BUCKEYE YARD AND GARDEN LINE 2015-07
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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 7th 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].

Or:

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.

In This Issue:

1. PLANTS OF THE WEEK: Annual (Snapdragon); Perennial (Wild Blue Lupine); Woody (White Fringe Tree); Vegetable (Rhubarb); and Weed (Cressleaf Groundsel).

3. BUGBYTES: Let the Galling Begin (Maple Bladder Galls, Elm Pouch Galls, Succulent Oak Galls, and Gnarled Oak Galls); Holey Oak Leaves! (Spiny Oak Sawfly and Oak Shothole Leafminer); Ailanthus Wonders (Ailanthus Webworm); Spittle in the Pine Needles (Pine Spittlebug); and Windshield Wipes (Oak Leaf Roller Caterpillar, Basswood Lace Bugs, Hawthorn Leafminer Damage, and Basswood Leafminer).

4. DISEASE DIGEST: A Case Study: Bacterial Fire Blight and the Disease Triangle.

5. TURF TIPS: Annual Bluegrass Troubles.

6. INDUSTRY INSIGHTS: We Need You! (Tracking Invasives) and Calico Scale Observations.

7. WEATHERWATCH: Weather Update and Growing Degree Days (GDD).

8. COMING ATTRACTIONS: Pond School; Buckeye Lady Beetle Blitz & Good Garden Bugs Workshop; A Gardener’s Guide to Climate Change; and The OSU Green Industry Short Course, The Ohio Turfgrass Foundation Conference and Show, and Trees on Tap Programs.

9. BYGLOSOPHY.

APPENDIX - Additional Website Resources.

1. PLANTS OF THE WEEK.

*ANNUAL - SNAPDRAGON (*Antirrhinum majus*). Snapdragons are in heaven with this recent spell of cool temperatures. These are excellent annuals to fill the void from early April through mid-June, until it gets warmer. Snapdragons prefer full sun and well-drained soil. They are extremely easy to grow from seed and in fact, they sometimes reseed themselves each season. The flowers bloom at the top of the stalks above the plant and have an interesting shape with their puffed petals. I first learned about snapdragons when I was a child visiting my grandma; she showed me the reason they are called snapdragons! If you squeeze the puffy petals, the "dragon's mouth" opens. Colors are red, orange, yellow, violet, white and pink and there are some bi-colored varieties. Deadheading can keep them blooming a little bit throughout the summer. When fall comes, they will start blooming again and go until a good freeze.

Snapdragons grow around 1 - 3.5’ tall depending on the variety; there are dwarf, compact varieties as well as taller varieties that make great cut flowers. ‘Rocket’ has been around quite a while and is excellent to cut for vases. Another nice feature is that they are deer resistant.

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*PERENNIAL - WILD BLUE LUPINE (*Lupinus perennis*). Northwest Ohio just celebrated Blue Week, May 12 - 17, 2015. A symbol of the Oak Openings Region, the wild blue lupine is a native plant that can be found not only growing, but thriving in sandy soils including at the sand dunes in Oak Openings Metropark and Kitty Todd Nature Preserve. This brilliant blue flowering plant had been lost in this natural landscape in the 1980s as a result of mowing the prairie-type habitat, the use of broad spectrum weed control, and fire suppression. However, it has recently made a come-back in natural areas and gardeners are planting it in landscapes too.

Lupine likes a dry and sandy soil. It prefers open areas where it gets full sun, but it will also grow in part shade. It will grow in an open wooded area, but does take longer for it to become established. For this perennial plant to thrive, a good deal of sun is preferred.

Wild lupine begins to grow in the early spring and flowers in May. Blooms typically last for a few weeks. Flowers are usually blue, but can also be shades of pinks, purples and white. The flower spikes can stand up to 7” standing above the leaves. The flowers turn to peapod-like seed pods as the season
progresses. The outer shell is fuzzy in appearance and is about 2” long. Each pod contains between 10 - 20 seeds.

In addition to its pure beauty that we enjoy, the KARNER BLUE BUTTERFLY (*Lycaeides melissa*) is reliant on lupine as the caterpillar will only feed on the lupine.

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*WOODY - WHITE FRINGETREE (*Chionanthus virginicus*). Thomas Jefferson so admired the white fringetree that in 1786 while living in France, he requested Philadelphia botanist John Bartram, Jr. send him seeds of this showy and fragrant tree to share with the Parisians. Today, many value this small tree or multi-stemmed shrub for its spring bloom of large clusters of sweet-smelling white flowers.

The white fringetree is a deciduous tree native to the United States. Also called "grancy graybeard" or "old man's beard," it grows to 12 - 20' high and 12 - 20' wide. It is slow growing and should be planted in full sun to part shade in moist, well-drained, acidic soils. It is adaptable to other soil conditions but does not like to be transplanted and should be planted when young.

A member of the olive family (*Oleacea*), individual fringetree plants are either male or female (dioecious). The male plants produce a better flower display while the female plants provide dark blue clusters of fruit for the birds in the fall. Since plants are not labeled male or female it is fortunate that both are beautiful specimens.

In the past, our native fringetree was known as a trouble-free plant. However, in 2014, EMERALD ASH BORER (EAB) (*Agrilus planipennis*) adult emergence holes were found on and larvae were found in a few trees in southwest Ohio. This was discussed in the October 23, 2014 BYGL ([http://bygl.osu.edu/content/october-23-2014](http://bygl.osu.edu/content/october-23-2014)). Thus far, it appears our native fringetree is only a marginal host to EAB, but further research is underway and we will keep you posted on new developments.

There is an Asian relative to the white fringe tree, the Chinese fringe tree (*Chionanthus retusus*), that has not been observed to be an EAB host. The Chinese fringe tree has a less-open structure and grows taller than its American cousin but still has the fragrant, white showy flowers. In fact, depending on the source of the discussion, some feel the Chinese fringe tree is more desirable. You will have to judge which cousin is more desirable under your growing conditions.

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*VEGETABLE - RHUBARB (*Rheum rhabarbarum*). Rhubarb is an easy to grow cool season, perennial vegetable. It is grown for its leafstalks that have a tangy flavor and is great in pies and jams, especially when combined with strawberries.

Rhubarb grows best in fertile, well-drained soils that have good organic content. The planting area should be cleared of any weeds. Proper soil preparation will help rhubarb stay healthy and productive for years. Since rhubarb is a long lived perennial, it should be planted to one side or at the end of the garden so as not to interfere with planting and growing annual vegetables. Some gardeners find the rhubarb plant suitable to include in a perennial flower bed because of its ornamental texture and size.

Planting rhubarb seeds is not recommended in Ohio; it is generally purchased as divisions or crowns. These crowns are best planted in early spring though they can also be planted in the fall after dormancy sets in. Each rhubarb plant requires approximately one square yard of space. The crowns should be covered with 1 - 2" of soil. Planting the crowns too deep will delay growth and production.
Rhubarb should not be harvested the first year in order for the plant to become well established. It is best to remove the flower stalks as they appear; this allows the plant to channel its energy into the leafstalk production. Allowing rhubarb to produce seed will also reduce the overall vigor of the plant.

In Ohio rhubarb is harvested in late May and throughout June. It is best to stop harvesting when the plant starts to produce thin stalks which is a sign which the plant's reserves are low.

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*WEED - CRESSLEAF GROUNDSEL (Packera glabella; syn. Senecio glabellus).* Mary Griffith reported that cressleaf groundsel is currently gracing landscapes and farm fields in Greene County with a smattering of canary yellow. Cressleaf groundsel, which is also known as BUTTERWEED, is a member of the aster family (Asteraceae; a.k.a. Compositae), sporting daisy-like flowers and seed heads that look like miniature dandelion puff-balls. The flowers are borne at the ends of thick, erect, stems that are green with reddish-purple streaks. The plant's "cress-like" leaves are responsible for the common name.

Cressleaf groundsel is a native winter annual found in the northern United States. It is a heavy seed producer, and the seed can remain viable in the soil for a number of years. For reasons that are not clearly understood, this weed has become unusually common in Ohio in recent years in cultivated fields, nurseries, and landscapes. Past reports indicate the weed may have some tolerance to 2,4-D and may require high rates of glyphosate to be controlled. Hand pulling is an effective option in landscapes, but plants must be destroyed prior to seed maturation. Cultivation prior to flower production is also effective. Both approaches will decrease future plant populations and reduce Ohioans seeing yellow next spring.

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2. HORT SHORTS.

A. MASSIVE MAPLE MASSACRE? County Extension offices are receiving reports from concerned homeowners wanting to know why their maple trees appeared to have "suddenly died." The trees reportedly began green and looked good and then suddenly they are all brown and have died. Is there some new insect or disease that is killing off maples? Upon closer inspection, the cause of the lack of foliage and the sudden browning is clearly due to those maples being loaded with MAPLE SEEDS (SAMARAS) (a.k.a. winged seed, whirligigs or maple helicopters)! This extreme seed load, and their subsequent ripening and dropping from the tree, coupled with an associated delay in leaf expansion is the reason for the perceived "sudden death" of the tree.

Maple samaras, which appeared green as they were developing, have suddenly ripened and the wing covering the seed has dried up, turned brown and is ready to blow off and spin away. Normal leaf development is slowed and reduced because the tree channels most of its stored energy resources into seed production. The seeds mature, turn brown and then fall off to cover every square inch of the earth, easily filling and plugging all rain gutters. However, the anxiety is most intense after the seeds fall because there is no apparent reason for the "thinning canopy," smaller leaf size and an overall reduction in leaf numbers. Some homeowners may be concerned about the overall health of their trees, while others may erroneously associate heavy seed production with the last hurrah of stressed, dying trees.

Maple trees are capable of producing many seeds each year, but the limiting factor of seed production tends to be the weather; specifically, those quick frosts and freezes, which can zap flowers and tender samaras. Without a killing frost or freeze, the die is cast for winged wonders of spinning samaras to rain down from the trees. This year just happened to be one that favored maple seed development. Remember that heavy seed production is not necessarily a reliable indicator of tree health nor should it be used as an indicator of impending tree death. It just means that we need some well-timed freezes to reduce the seed numbers or hope for a really strong wind to blow them all into the neighbor's yards!
B. POISONED POISON HEMLOCK. We highlighted poison hemlock (*Conium maculatum*) earlier this season as the "Weed" in the "Plants of the Week" section of BYGL 2015-02 (04/16/15) and noted that this non-native is among the most deadly plants in North America. All parts of the plant are highly toxic to both humans and livestock. It is also extraordinarily invasive owing to its prolific seed production and dense growth habit; a few plants can become a sea of poison hemlock in just a few years squeezing out preferred plants. This week, Joe Boggs shared images of "poisoned" poison hemlock to the applause of BYLGers on the web conference!

The poison hemlock had been effectively treated with the selective, post-emergent herbicide Transline (clopyralid) as part of a non-native invasive plant management program conducted by Tom Borgman (Natural Resource Manager) in Glenwood Gardens (Great Parks, Hamilton County). Transline, along with several other selective herbicides including 2,4-D as well as some non-selective herbicide such as glyphosate (e.g. Roundup) are being used by a number of local, state, and federal agencies throughout the U.S. to suppress this and other non-native invasive plants.

Poison hemlock is a member of the carrot family, Apiaceae (formerly Umbelliferae). It is a biennial weed and spends the first year as a basal rosette. During the spring of the second year, plants bolt to form erect, towering flowering plants that can measure 6 - 10’ tall. Joe noted that the timing for the herbicide application was very good because flower heads are just starting to appear in southwest Ohio. Seed production may still occur if plants are treated with a number of herbicides after flowers reach maturity. Other control options include mowing or tilling prior to flowering; however, mowing will not eliminate the rosettes.

C. WOOD ASH IN THE GARDEN? This question is a common one in the spring when we have a surplus of ash from the woodstove coming out of a long winter. This material could only be good for our gardens, right? Well, not so much in soils that have a higher pH, which includes a sizable portion of the State of Ohio.

Taking a closer look at ash and the components of it is necessary to understand why it is not great for high alkaline soils. Most would think that it would have an acidifying effect but actually it does just the opposite. The largest component of wood ash (about 25%) is calcium carbonate, a common liming material that increases soil pH. The pH level of soil is measured on a scale of 0 - 14, with 7.0 being neutral. The target pH for growing a garden is 6.5 (slightly acidic). While there are small amounts of nutrients applied with wood ash, the main effect is that of a liming agent.

Plant nutrition is affected by increasing the pH or alkalinity of the soil. Nutrients are most readily available to plants when the soil is slightly acidic. As the soil pH (or alkalinity) rises above 7.0, nutrients become chemically tied to the soil and less available for plant use.

In soils that are more acid, wood ash may actually be useful, but it is advisable to also look at what types of plants you intend on growing as well. Asparagus, blueberries, etc., love acid soils and adding wood ash may create an undesirable growing area for these plants.

Soil testing is the best way to understand the pH and the nutrient make-up of the growing area in question. It is recommended that garden soil be tested every two to three years to determine current nutrient levels and to make nutrient adjustments accordingly.
A PLANT GALL TRILOGY. Plant galls are some of the most obvious but least understood plant disorders encountered by arborists, landscapers, and others who work with plants. To learn more about plant galls, check out Part 1 of a three-part “Gall Trilogy” written by Joe Boggs and Jim Chatfield for American Nurseryman Magazine. The article is titled, “Plant Galls: Myths and Misconceptions” and focuses on helping readers to separate galls from other plant maladies such as plant cankers as well as spotlighting the micro and macro-organisms responsible for producing plant galls. The next two installments of the Gall Trilogy will appear in the next two issues. Here’s the web link to the current issue of the magazine: [http://www.amerinursery-digital.com/#&pageSet=0&contentItem=0].

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A WALK ON THE WILDSIDE: SSSSSNAKES ALIVE! It is not uncommon this time of year to encounter a slithery visitor in gardens, landscapes, and backyards. There are several species of snakes happy to live their lives in backyards, but one of the most common is the EASTERN GARTERSNAKE (Thamnophis sirtalis). Named for the 3 light stripes that run along the length of its black, brown, gray, or olive body, the gartersnake is sometimes nicknamed the ‘garden’ snake because that is where unsuspecting gardeners often encounter them. The stripes running vertically along the length of the snake's body resemble the once stylish sock garters worn by men. While it can be startling to encounter a snake while weeding or planting, if their presence can be tolerated, gartersnakes are doing the constant gardener a favor. They feed on worms, slugs, insects, and small mammals that may otherwise be feasting on garden plants and flowers.

Gartersnakes are most active during the day and on sunny summer days are often found basking on rocks, sidewalks, decks, or patios. On hot days and when sleeping, they retreat to sheltered areas such as under foundations, rocks, logs, stumps, or porches. There are no repellents that effectively work to keep snakes away. The best approach, aside from sharing the garden with them, is to eliminate denning and sleeping sites (rock or log piles) and shoo them away from basking areas. They are rarely aggressive and habituate to humans easily. Some gardeners find relief using glue traps to capture and remove snakes from around the home.

The COMMON WATERSNAKE (Nerodia sipedon sipedon), on the other hand, is not a snake that should be picked up without the expectation of a strong bite. The coloration of this snake, which prefers streams, creeks, and other bodies of water, can sometimes cause it to be mistaken for a NORTHERN COPPERHEAD (Agkistrodon contortrix), one of Ohio's 3 venomous snakes (the other 2 are the TIMBER RATTLESNAKE (Crotalus horridus) and EASTERN MASSASAUGA RATTLESNAKE (Sistrurus catenatus)). The northern copperhead has a distinct triangular head that the watersnake lacks, and is not common among well-settled areas. Because of the common watersnake's preference for water, it is also often mistaken for a WATER MOCCASIN (A. piscivorus) (a.k.a. COTTONMOUTH), a venomous snake that does NOT occur in Ohio.

While it would be rare to encounter a venomous snake while gardening, never disturb or handle a snake without first determining the species and if it is venomous. Other snakes found around the home are the MIDLAND (Storeria dekayi wrightorum) and NORTHERN BROWN SNAKE (S. dekayi), EASTERN MILKSNAKE (Lampropeltis triangulum), and BLACK RATSNAKE (Elaphe obsoleta obsoleta) (a.k.a. EASTERN RATSNAKE or GRAY RATSNAKE). The black ratsnake is Ohio's largest snake, reaching lengths of 4 - 6’. As its name suggests, this snake is typically black in color with a white chin, however variations do occur as the skin between the scales of some individuals can be lighter, producing a more significant pattern. What can be difficult to identify is a juvenile black ratsnake as they are strongly patterned thus appearing much different than the adults. For help identifying Ohio snakes and more information on each species, see the Division of Wildlife “Reptiles of Ohio Field Guide.”

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A WALK ON THE WILDSIDE: COYOTES, DENS, AND PUPS. April through May is the time of year when female coyotes (Canis latrans) reluctantly enter underground dens to birth their pups. With their
incredibly heightened senses of hearing and smell, confinement in a small underground den limits these senses making coyotes even more nervous than normal. However, the female recognizes underground dens are a safe and protective place for her pups; therefore she reluctantly makes the necessary decent underground. Coyote dens can be located within or under a downed tree, under rock outcroppings, or in an existing burrow vacated by a raccoon or skunk. Coyotes will also dig out their own den if necessary. Dens are usually concealed by protective vegetation and found on a slope to aid in drainage.

A coyote pack is very dedicated to the survival of the current year’s pups and will defend the area around the den against threats. What kind of threats? To a coyote defending pups, a threat may be a curious dog out for a stroll in the park or perhaps a hiker spending a warm spring day in the woods. It’s no coincidence that this is also the time of year when the highest amount of conflict between coyotes and medium to large sized dogs occurs. During times of the year other than the pup birthing season, medium to large sized dogs usually emit enough of a presence to deter a coyote. However, coyotes are much more defensive this time of year in order to protect their pups from harm. A dog or person that accidentally wanders too close to a coyote den may encounter a parent coyote that is much less likely to be scared off and will often hold their ground. If such a coyote is encountered, back away slowly and try to avoid the area for the next few months. By July and August the pups should be out and about and able to move on their own, and the parents will be a little less defensive of the denning area.

While medium to large sized dogs can typically hold their own when it comes to coyotes, the same isn’t true of cats and small dogs. Cat owners should think twice about letting cats roam outside, especially at night, if coyotes are known to be in the area. Small dog owners should always keep an eye on their pets when walking them at any time of day. At night, small dogs should be kept on a short leash when walking. If a coyote is encountered, pick up the small dog and harass the coyote until it moves away. Harassing is yelling at the coyote, waving your arm (the one NOT holding the dog), or throwing something in the general direction of the coyote (not directly AT the coyote). The coyote should respond to this harassment by running away. If it does not, or proceeds to follow you, return home or to the nearest building and try to note any distinguishing characteristics of the coyote. Aggressive or fearless coyotes should be reported to a nuisance wildlife control operator or company for removal. Several OSU Extension FactSheets on coyote conflict and damage management can be found at [http://woodlandstewards.osu.edu] for more information.

Homeowners with coyote dens nearby are usually aware of said dens. Both the adults and pups are very vocal, especially at the end of the day when the pack is together. Barking, yipping, yowling, and of course, howling can be heard from quite a distance away. A coyote pack consists of the alpha male and female, a few other adult coyotes, and the new litter of pups. In urban areas, packs are typically 5 - 6 coyotes plus the pups. Litter sizes range from 4 - 6 pups but can be larger or smaller based on available resources. A fascinating ability of coyotes is that they are able to adjust their litter sizes based on food abundance and population density (litter sizes of 11 pups have been reported). In urban areas, coyote litters tend to be larger, which indicates there is plenty of food available. For more information on urban coyotes, visit [http://urbancoyoteresearch.org] to learn about research studying urban coyotes in Chicago metropolitan region.

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3. BUGBYTES.

A. LET THE GALLING BEGIN. Arthropod plant galls can only form from newly differentiating tissue (= meristematic tissue). This is why spring is the time of year when leaf galls created under the supervision of insects or mites begin to appear on plant leaves. Despite their often unusual appearance, few plant galls cause significant harm to the overall health of their host trees.

Everyone’s favorite gall, the light-green to deep-red, globose, MAPLE BLADDER GALLS produced under the direction of the eriophyid mite, Vasates quadripedes are beginning to adorn the upper leaf surfaces
of some red and silver maples in southern Ohio. The hairy, elongated, ELM POUCH GALLS produced by the aphid, Kaltenbachiella (= Pemphigus) ulmifusus are rising from the upper leaf surfaces of several species of elms.

Oaks are prime gall-fodder providing support for over 800 different types of galls! Three quarters of the gall-makers belong to two families: the wasp family Cynipidae; and the "gall midge" family Cecidomyiidae. Curtis Young shared images of the light green, ball-like SUCCULANT OAK GALLS (a.k.a. roly-poly galls) produced under the direction of the gall wasp, Dryocosmus quercuspalustris decorating newly expanding oak leaves. The hollow galls are around 1/2" in diameter; their common name comes from the fleshy (succulent) walls of the galls. The alternate "roly-poly" name comes from the unattached, white, seed-like structure that rolls around inside the galls. The structure houses a single wasp larva.

Joe Boggs reported that he received images of the aptly named GNARLED OAK GALLS produced by the gall midge, Macrodiplosis niveipila. The galls form on the petioles and main leaf vein and often envelope the entire leaf.

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B. HOLEY OAK LEAVES! Two problems were observed on oaks in southwest Ohio that can cause holes to appear in the leaves. They are the feeding damage caused by the SPINY OAK SAWFLY (Periclista albicollis) and the adult feeding damage as well as larval leafmining activity from the OAK SHOTHOLE LEAFMINER (Japanagromyza viridula). The small, light-green semi-transparent spiny oak sawfly larvae have shiny black head capsules and are covered with rows of forked (bifurcated) spines. Early instars produce small holes in newly emerging leaves; the holes get larger as the leaves expand. Later instars consume interveinal tissue leaving behind the main veins to give the oak leaves a tattered appearance.

The handiwork of the oak shothole leafminer is more subtle but also becomes more evident as leaves expand. The tiny fly (family Agromyzidae) produces distinct holes in leaves through the feeding behavior of the adult females and the leaf mining activity of the larvae (maggots). Females use their sharp ovipositors to pierce newly emerging leaves and release nutrient rich sap which they lap-up using their lapping mouthparts. The wounds produce minuscule holes in the juvenile leaves. Of course, the females also use their ovipositors to deposit eggs within the tissue of the newly emerging leaves. Once the eggs hatch, the resulting maggots produce tiny, circular, leaf mines on nascent leaves. The larval leafmines become holes when the necrotic tissue caused by the leafmining activity eventually dries and falls away from the leaves. Both the adult female's holes and the holes from the larval leaf mines become larger as the leaves expand and impart a "Swiss cheese" appearance to the leaves.

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C. AILANTHUS WONDERS. Curtis Young and Joe Boggs reported that large numbers of AILANTHUS WEBWORM (Atteva aurea) moths are flying to their porch lights in northwest and southwest Ohio, respectively. Reports of plant pests generally solicit concerns; however, since the caterpillars of this ermine moth (Family Yponomeutidae) feed exclusively on the non-native, invasive TREE OF HEAVEN (Ailanthus altissima), their reports generated delight, if not great hope!

The webworms produce communal nests by pulling leaflets into a network of loose webbing. Several caterpillars live within the nests consuming the leaflets bound by the webbing. The webworms can grow up to 1 - 1 1/2" long and they have a wide, light greenish-brown stripe down their backs and several thin, alternating white and olive green stripes along their sides. The caterpillars are sparsely covered with short, erect hairs, which help to suspend them within the webbing. When disturbed, the caterpillars move backwards out of the nest and drop towards the ground on strands of silk.
Ailanthus webworms are native to tropical regions in Central and South America where the caterpillars feed on native trees in the genus *Simarouba* (family Simaroubaceae). The moth was originally assigned the scientific name, *Atteva punctella*, and it was known that the moth jumped from its native hosts to the non-native Tree of Heaven (*Simarouba*). It was assumed the moths exploited the ever-expanding range of Tree of Heaven to move north into the U.S. and Canada. However, research involving DNA bar-coding, moth morphology, and food plant records eventually revealed that while *A. punctella* and *A. aurea* co-inhabit tropical regions of the New World, the moth in the U.S. and Canada is *A. aurea*.

Ailanthus webworm moths are multivoltine meaning that there are several generations per year. The caterpillars are capable of defoliating their odoriferous namesake host and they may feed on stem tissue once all leaves are devoured. Unfortunately, such extreme damage is rare on large trees. Although feeding by this webworm has yet to halt the spread of tree of heaven, hope springs eternal since this is one of only a few insects known to infest this encroaching interloper.

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D. SPITTLE IN THE PINE NEEDLES. Curtis Young reported that PINE SPITTLEBUG (*Aphrophora parallella*) is active on white pine (*Pinus strobus*). Their presence is evidenced by the frothy spittle masses that the individual developing nymphs produce as they feed. Despite the masses being called spittle, these masses are not produced by the mouth of the nymph but rather by special glands associated with the anus of the insect. Thus, an alternative name of these insects proposed by Dave Shetlar is the "anal bubble" bugs.

These insects may not be obvious on all trees upon which they are feeding; rain storms may wash away their masses. Inside the masses, the nymphs may be protected from predation, parasitization and environmental conditions. Pine spittlebug does not often require management. However, heavy infestations may stunt or kill shoots as the feeding activity clogs the tree vascular system. Black sooty mold grows on the spittle when it drops onto needles and branches. This is the most common damage caused by this pest. The feeding wounds are also sites for infection of various fungi, especially Diplodia tip and stem blight.

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

* Joe Boggs reported observing the characteristic handiwork of the OAK LEAF ROLLER (family Tortricidae, *Archips semiferana*) on its namesake host in southwest Ohio. Caterpillars of this moth hatch from overwintered eggs in early spring to feed on buds and newly expanding leaves. Once leaves fully expand, the caterpillars use silk to roll individual leaves from edge-to-edge into a cigar-like structure, thus the common name. A single, yellowish-white to creamy-white caterpillar resides in sac-like silk structure constructed within the rolled leaf. The caterpillar periodically leaves it's silk home to feed on the leaf. Although rare, oak leaf roller populations can occasionally reach outbreak levels to produce significant defoliation. However, Joe noted only moderate populations are occurring on oaks in the southwest part of the state.

*Author: Joe Boggs; boggs.47@osu.edu*

* Joe also reported observing significant numbers of BASSWOOD LACE BUGS (*Gargaphia tiliae*) on the underside of silver linden (*Tilia tomentosa*) leaves in southwest Ohio. These lace bugs should more accurately be called "*Tilia* lace bugs" since they may be found on several species in the *Tilia* genus including littleleaf linden (*T. cordata*). Joe noted the adults were hovering over large clutches of recently laid eggs; the large number of eggs indicates this may be bumper-crop year for this lace bug.

*Author: Joe Boggs; boggs.47@osu.edu*
* Curtis Young and Joe reported that HAWTHORN LEAFMINER (*Profenusa canadensis*) larvae have completed their development in northwest and southwest Ohio, respectively. Larvae of this sawfly feed between the upper and lower leaf surfaces mining the leaf parenchyma to produce large, blister-like, reddish brown "blotch" mines. Although the leafmines may appear unsightly, this sawfly seldom causes enough damage to significantly harm the overall health of established host trees. However, severe leafmining damage may produce stress on newly planted trees. There is one generation per season.

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* BASSWOOD LEAF MINER (*Baliosus nervosus*) returns to the northwest. Curtis Young observed basswood leaf miner adult beetles feeding on the leaves of the American basswood or linden (*Tilia americana*) in northwest Ohio. The adult is a small, wedge-shaped, reddish-yellow beetle with dark markings on its wings. The larvae or grubs of this beetle mine the leaves of American basswood, feeding between the upper and lower leaf surfaces. The adults will soon lay their eggs and the newly hatched larvae will mine the leaves. Watch for these mines to appear in the next couple of weeks.

The basswood leaf miner has one generation per year. New adults will emerge in late July or early August and continue feeding on the foliage through the rest of the growing season. In northwest Ohio, we have seen this beetle do a similar type of damage to American basswood as its close relative, the LOCUST LEAF MINER (*Odontota dorsalis*), does to black locust. By the end of summer, the feeding activity makes their host trees look scorched or burned. The brown color of these host trees stands out against the green canopy of other tree species in surrounding wood lots. It is also reported that the basswood leaf miner can damage leaves of oaks.

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4. DISEASE DIGEST.

A. A CASE STUDY: BACTERIAL FIRE BLIGHT AND THE DISEASE TRIANGLE. Nancy Taylor reported receiving a sample of bacterial fire blight taken from a crabapple located in southwest Ohio. Joe Boggs noted that owing to warm temperatures and only widely scattered rain showers occurring in that part of the state while crabapples were blooming, fire blight is likewise widely scattered with noticeable infections occurring short distances from trees with no symptoms. Nancy responded: "don't you just love the Disease Triangle."

Indeed, ever since the Disease Triangle concept was first published by R.B. Stevens in 1960, it has been effectively used to illustrate that diseases caused by biotic agents such as fungal and bacterial plant pathogens require three things to be present before a disease can develop: a susceptible host; an environment that favors disease development; and the pathogen itself. Remove any one of these three conditions and a plant disease will not occur. Nancy's report provides a perfect case study.

The bacterial plant pathogen, *Erwinia amylovora*, produces fire blight on crabapple as well as many other members of the rose family (Rosaceae). Fire blight is so named because of symptoms produced by the bacterium as it kills the vascular tissue on new shoot growth. The lack of water causes affected stem tissue to become browned and blackened. Leaves remain attached, but become wilted and turn from brown to black. Occasionally, the tips of affected shoots curl over to resemble the end of a Shepherds crook. Collectively, the symptoms make the shoots and leaves look like they were damaged by fire, thus the name "fire blight."

Now, let's apply the Disease Triangle to managing bacterial fire blight. First, it is important to recognize that the three sides of the Triangle seldom act independently of one another for any plant disease. Although we may state that a disease can be managed "simply" by removing one of the three conditions, it is not always that simple!
However, there are a few exceptions. The microscopic bacterium that is responsible for fire blight is not mobile on its own and it is not moved from plant to plant by the wind. But, it can be washed by water from one part of the plant to another part, or carried from plant to plant or from branch to branch on pruning equipment. Pruning and destroying diseased tissue coupled with good sanitation will remove the pathogen from the disease equation. This is why it is recommended to make pruning cuts more than 12” below infected tissue, and to sterilize pruners with alcohol between cuts. There are also recommendations for spraying bactericides which will affect the pathogen; however, timing is critical. The applications are most practical in fruit orchards where the applicator is on-site day after day. Effective timing is problematic for landscapers and arborists who often have multiple clients over a wide geographical area.

Bacterial fire blight requires a susceptible host which varies widely among different types of crabapples. Selecting fire blight resistant crabapples is an effective one-step method for managing fire blight by removing the host from the disease equation. Of course, the most fool-proof way to take the host off the fire blight table is to select a tree that does not belong to the rose family! Although Joe's observation may be connected to host range, it is unlikely that the only crabapples planted in one area in southwest Ohio were those that are susceptible to the fire blight bacterium. Conversely, Joe also observed highly susceptible crabapples that were totally disease free. Something else is afoot! Or, in this case, six feet.

The fire blight bacterium can be moved from plant to plant by insect pollinators such as bees. However, that's not the whole story. Bacterial proliferation occurs on flowers once temperatures rise above 65°F which means warm temperatures are required for bees to pick-up and carry the bacteria from infected to non-infected trees. Also, water is required to wash the bacteria from floral stigmas to natural openings such as nectaries at the base of the flowers. So, spring infections occur when susceptible crabapples (host) are in bloom (host) at the same time warm temperatures (environment) support bacterial proliferation (pathogen) on infected trees (host) and water from rainfall or heavy dew (environment) is available to move the pathogen into nectaries. Thus, warm temperatures coupled with widely scattered rainfall occurring when crabapples were in full bloom in southwest Ohio was most likely responsible for the observation that fire blight infections are widely scattered in that part of the state. As Nancy noted: "don't you just love the Disease Triangle."

Author: Joe Boggs; boggs.47@osu.edu

5. TURF TIPS.

A. ANNUAL BLUEGRASS TROUBLES. Curtis Young reported working with a homeowner who had recently invested quite a bit of money into renovating his lawn and installing an irrigation system. The lawn was completely reseeded with a high quality seed mixture in the fall of 2013. Everything looked good for establishment. In 2014, the lawn grew very well, but there were a few scattered light-green very seeded spots of grass. In 2015, the light-green, very seeded grass spots had spread into large areas displacing the desirable species, especially in some of the more shady areas of the lawn. The culprit was and is annual bluegrass (Poa annua).

Annual bluegrass is one of the most common weeds of residential and commercial turfgrass, ornamental plantings, and garden areas in the U.S. It is native to Europe but is distributed worldwide. The genus Poa consists of about 200 species of grasses worldwide. Their typical boat-shaped leaf tips, which curve upward like the bow of a boat, are a distinguishing characteristic of the genus.

There are two annual bluegrass varieties that may be found in residential lawns, a true annual type (P. annua var. annua) or a perennial type (P. annua var. reptans). The two types are not easy to distinguish from each other however, the annual type is more upright in its growth habit and produces more seed than the lower-growing perennial type. The perennial type is common in such sites as golf course greens, while the annual type tends to be more common in lawns and parkways, although both types can be found in either of these situations.
Annual bluegrass can be a major weed problem in home lawns and is a continual nuisance for turf and landscape managers. Because it is a grass weed growing in turfgrass, selectively removing it is very challenging. Annual bluegrass produces great numbers of unsightly seed heads that reduce the aesthetic quality of a lawn.

Annual bluegrass has a fairly weak, shallow root system and needs frequent rainfall or irrigation to survive. It grows well in moist areas in partial shade to full sun and tolerates compacted soil conditions. Under hot, dry conditions, annual bluegrass does not survive well. It usually dies in the summer. However, lawns that are frequently irrigated to the point that soils are moist to wet throughout the growing season, annual bluegrass is favored and will aggressively take over the lawn. Once a few annual bluegrass plants become established in turf or ornamental areas, spread can be rapid because of its prolific and rapid seed production. Mowing, foot traffic, birds, and cultivation all spread seed.

Control of annual bluegrass can be very difficult and may take several seasons, mechanical and/or non-selective chemical removal, and cultural practice adjustments to eventually reduce its impact. Early detection and removal of solitary infestations can be successful if practiced diligently. Rapid repairs to open spots after removal of annual bluegrass is a must. And removal of grass clippings from heavily infested areas might help reduce the number of seeds that remain in the lawn to build the seed bank.

One cultural practice that will predispose turfgrass to invasion by annual bluegrass is overwatering, especially in shady areas. This can be a serious problem in lawns with automated sprinkler systems. If these systems are not adjusted regularly to account for changes in weather, they can setup bad situations. It is better to use deep, infrequent irrigation events rather than shallow, frequent irrigations. Letting the soils dry out between irrigations will discourage the development of the shallow-rooted annual bluegrass.

Pre-emergent herbicides such as benefin, bensulide, dithiopyr, and pendimethalin can be very successful in limiting germination of annual bluegrass. They should be applied a few weeks before weed seeds germinate to be most effective. Herbicides must be applied in early fall (early September) and a second application in November or March to control spring germination. However, one does have to remember that a pre-emergent herbicide will inhibit desirable grass seed from germinating as well thus any reseeding that needs to be done will have to be done before applying these products.

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6. INDUSTRY INSIGHTS.

A. WE NEED YOU! The story is not unique. In fact, it can be told over and over again with a simple name change. That name could be GARLIC MUSTARD, JAPANESE HONEYSUCKLE, AUTUMN OLIVE, or KUDZU. It could be EMERALD ASH BORER, GYPSY MOTH, or VIBURNUM LEAF BEETLE (VLB).

So if you are working in your own landscape or spending time in a client’s; walking in a park or down “main street” in your community; or purposely monitoring for specific invasive species, we have an APP for that. The Great Lakes Early Detection Network (GLEDN) is a tool to engage green industry professionals, volunteers, students and the public. Once downloaded on your smartphone, you can begin reporting what you are seeing. There is an option to submit photos and additional information for each pest. Once confirmed, the report will be added to the EDD map.

Whether the invasive species is a plant, pathogen, insect, mammal or more – we are encouraging Ohioans to join in this battle of invasive species. The first step is to identify and map the locations of invasive species making Ohio their home. If a potential regulated pest is reported using the APP, information will be shared with ODA for confirmation.
As you read this week’s BYGL, VLB larvae are wreaking havoc on the foliage of their plant’s namesake. While a problem in NE Ohio for many years, this pest has been “spreading” westward. There have been reports in Akron, Wooster and Mansfield. Several years ago an alert Master Gardener Volunteer noticed infested nursery stock in the early spring and the Ohio Department of Agriculture was alerted. Thankfully the situation was addressed prior to emergence and that NW Ohio County is still VLB-free.

No matter your location across the buckeye state, and you have viburnums, take a look for feeding damage, or holey leaves on VLB this week. If you aren’t familiar with the invasive species, check out Cornell’s VLB website at [http://www.hort.cornell.edu/vlb/].

Haven’t downloaded the free GLEDN APP yet? Check out the APP store for your smartphone, download, and begin reporting what you are seeing.

Author: Amy Stone; stone.91@osu.edu

B. CALICO SCALE OBSERVATIONS. Joe Boggs shared images taken on July 25, 2014 and last week of the same honeylocust trees that have been heavily infested with calico scale (Eulecanium cerasorum) for a number of years. The trees are planted in parking lot islands and range in DBH from 3.2 - 6.0". They only share the islands with winter creeper euonymus. Side-by-side comparisons of the images clearly showed the trees have suffered significant branch dieback and in some cases death since last season. The images prompted a discussion regarding the exact role calico scale played in bringing about the tree deterioration. Was the scale primarily responsible? Or, did the scale infestation simply add to the overall stress experienced by the trees to tip the tree health scales in the direction of tree decline and death?

Calico scale is a non-native globular "soft" scale which means mature scales are protected by a soft shell. Their common name is derived from the starkly contrasting calico pattern of black-and-white markings on the hemispherical-shaped shells of mature females. The mature females measure about 1/4" in diameter and their distinct markings make them easy to recognize, particularly on bark and branches that are blackened by sooty mold.

Both adults and nymphs (crawlers) feed by inserting their piercing-sucking mouthparts into phloem vessels to extract amino acids that are dissolved in the sugary plant sap flowing through the vessels. They discharge excess sap from their anus in the form of sticky, sugary "honeydew" that drips onto the leaves, stems, and branches of scale infested trees and onto understory plants as well as parked cars, sidewalks, and lawn furniture.

Reports in the literature commonly note that calico scale is seldom a direct tree killer; however, many of the reports also note that heavily infested trees may suffer branch dieback and the accumulated stress caused by substantial sap loss may cause them to succumb to other stress related factors. While all parking lot islands are not equal, it is not uncommon for trees and other plants to suffer from a number of stress inducers including poor soils and drainage, lack of consistent watering, high reflective heat in the summer, and salt accumulations in the winter. Indeed, a close examination of photographs showed dead areas in the euonymus at the ends of the tree islands which indicates that snow, possibly laden with de-icing salt, was plowed into the islands during the winter; a common practice. BYGLers concluded that while the calico scale infestation was doing nothing to help the trees, it was probably not the single reason the honeylocusts were declining and dying. Calico scale was tipping the tree health scale in favor of decline and death.

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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 - 20, 2015, with the exception of the soil temperatures which are readings from Wednesday, May 20, 2015 at 5:20 p.m.

Many of the BYGLers reported receiving rain this past week including Erik Draper’s gulley-washer. Summer-like temperatures experienced on Monday, cooled quickly on Tuesday with about a 30 degree difference.

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<td>Ashtabula</td>
<td>NE</td>
<td>72.9</td>
<td>51.8</td>
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<td>2.2&quot;</td>
<td>65.25/65.83</td>
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<td>Wooster</td>
<td>NE</td>
<td>76.5</td>
<td>51.8</td>
<td>1.54&quot;</td>
<td>2.5&quot;</td>
<td>64.11/63.13</td>
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<tr>
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<td>NW</td>
<td>77.0</td>
<td>53.8</td>
<td>1.33&quot;</td>
<td>2.0&quot;</td>
<td>64.57/61.03</td>
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<tr>
<td>Columbus</td>
<td>Central</td>
<td>80.2</td>
<td>56.7</td>
<td>2.79&quot;</td>
<td>2.7&quot;</td>
<td>66.98/66.21</td>
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<tr>
<td>Piketon</td>
<td>South</td>
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<td>52.9</td>
<td>0.89&quot;</td>
<td>3.0&quot;</td>
<td>72.62/71.27</td>
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For a link to the OARDC Weather Stations, visit: [http://www.oardc.ohio-state.edu/centernet/weather.htm](http://www.oardc.ohio-state.edu/centernet/weather.htm)

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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/](http://www.oardc.ohio-state.edu/gdd/).

The range of GDD accumulations in Ohio from north to south is 379 to 596. Following is a report of GDD for several locations around Ohio as of end of the day of May 20, 2015: Painesville, 379; Cleveland, 408; Toledo, 429; Canfield, 415; Findlay, 431; Van Wert, 441; Wooster, 436; Coshocton, 512; Columbus, 584; Springfield, 530; Dayton, 534; Cincinnati, 577; Ironton, 595; Portsmouth, 596; and Piketon, 585.

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.

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; smokebush, first bloom, 501; arrowwood viburnum, first bloom, 534; American yellowwood, first bloom, 546; bronze birch borer, adult emergence, 547; black locust, full bloom, 548; American holly, first bloom, 556; mountain laurel, first bloom, 565; potato leafhopper, adult arrival, 568; juniper scale, egg hatch, 571; common ninebark, full bloom, 596; American yellowwood, full bloom, 599; and arrowwood viburnum, full bloom, 621.

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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. The 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 one location left for this workshop:

* 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_2015a.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. A GARDENER’S GUIDE TO CLIMATE CHANGE. The Greene County Master Gardeners present "A Gardener's Guide to Climate Change." The workshop will focus on sustainable solutions to environmental challenges, featuring Ohio State University Professors Dan Herms and Jim Chatfield. Topics include: Earth is Warming - Are We the Cause?; What Science Tells Us About Climate Change?; Biological Calendars: Using Plant Phenology; Sustainable Gardening in a Changing Climate; and Ten Keys to Taking Action in Your Backyard. The event is June 13, 2015 at the Greene County Fairgrounds, 100 Fairground Rd, Xenia, OH. Registration begins at 8:30 a.m., with the program running from 9:00 a.m. - 3:30 p.m. For more information, including registration form, visit [http://greene.osu.edu/events/gardener%E2%80%99s-guide-climate-change-0].

D. 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 19th conference call: Pam Bennett (Clark); Joe Boggs (Hamilton); Julie Crook (Hamilton); Erik Draper (Geauga), Mary Griffith (Greene), Denise Johnson (Master Gardener Volunteer program); Ashley Kulhanek (Medina), Amy Stone (Lucas); Nancy Taylor (C. Wayne Ellett Plant and Pest Diagnostic Clinic (CWEPPDC)); Marne Titchenell (School of Environment and Natural Resources), 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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CFAES provides research and related educational programs to clientele on a nondiscriminatory basis. For more information: [http://go.osu.edu/cfaesdiversity].