterpillar. Despite its common name and shared taxonomy with eastern tent caterpillar, forest tent caterpillars produce only rudimentary silk nests involving single leaves. They feed en masse and outbreaks of this native caterpillar have occurred in recent years in the southern part of the state causing heavy spring-time defoliation of maples as well as oaks; damage to oaks is sometimes mistaken for GYPSY MOTH (*Lymantria dispar*) defoliation. Forest tent caterpillars have short grayish-white hairs and a row of distinct white "footprint" or "keyhole" markings running down their backs. The markings are flanked by cobalt-blue lines running the length of the caterpillars’ bodies.
* Amy Stone reported observing the handiwork of the WITCHHAZEL CONE GALL APHID (*Hormaphis hamamelidis*) on its namesake host in northwest Ohio. Joe Boggs noted that participants in this week's S.W. Ohio Diagnostic Walk-About also observed the cone galls. The descriptively named galls rise from the upper leaf surface; they are at first light green but eventually turn deep red. Opening the developing galls will reveal either a single, greenish-white, "stem mother" that directs gall development and is eventually enveloped by the gall, or large numbers of similar looking progeny produces asexually by the stem mother.

The aphid has a complicated life-cycle involving multiple generations; however, it only focuses its attention on witchhazel. This is unlike the SPINY WITCHHAZEL APHID (*Hamamelistes spinosus*) (a.k.a. RIVER BIRCH APHID) which alternates between witchhazel where it hi-jacks developing buds to produce spiny galls and river birch where resides on the underside of leaves to produce the characteristic symptom of corrugated leaves. The cone gall aphid only affects plant aesthetics and it causes no appreciable harm to the overall health of its witchhazel host.

* Pam Bennett reported observing "disappearing" columbine leaves; the handiwork of the COLUMBINE SAWFLY (*Pristophora aquiliage*). A closer examination of the containerized plant in Clark County revealed the culprits. The deep-green larvae have a brownish-green head capsule and like all sawfly larvae, they strongly resemble caterpillars. However, it is important to correctly identify sawfly larvae because caterpillars which grow up to become moths and butterflies can be killed using the naturally occurring bacterium, *Bacillus thuringiensis* (Bt). The bacterium has no effect on sawfly larvae which are related to bees and wasps.

Sawfly larvae can be distinguished from caterpillars by counting the number of prolegs; the fleshy legs found on the backend of the immature insects that are lost during pupation. Sawfly larvae have 6 - 9 pairs of prolegs while caterpillars have 2 - 5 pairs; the same number or less than the number of fingers on your hand. Columbine sawfly larvae are specific to their namesake host. They start feeding on the leaf edge and eat inward devouring all of the leaf tissue. They will sometimes leave the mid-veins producing damage that make plants look like they were sprouting match sticks.

* Danae Wolfe reported that the larvae of the viburnum leaf beetle (VLB) are actively feeding on the foliage of the namesake host plants. VLB is very well established in NE Ohio and is found as far south and west as the OSU Mansfield Campus in Richland County. VLB feeds on multiple members of genus *Viburnum*, but highly favors the native arrowwood viburnum (*V. dentatum*), European cranberrybush viburnum (*V. opulus*), and blackhaw viburnum (*V. prunifolium*). VLB larvae tend to feed from the undersides of the host plant leaves. The larvae develop through 3 instars, the smallest appearing somewhat black in color while the largest being primarily greenish-white to yellowish in color with black spots. Large populations of larvae may completely defoliate shrubs upon which they are feeding. VLB larvae are easily controlled with insecticides, however one should be careful with applications during periods when viburnum is blooming to protect pollinators. Systemic insecticides work well against VLB, but they should only be used after the viburnum are no longer blooming for the year.

*Author: Curtis E. Young*

4. DISEASE DIGEST.
A. RUSTS ARE BUSTING OUT ALL OVER. In BYGL 2015-4 in late April, we talked about disease cycles, and their infinite variety. No other diseases say this best like rust diseases. CEDAR APPLE RUST is showing its beauty and beast nature right now, with telial horns of the Gymnosporangium juniperi-virginianae fungal pathogen oozing forth spores in all their glory on junipers (Eastern red cedar) in northern Ohio. These spores will follow the wind to their alternate hosts, plants in the rose family such as apple, crabapple, and hawthorn. This dual nature of widely divergent host plants - junipers and apples - that this fungus must cycle between to complete its life cycle, earn this rust disease the moniker of a "heteroecious" rust.

Two common woodland examples of rusts with simpler life cycles, that complete their range of spore types and their life cycles on only one host plant ("autoecious" rusts) are MAY-APPLE RUST and JACK-IN-THE-PULPIT RUST. May-apple rust with its bright orange spore stage and then its rusty red spore stage seems as omnipresent as may-apples in the woods, suggesting that it causes little overall damage to the plant in terms of survival. Look for it as the season progresses. Jack-in-the-pulpit rust is perhaps less common, and in fact one BYGLer who noted it this past week did not realize it was present on a plant he was photographing, until looking at the images on this computer later that night.

Check out rusts and check out one of the rusts that produce galls (cedar apple rust) in a recent American Nurseryman article by Joe Boggs and Jim Chatfield ([http://www.amerinursery-digital.com/#&pageSet=0&contentItem=0]).

Author: Jim Chatfield

B. BACTERIAL WETWOOD. This is a bacterial disease of elms and a number of other trees, including ash, fir, maple, birch, hickory, beech, apple, mulberry, oak, sycamore, poplar, cherry, plum and linden. A number of different bacterial species in the interior of the tree cause fermentation that results in the spewing forth of foul-smelling (unless you are an insect in search of an alcoholic high), foamy liquids known as slime flux. As this slime flux drains down the tree it damages bark and cambium, leaving light and dark streaks and encrusted slime. Although tubes to drain off the slime flux have been used to prevent damage to the trunk, typically this problem is not considered serious on landscape plants and few control practices are used.

5. TURF TIPS.

A. SEEDY LAWNS. Joe Boggs reported that seedheads are rising above TURF-TYPE TALL FESCUE (Festuca arundinacea) lawns in southern Ohio. This is a natural event at this time of the year and it can also occur with other turfgrasses used in home lawns including KENTUCKY BLUEGRASS (Poa pratensis). Unfortunately, an abundance of seedheads can wreck the aesthetic appeal of a lawn and the physiological effects on turf plants may temporarily reduce overall turf quality.

Seedhead production saps energy from the plant and may cause turf blades to become sparse and off-colored. The seed stalks have fewer leaf blades and their woody structure resists mowing which adds to the eyesore. Seedhead production is seldom consistent throughout a home lawn and it sometimes occurs in patches. Thus, the problem is often made more obvious by patches of seedheads occurring in an otherwise smooth, dark green lawn.

Turfgrass seedheads usually begin to form below the recommended mowing height of 2 1/2 - 3" for lawns, thus the seedheads will still develop despite frequent mowing. However, turf managers should not lower the mowing height in an attempt to remove all of the seedheads. Seedheads are a short-live aesthetic problem; they do not cause long-term damage to turf plants. The stress produced by low-mowing can cause long-term injury to turf plants.

Frequent mowing will not prevent seedhead development; however, infrequent mowing will allow seedheads to fully develop with the seedheads rising to their full glory to tower above the turf plants.
Thankfully, the unsightly seedheads and stalks will eventually disappear on their own allowing Ohio lawns to return to an aesthetically appealing uniformly green carpet.

Author: Joe Boggs

6. INDUSTRY INSIGHTS.

A. EMERALD ASH BORER (EAB) UPDATE. Things are turning green. Whether it is the grass, trees, shrubs, or herbaceous plants, spring has definitely sprung. Something else that you may begin to notice that is also green is the first emergence of the emerald ash borer adults. The emergence occurs at about the same time the black locust is blooming.

While many of Ohio’s ash trees have succumbed to the EAB larva, occasionally we receive a telephone call or email from a resident that still has an ash tree that was spared its life - well at least for now.

Kathleen Knight with the USDA Forest Service’s Northern Research Station in Delaware, Ohio lab is working with others to encourage residents to report those trees. Recently there was an article in the Winter Issue of the Ohio Woodland Stewards Newsletter about these surviving ash. Kathleen was inspired by a surviving ash tree just outside her research plot at Oak Openings Metropark, just west of Toledo, Ohio. Knight and her colleague Jennifer Koch, a research biologist have been working on this project and are now looking for citizens’ help in finding survivor ash trees. Last fall, the Northern Research Station launched a new on-line system for reporting the location of survivor ash trees in 10 southeastern Michigan counties and 7 northwestern Ohio counties (Williams, Fulton, Lucas, Defiance, Henry, Wood, and Ottawa): [http://www.nrs.fs.fed.us/SurvivorAsh].

Visitors to the survivor ash page can identify the general location of a tree by entering an address, zip code, latitude and longitude, or even a place name, such as the name of a forest, park or wildlife refuge. Google Maps shows the area, and from there users can zoom in using either map view or satellite view until they can pinpoint a tree’s location and mark the spot with a digital "thumbtack."

"To understand the mechanisms of resistance, we need to study more than just a few survivors," Knight said. "We need to be able to look at different species as well as genetic diversity within the same species.” To assure that trees reported to the site are true EAB survivors and not just lucky enough to not yet be infested, Knight and Koch are limiting ash reporting to counties that have been hit hard by EAB. As the insect continues to spread, they expect to open the survivor ash reporting system to additional locations. The trees they are looking for should be natural ash trees rather than planted ash trees, and they should be 10” or more in diameter. Ash trees treated with insecticide to prevent EAB should not be reported.

So, if you think you have a survivor ash tree that meets the criteria and is in one of the listed counties go to please go to the following site [http://www.nrs.fs.fed.us/SurvivorAsh] and report it!

Author: Amy Stone

B. LIGHTNING STRIKES AGAIN. In response to an article written about trees and lightning strikes (BYGL Issue 2015-04, Industry Insights, 04/30/15), one of our readers suggested some additional information that could be of value to others readers. When it comes to lightning strikes, are trees are not created equal. Tree species that appear to receive greater numbers of lightning strikes than others include ash, elms, maples, oaks, pines, poplars (e.g. cottonwoods and tulip trees), and spruce. Part of the reason that these trees become targets for lightning is the heights to which they grow. The taller a tree is, the more likely they become to be a receiver of a lightning strike. Tree species that are infrequently struck include beech, birch and horse-chestnut.
In addition to tree species and height, there are several other factors to consider. Trees that stand alone in pastures, fields or in other open areas, on hills or close to water are susceptible to strikes. Deeper-rooted, decayed and dying trees are more prone than shallow-rooted, healthy trees. Trees that rise above neighboring trees are prime targets. And a tree closer to a house is more likely to receive a lightning strike than another tree of the same species and height 10' further from the house. The house plumbing gives the closer tree a better ground to conduct an electrical charge. Many of these above described trees line our community streets and surround our homes, schools and businesses.

In some cases, select trees may justify an investment in a lightning protection system. The purpose of a protection system is to dilute and slowly release electrical charge potential between the ground and cloud similar to lightning protection system placed on buildings. Lightning protections systems do not attract lightning, so they do not make a tree a greater target than what it would be without the system. Examples of trees that may justify the investment into a lightning protection system include trees of historical significance, trees of extreme high value to a landscape, and high lightning strike-susceptible trees that are positioned near homes and other structures that are frequently occupied by people.

Installing a lightning protection system is not a do-it-yourself project. Homeowners should consult a commercial arborist with the proper training and experience for this type of project. And a final reminder, if a tree does get hit by lightning, one should contact a certified arborist to evaluate the tree, especially an arborist, whom is Tree Risk Assessment Qualified (TRAQ).

Author: Curtis E. Young

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 May 1 - 13, 2015, with the exception of the soil temperatures which are readings from Wednesday, May 13, 2015 at 11:25 a.m.

Summer-like temperatures have subsided a bit and some describe it as a chill in the air. While rain did move through over the past weekend and Tuesday of this week, the rainfall that fell was spotty in nature. On Saturday, garden enthusiasts watched three different cells skirt around the Toledo Botanical Garden until the fourth came right overhead. Of the five weather stations reporting below, all have received less than the normal rainfall amount for the month of May to date.

<table>
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</thead>
<tbody>
<tr>
<td>Ashtabula</td>
<td>NE</td>
<td>82.6</td>
<td>52.0</td>
<td>0.52&quot;</td>
<td>1.8&quot;</td>
<td>53.39/55.28</td>
</tr>
<tr>
<td>Wooster</td>
<td>NE</td>
<td>79.2</td>
<td>51.4</td>
<td>0.9&quot;</td>
<td>1.5&quot;</td>
<td>58.51/58.81</td>
</tr>
<tr>
<td>Hoytville</td>
<td>NW</td>
<td>78.8</td>
<td>53.9</td>
<td>0.88&quot;</td>
<td>1.3&quot;</td>
<td>54.59/53.86</td>
</tr>
<tr>
<td>Columbus</td>
<td>Central</td>
<td>83.0</td>
<td>56.4</td>
<td>1.56&quot;</td>
<td>1.7&quot;</td>
<td>61.61/62.03</td>
</tr>
<tr>
<td>Piketon</td>
<td>South</td>
<td>82.6</td>
<td>52.0</td>
<td>0.52&quot;</td>
<td>1.8&quot;</td>
<td>66.17/63.57</td>
</tr>
</tbody>
</table>

For a link to the OARDC Weather Stations, visit: [http://www.oardc.ohio-state.edu/centernet/weather.htm]

Author: Amy Stone

B. GROWING DEGREE DAYS. GDD is a measure of the daily maximum and minimum temperature and directly relates to growth and development of plants and insects. The GDD of any zip code location in Ohio is estimated using the GDD of ten OARDC weather stations and available on the web at: [http://www.oardc.ohio-state.edu/gdd/].
The range of GDD accumulations in Ohio from north to south is 285 to 473. Following is a report of GDD for several locations around Ohio as of end of the day of May 13, 2015: Painesville, 285; Cleveland, 307; Toledo, 320; Canfield, 314; Findlay, 323; Van Wert, 333; Wooster, 332; Coshocton, 400; Columbus, 458; Springfield, 428; Dayton, 430; Cincinnati, 458; Ironton, 472; Portsmouth, 461; and Piketon, 473.

To put these GDD accumulations into perspective, the following is an abbreviated listing of plant and insect species with their respective phenological event and average GDD accumulations at which these events occur. Due to variations in weather, temperature, humidity, etc., these events may occur a few days earlier or later than predicted by the average GDD. By looking at a city, town, or village nearby on the above list, or visiting the above web site, one can see what is approximately taking place in the landscape.

Hawthorn leafminer, adult emergence, 260; flowering dogwood, first bloom, 263; red buckeye, first bloom, 265; blackhaw viburnum, first bloom, 269; imported willow leaf beetle, adult emergence, 274; Sargent crabapple, full bloom, 298; red horsechestnut, first bloom, 304; pine needle scale, egg hatch - 1st generation, 305; cooley spruce gall adelgid, egg hatch, 308; eastern spruce gall adelgid, egg hatch, 308; Vanhoutte spirea, first bloom, 309; common lilac, full bloom, 315; 'Pink Princess' weigela, first bloom, 316; blackhaw viburnum, full bloom, 322; redosier dogwood, first bloom, 323; dwarf fothergilla, full bloom, 325; 'Winter King' hawthorn, first bloom, 328; lilac borer, adult emergence, 330; slender deutzia, first bloom, 338; Japanese kerria, full bloom, 342; common horsechestnut, full bloom, 344; red chokeberry, full bloom, 351; doublefile viburnum, first bloom, 353; Pagoda dogwood, first bloom, 363; red Java weigela, first bloom, 365; black cherry, first bloom, 368; common sweetshrub, first bloom, 371; lesser peach tree borer, adult emergence, 372; Ohio buckeye, full bloom, 374; holly leafminer, adult emergence, 375; Vanhoutte spirea, full bloom, 406; euonymus scale (first generation), egg hatch, 406; black cherry, full bloom, 419; Miss Kim Manchurian lilac, first bloom, 422; locust leafminer, adult emergence, 437; doublefile viburnum, full bloom, 444; black locust, first bloom, 467; common ninebark, first bloom, 478; oystershell scale, egg hatch, 497; and smokebush, first bloom, 501.

Author: Curtis E. Young

8. COMING ATTRACTIONS.

A. POND SCHOOL MAY 27, 2015. Pond School is a 3-hour workshop on pond care and management. There will be 8 different presentations to choose from taking place across 3 concurrent tracks of 1-hour sessions. There will be lectures, hands-on, and outdoor sessions on a variety of aquatic topics including algae control, aggressive vegetation, managing wildlife around the pond, fish management, aerating, water testing and more. Pre-registration is required and space is limited. The event is May 27, 2015 at Wolf Creek Environmental Center, 6100 Ridge Rd., Sharon Center, OH in Medina County. Program starts at 5:30 p.m. and goes to 8:30 p.m. Registration Deadline is May 11, 2015. For more information visit: [ http://go.osu.edu/pond ].

B. BUCKEYE LADY BEETLE BLITZ & GOOD GARDEN BUGS WORKSHOP. The Ag-Urban Landscape Ecology Lab is hosting three sessions of a workshop this year in May to kick off The Buckeye Lady Beetle Blitz 2015! This workshop will focus on training for our Buckeye Lady Beetle Blitz citizen science project. We will provide a review of lady beetle identification and sampling procedures, and distribute the 2015 toolkits. Dr. Mary Gardiner will also cover information from her new book, "Good Garden Bugs," due out May 2015. Participants will learn about the diversity of beneficial arthropods that inhabit their garden. A flyer is attached with additional information, and even more can found on our website: [ http://www.ladybeetles.osu.edu ]. Please direct any questions towards Chelsea Smith ([ smith.7231@osu.edu ]) or call 330-202-3555, ext 2583).

We have two locations left for this workshop:
* CLEVELAND: May 21, 2015 at the OSU Cuyahoga County Extension Office, 5320 Stanard Ave., Cleveland, OH

* DAYTON: May 27, 2015 at the Montgomery County Fairgrounds, 1001 South Main Street, Dayton, OH

PRE-REGISTRATION IS REQUIRED. Please send your registration form in at least 3 days before the workshop you are attending. The cost for the workshop is $20.00. Checks should be written out to "Ohio State University". Lunch will NOT be provided. Participants can bring a brown bag lunch or visit a local restaurant (a list of local options will be provided). The registration fee includes workshop attendance, beverages, and BLBB sampling kits. Follow this link for a registration form: [http://ale.cfaes.ohio-state.edu/sites/gardinerlab/files/imce/Events/2015%20registration%20form_workshop_ALL-fillable_0.pdf] and send it by email* to Chelsea Smith [smith.7231@osu.edu] or US mail to:

Chelsea Smith
1680 Madison Ave
Thorne Hall
Wooster, OH 44691

* If you are emailing the form in please follow these steps: 1) Fill out the PDF; 2) Save the PDF as a file on your computer; 3) Open the file to confirm that your entries were saved; and 4) Attach the saved completed PDF file to an email and send it to [smith.7231@osu.edu].

C. THE OSU GREEN INDUSTRY SHORT COURSE, THE OHIO TURFGRASS FOUNDATION CONFERENCE AND SHOW, AND TREES ON TAP PROGRAMS. Mark your calendars now, as these shows will be here sooner than you think. The event will be moving back to the Columbus Convention Center in 2015 and will be held on December 8 - 10, 2015, with the addition of a special tree program on Monday, December 7, 2015. Details on over 100 educational programs and a wide array of certification credits will be coming throughout the BYGL season. We are happy to acknowledge the robust support of the Ohio Turfgrass Foundation for their financial and other aid of the educational efforts of the OSU Extension Nursery Landscape and Turf (ENLT) Team, a group of Extension Educators and OSU Specialists that brings to you a range of programs including field diagnostic walkabouts (such as BYGLive! in southwest Ohio) and diagnostic workshops as well as help with horticulture problem troubleshooting, numerous publications, and of course, the BYGL.

A key speaker for both the Trees on Tap program and the tree care track of the Green Industry Short Course will be Dr. Ed Gilman of the University of Florida Environmental Horticulture program. Ed is Professor of Urban Trees and Landscape Plants and his research and educational efforts focus on tree care practices such as the effect of tree pruning on tree biology, production practices and landscape establishment, root pruning, and irrigation and fertilization practices. He is reason enough alone to attend the conference.

9. BYGLOSOPHY. "Knowledge is of two kinds. We know a subject ourselves, or we know where we can find information on it." - Samuel Johnson

APPENDIX
ADDITIONAL WEBSITE RESOURCES:

Ask a Master Gardener Volunteer
http://mastergardener.osu.edu/ask

Buckeye Turf
http://buckeyeturf.osu.edu
Emerald Ash Borer Information
http://ashalert.osu.edu

National Plant Diagnostic Network and First Detector Program
https://www.npdn.org/first_detector

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

Hungry Pests Website
http://www.HungryPests.com

Ohio Pesticide Safety Education Program
http://pested.osu.edu/

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

Ohio State University Extension Bee Lab
beelab.osu.edu

Ohio State University Extension Master Gardener Volunteer Program
http://mastergardener.osu.edu

Ohio Woodlands Stewards Program
http://woodlandstewards.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 May 12th conference call: Amanda Bennett (Miami); Pam Bennett (Clark); Joe Boggs (Hamilton); Jim Chatfield (Hort & Crop Science); Julie Crook (Hamilton); Erik Draper (Geauga), Denise Johnson (Master Gardener Volunteer program); Jacqueline Kowalski (Cuyahoga); Cindy Meyer (Butler); Amy Stone (Lucas); Nancy Taylor (C. Wayne Ellett Plant and Pest Diagnostic Clinic (CWEPPDC)); Danae Wolfe (Summit); and Curtis E. Young (Van Wert).

BYGL is available via email, contact Cheryl Fischnich [fischnich.1@osu.edu] to subscribe. 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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