BUCKEYE YARD AND GARDEN LINE 2015-08
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This is the 8th 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.

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1. PLANTS OF THE WEEK.

*ANNUAL - STRAWFLOWER (Bracteantha bracteata). Strawflower, which is native to Australia, is part of the Asteraceae family. In Ohio, these plants are considered annuals but in southern parts of the US these plants are somewhat perennial (zones 8 - 11), generally only lasting a few years. This plant goes by several names including, everlasting daisy, golden everlasting, or everlasting. The flowers of this plant come in various shades of pink, yellow, orange, salmon, purple, and white and somewhat resemble daisies. The petals surrounding the flower are actually bracts. These bracts are papery and straw-like, hence the common name. Strawflowers are great used as cut flowers and for dried arrangements because they retain their color. Flowers close at night and open during the day. They can reach heights of 1 - 4’ and widths of 1 - 2’. These plants need to be in full sun and need to have well-drained soil.

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*PERENNIAL - PEONY (Paeonia spp.). Curtis Young reported this week that this plant is in full bloom in Van Wert County. Peonies are a perennial favorite in the flower garden because of their beautiful large blossoms and shiny green leaves. These flowers are often fragrant and provide a stunning display in the garden or make excellent cut flowers. There are two types of peonies that are generally grown in the home landscape, garden peony (Paeonia hybrids) and tree peony (Paeonia suffruticosa).

Garden peonies are grouped into five types according to flower form: single, semi-double, double, Japanese, and anemone. They range from 2 - 3’ in height and 3 - 4’ in width. Peonies should be planted in full sun and prefer well-drained soils. Support of the flower stalks is often necessary, especially for the large double flower varieties. Early fall is the best time to plant, transplant and divide peonies but can be done successfully in the spring if completed early.

The most common problems for peonies are Botrytis blight and Cladosporium leaf spot, both fungal diseases. Prompt removal of infected or dead foliage and a thorough fall cleanup are necessary for managing these diseases.

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*WOODY - KOUSA DOGWOOD (Cornus kousa var. chinensis). Kousa dogwoods are in full bloom downstate right now and in a delightfully delicate early stage now in northeast Ohio. Kousas are small trees (15 - 20’) with showy white flower bracts, appealing multi-colored bark of grays, browns and tans. They also offer a pleasing stratified horizontal branching pattern, attractive dark-green leaves (red-purple fall color), and colorful, roundish raspberry-like fruits. Vase-shaped plants grow rounded with age. Kousas prefers moist soils, but are better adapted to drought than our native flowering dogwood, Cornus
ideal conditions the wild parsnip produces a 3 forms a low toxic, non-wild parsnip.

There are many cultivars with white and pink flower forms, variegated foliage, and other features. 'Satomi' is on one popular cultivar with pink floral effects. 'Milky Way' has an abundance of flowers and fruits. Rutgers hybrids are crosses of C. kousa and C. florida with intermediate characteristics and improved disease resistance over some C. florida cultivars. Examples are 'Constellation' and 'Stellar Pink' with exceptional flowering.

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*FRUIT - STRAWBERRY (Fragaria x ananassa). Ohio strawberry season is upon us! Strawberries are an excellent choice for the home garden and edible landscapes. Strawberries can be categorized into three general types: June-bearing, day-neutral, and ever-bearing. Common June-bearing cultivars are 'Earliglow,' 'Annapolis,' 'Honeoye,' 'Allstar,' 'Lateglo,' and 'Ovation.' Common cultivars of day neutral types are 'Albion,' 'Tristar,' and 'Tribute' while 'Ozark Beauty' and 'Quinault' are the most common cultivars of ever-bearing types. Many times ever-bearing and day-neutral types will be lumped together. June-bearing cultivars are the most productive, produce from late-May to late-June, and will produce a full crop a year after planting whereas day-neutral and ever-bearing types will produce small crops throughout the growing season and will produce berries soon after planting. One cannot tell the difference by looking at the plants, so it is important to know the type that you have for management purposes.

Strawberries prefer full sun, slightly acidic soil and although they will produce a crop in many types of soil, they produce best in well-drained, loose, fertile soil with high organic matter content. The best time to plant strawberries is generally May. June-bearing cultivars should be planted 12 - 24" apart with 36 - 40" between rows and other cultivars should be planted 8 - 12" apart with 30 - 36" between rows. Strawberries also do well in containers and vertical planters. Strawberry beds should be kept weed-free. Remove the flower buds of June-bearing cultivars in the first growing season and 6 weeks after planting for day-neutral and ever-bearing cultivars. Remove unwanted runners in the first year after planting for all cultivars. Fertilize based on soil test recommendations. Ensure that the plants receive 1" of water per week.

June-bearing strawberries should be renovated immediately after harvest is complete for the season by mowing them down to 1" above the crown in order ensure adequate bud set for the following year and to remove diseased foliage. Strawberry plants produce fruit for up to three years and should be replaced after 3 - 4 years with a new planting. While there are many diseases that affect strawberries, choosing resistant cultivars and maintaining appropriate cultural practices can help avoid some of disease issues.

Cover the plants with 2 - 3" of straw mulch after the plants have been exposed to a couple of freezes, but before December 15th. Strawberry blossoms are very sensitive to frost damage. When removing the mulch in the spring, keep the mulch close at hand in order to quickly re-cover the plants in the event of frost.

Refer to OSU Extension FactSheet HYG-1424-98 "Strawberries are an Excellent Fruit for the Home Garden" for more details.

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*WEED - WILD PARSNIP (Pastinaca sativa)

A toxic, non-native invasive plant, wild parsnip, is in the carrot family (Apiaceae). This biennial plant forms a low-growing rosette and an edible root the first year; in its second year during May to June, it produces a 3 - 5' flower stalk with a compound umbel of hundreds of small five-petal, yellow flowers. In ideal conditions the wild parsnip’s thick, heavily-grooved, yellowish-green stem can reach heights up to
8'. Its leaves are odd pinnate with 5 - 11 sharply-toothed leaflets. Wild parsnip resembles the celery plant but has the taste and smell of a parsnip. It can form dense stands and prefers full to partial sun in a range of soil types with a preference for alkaline and dry areas. Wild parsnip is commonly found in disturbed soils along roadsides, pasture areas, fields, vacant lots and natural areas.

This plant poses two threats - it chokes out native plants and it causes phytophotorodematitis or Berloque dermatitis. The sap from broken leaves and stem of the wild parsnip contain a chemical called furocoumarins. When absorbed on the skin and exposed to sunlight (even on a cloudy day) this causes painful and severe burns and blisters; the skin discoloration can persist months after the blisters heal.

Controlling wild parsnip is complicated by its toxicity. Mechanical removal of small patches by hand digging should be undertaken with protection by wearing gloves, long sleeves, long pants and eye protection and avoiding contact to the skin. Roadside mowing has been reported to encourage wild parsnip production while reducing the growth of parsnip competitors such as goldenrod. Chemical control by using glyphosate to rosettes is suggested in the Cornell University management of berry crops publication. Control by burning has been found to encourage parsnip growth and is not encouraged. Bagging and removal of plant debris is recommended.

Last year, Joe Boggs celebrated the Ohio sighting of the parsnip webworm (Depressaria pastinacella) that was causing damage to the wild parsnip - [http://bygl.osu.edu/content/wild-parsnip-pest-yippee]. The long term effect on controlling wild parsnip by this pest is still to be determined.

Be on the lookout for wild parsnip before you get burned. Other toxic weeds in the Apiaceae family include: poison hemlock (Conium maculatum), water hemlock (Cicuta douglasii) and giant hogweed (Heracleum mantegazzianum). Giant hogweed can grow over 14' tall and this plant causes burns more severe than the wild parsnip and can result in permanent scarring.

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2. HORT SHORTS.

A. WHAT MAKES A PINE, A PINE? As tree-problem diagnosticians, one of the very first questions we have to answer is, “What is the tree that is having the problem?” Surprisingly, many owners of trees don’t really know the names of their trees even to the level of knowing whether it is an oak, elm, maple or ash for the deciduous trees or pine, spruce or fir for the evergreen trees. So, how does one explain to a tree owner how to distinguish between these types of trees, such as what makes a pine, a pine and not a fir or a spruce.

Pine trees (Pinus spp.) are characterized by: (a) producing seeds in (female) cones (i.e., a conifer) and (b) having narrow leaves (“needles”) arranged in bundles of 2 - 5 with a permanent or deciduous papery wrap or sheath at their bases, called a fascicle. Needles of spruces and firs are not produced in bundles of multiple needles. The individual needles in one fascicle, when viewed in cross section, are like pie-shaped segments which fit together to form a complete circle. Pines such as Scotch (Scotts) Pines have 2 needles per fascicle which are hemispherical (“D”-shaped) in cross section and white pines with 5 needles per fascicle are triangular in cross section.

Pines are monoecious (i.e., individual trees have both female cones which bear the ovules which when fertilized develop into seeds and male cones which shed the pollen). The female cones are the most obvious because of their size and length of time that they are on the trees. The male cones are generally much smaller than the female cones and are present on the trees for a short period of time. Once the male cones shed their pollen, they often break apart and fall from the tree. The pollen is carried by wind and gravity; none of the pines is pollinated by insects or birds.
Pines are generally sun-loving and relatively shade-intolerant. Pines grow well in open areas and in young stands of trees, but not so well in already established shady forests.

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3. **BUGBYTES.**

**A. STRIPED AND SPOTTED CUCUMBER BEETLE.** Cucumber beetles have found their way to gardens and are now feeding on cucurbit plants, including cucumber, squash, pumpkin and melon. Striped cucumber beetles (*Acalyymma vittatum*) are yellow-green with three black stripes down the back and are 1/4" long. The spotted cucumber beetle (*Diabrotica undecimpunctata*) (also known as the southern corn rootworm), also 1/4" long, is yellow-green with 12 black spots on its back. The head and antennae are dark.

Larvae of striped beetles feed on cucurbit roots which stunt and kill young plants. Adults of striped and spotted cucumber beetles feed on leaves, but only striped beetles feed on cucurbit fruits. Both insects are vectors of bacterial wilt disease. The bacterium that causes bacterial wilt overwinters in the gut of some of the adult striped cucumber beetles. When beetles become active in the spring and begin feeding, they spread the bacterium either through feces or from contaminated mouthparts. Chewing damage from these insects open the entry points for the pathogen. Once inside the plant, the bacterium multiplies quickly in the vascular system, producing blockages that cause the leaves to wilt. Infected plants wilt quickly, and leaves dry out just prior to death. Beetles are attracted to infected plants and can pick up the bacterium and move it to healthy plants. Infected plants wilt quickly, and leaves dry out prior to death.

Inspect plants frequently for beetle infestations. Row covers provide some protection, but must be removed a few hours each day to allow for pollination. Plant wilt-resistant varieties and use trap crops, if possible. Insecticides can be used and should be applied at five day intervals, from the time plants emerge from the soil until flowers appear on the vines.

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**B. FIERY SEARCHERS ARE ON THE HUNT.** This is the time of the year when populations of many soft-bodied insects such as caterpillars and sawfly larvae begin to rise. It's not coincidental that this is also the time of the year when FIERY SEARCHER CATERPILLAR HUNTERS (*Calosoma scrutator*) begin to appear in the landscapes and forests of Ohio. This colorful predacious beetle feasts on free-range caterpillar meat as well as on any other soft-bodied insect that it can clamp its mandibles on. Indeed, this beetle is considered one of the more significant insect predators with the capability of having a substantial impact on the population densities of general defoliators.

Fiery searchers measure around 1 1/4" in length and are one of the largest sized “ground beetles” (family Carabidae) found in Ohio. The beetle has long, purplish-black legs and antennae. The abdomen is almost rectangular, with the posterior end slightly pointed. The hardened front wings (elytra) that cover and protect the abdomen and membranous hind wings are metallic green with fine longitudinal grooves. The outer edges of the elytra and the prothoracic shield; the flat structure just behind the head, are lustrous reddish-orange. This striking color feature that is responsible for the fiery common name. The front end of the beetle, the business end, sports sickle-shaped mandibles used to reduce hapless caterpillars into beetle fodder. Adults may live for 2 - 3 years, spending the winter beneath bark or in the soil.

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**C. LACE BUGS LAYING EGGS.** Last week (2015-07, 05/21/15), we reported that BASSWOOD LACE BUGS (*Gargaphia tiliae*) were observed clustering around newly laid eggs on silver linden (*Tilia*
tomentosa) leaves in southwest Ohio. This week, large numbers of overwintered adult HAWTHORN LACE BUGS (Corythucha cydoniae), OAK LACE BUGS (C. arcuata), and SYCAMORE LACE BUGS (C. incurvata) along with newly laid eggs were also found on their namesake hosts in southern Ohio. Based on the numbers of adults and eggs observed, this could be a bumper crop year for all four lace bugs in the southern part of the state.

These lace bug species live on the undersides of leaves where they use their piercing/sucking mouthparts to suck juices from their host plants. As with all lace bugs, their feeding produces tiny yellow or whitish leaf spots (stippling) that may coalesce to produce large, yellow-to-copper colored areas on leaves, and early leaf drop. It is not unusual for early feeding symptoms of basswood, hawthorn, and oak lace bugs to appear as distinct 1/4 - 1/2” diameter spots on the upper leaf surface. It is speculated that the circular stippling pattern is produced by nymphs feeding around egg clusters. Lace bugs also deposit unsightly hard, tar-like spots of excrement onto the leaf surface as they feed. Most lace bugs have multiple generations per season; their damage builds with each succeeding crop of new bugs.

Oak lace bugs may be found on both red and white oaks. Hawthorn lace bugs have a more cosmopolitan palate and will feast on a variety of rosaceous plants as well as a few plants outside of the rose family. They are commonly observed on their namesake host as well as Cotoneaster sp. and Amelanchier sp. Lace bug leaf feeding damage seldom causes significant harm to the overall health of established trees; however, the stress associated heavy lace bug feeding activity on newly planted trees may make young trees susceptible to other pest problems such as borer infestations. Thus, it’s important to monitor young trees and apply corrective insecticide treatments if necessary.

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D. SAWFLY SLUGGED ROSE LEAVES. Dave Shetlar and Joe Boggs reported that the activity of the so-called “roseslug sawfly complex” is becoming apparent in southwest Ohio. Three sawfly species are generally grouped in the complex: EUROPEAN ROSES Slut SAWFLY (Endelomyia aethiops); CURLED ROSES Slug SAWFLY (Allantus cinctus); and BRISTLY ROSES Slug SAWFLY (Cladius difformis). All are non-natives and were introduced at different times from Europe into North America. Despite their common names, they look nothing like the glistening, elongated pear-shaped slug sawflies which do resemble tiny slugs. Instead, these three sawflies resemble tiny caterpillars.

The European roseslug sawfly has a single generation per season. The larvae are light-green and appear in the spring to feed on the upper leaf surface as skeletonizers. This was the most commonly found roseslug sawfly for a number of years in Ohio. Consequently, there remains some confusion between this species and the other two roseslug sawflies regarding feeding behavior and numbers of generations per season.

The curled roseslug sawfly has at least two generations per year in Ohio. The larvae are also light green, but they have white spots on their thorax and abdomen. Of course, their most distinguishing feature is their unique behavior of curling their bodies into a tight coil when disturbed or at rest, thus their common name. They are most often found on the lower leaf surface where some have described them as looking like naked snails attached to the underside of the leaves. Early instar larvae spend a short time feeding as skeletonizers; however, they quickly change their behavior to consuming entire leaves from the edges inward leaving behind only the main veins. This sawfly also has another unique feature. Late instars bore into the pith of pruned canes where they pupate.

Bristly roseslug sawfly has multiple generations per year in Ohio. In fact, we reported in 2013 that Amy Stone was finding the larvae feeding on rose leaves in northwest Ohio in late-September (BYGL 2013-26, 09/26/13). The larvae are pale green and covered with short, hair-like bristles that can be seen with a hand-lens. Early instar larvae appear in the spring to feed as leaf skeletonizers on the lower leaf surfaces. The corresponding epidermis on the upper leaf surface remains intact and turns white producing a characteristic “windowpane” symptom. Eventually, the “windowpanes” drops out to produce holes. Later instars feed between the main veins to directly produce holes in leaves. The holes
produced by early and late instar feeding damage produce "see-through" leaves. This sawfly has gradually become the most commonly found of the three species that make up the roseslug sawfly complex in Ohio.

Control and prevention of damage depends on a proper identification of the roseslug culprit. Only the bristly roseslug continues to produce damage throughout the season, so this species causes the most injury to roses. Damage by this sawfly can be prevented by making topical applications of a contact insecticide to the underside of rose leaves or a soil drench application of the systemic insecticides imidacloprid (e.g. Merit) or dinotefuran (e.g. Safari). The best timing for the contact insecticides is once the larvae first appear. The besting timing for the soil drench application is at the time leaf buds start to break. However, given the rapid uptake and distribution of dinotefuran, this insecticide can also be applied later in the season.

E. ERIOPHYID ERINEUM PATCHES. Joe Boggs reported observing the unusual handiwork of eriophyid mites that produce ERINEUM PATCHES on the leaves of a number of landscape trees in Ohio including beech, birch, linden, and maple. The felt-like erineum patches are often described as plant galls; however, there is a debate as to whether the patches should be considered "true galls." They appear to arise from leaf cell damage, almost like scar tissue caused by mite feeding activity rather than by a gall-maker exuding chemicals to direct plant growth. Regardless, as the patches turn colors from green to red, gold, or silver, then to brown, they become very noticeable and are often mistaken for leaf spot or rust diseases.

The eriophyid mite Acalitus fagerinea produces erineum patches on American beech. Although the patches are located on the upper leaf surface, they cause a dimpling of the lower leaf surface beneath the patch. Erineum patches in southwest Ohio are currently light-green to a brilliant yellow in color. They will eventually become golden then rusty-red to reddish-brown in color later in the season. The mite A. brevitarsus generates pinkish-red erineum patches on the upper leaf surface of birch leaves. These patches in the southwest part of the state are currently silvery-white with slight overtones of pink.

Two different eriophyid mites produce erineum patches on sugar maple. Eriophyes elongatus generates patches on the upper leaf surface that are deep crimson red; they are currently greenish-white. E. modestus produces silvery colored patches in the forks in the leaf veins on the lower leaf surface of sugar maple leaves. The eriophyid E. tiliae generates a very similar looking silvery erineum patch on the lower leaf surface of lindens.

Whether or not erineum patches should be considered plant galls, they do have one thing in common with most galls. The patches are seldom so severe as to cause significant injury to the overall health of their host trees. Thus, control recommendations are not necessary.

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F. SEEING RED … AGAIN! In 2013 and again last season, we reported the appearance in late-May to early-June in Ohio of huge numbers of tiny, fast-moving bright red mites scurrying around in sunny locations on picnic tables, patios, sidewalks, concrete retaining walls, and on the outside walls of homes and buildings (BYGL 2013-10 (06/06/13), BYGL 2014-10 (06/05/14)). In fact, large gatherings of these mites were observed in a number of Midwestern, eastern, and southern states. The mites have been tentatively identified as Balaustium murorum (family Erythraeidae). The mites have no approved common name; however, they are sometimes referred to as "concrete mites," or "pavement mites," based on locations where the mites tend to congregate.

This week, Dave Shetlar reported that concrete mites are again appearing in central Ohio. Whether the numbers will rise to the same population densities observed last season, remains yet to be seen. The mites prey upon other mites as well as small insects and are capable of supplementing their meat diet
with pollen. Indeed, research conducted at Wittenberg University (Springfield, OH) revealed that the mites often start the season as pollen-feeders and switch to becoming predators later in the season as more prey becomes available.

Concrete mites are sometimes mistaken for CLOVER MITES (Bryobia praetiosa) which are entirely herbivorous and occasionally appear in large congregations to become a nuisance pest by invading homes in the spring and fall. In fact, some web images that are labeled as being clover mites are actually images of concrete mites, or some other Balaustium species. The legs and bodies of concrete mites are always bright red. Although the coloration of clover mites varies from reddish-green to very dark red, they are never bright red. Also, clover mites do not zip around; they just mill around making inaudible mooing sounds since they only feed on plants.

It is unclear why concrete mites appear in large numbers in sunny locations in the spring. However, the mass gatherings appear to be highly seasonal and short-lived. Thus, even if their numbers swell this spring, the onslaught will quickly subside. However, Dave noted that if there is a substantial risk that large numbers could spoil an outdoor event involving an abundance of white clothing, such as a spring wedding, the mites may be suppressed with a surface application of a pyrethroid insecticide such as products containing bifenthrin (e.g. Talstar).

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

* WOOLLY BEECH APHID (Phyllaphis fagi) nymphs are beginning to appear on the leaves of European beech (Fagus sylvatica) trees in southwest Ohio. The aphid has no approved common name, but entomologists generally refer to it as the "woolly beech leaf aphid" owing to the profusion of white, waxy filaments that issue forth from the hind portion of the nymphs. The aphids also exude copious quantities of honeydew and droplets of this sugary, sticky substance creates a gummy mess on underlying beech leaves, sidewalks, building decking, slow-moving gardeners, etc. The deposited honeydew may become colonized with black sooty molds adding to the unsightly appearance of the goo. However, the aphid has little impact on its beech host other than a reduction in aesthetic appeal caused by the high contrast between the brilliant white aphid colonies and the lustrous dark green or dark purple beech leaves. This non-native European aphid retains its preference for its non-native European beech host; it does not infest American beech (F. grandifolia).

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* Finding large numbers of ants on PEONY FLOWER BUDS is such a common occurrence that it has led to the common misconception that the ants are there to help open the peony's flowers. Of course, this isn't true. Peonies will flower without the help of ants. What is true is that the peony flower buds have specialized glands, known as "extrafloral nectaries," that produce nectar. The ants are their gathering this sugary sweet treat. It is speculated that in return for the nectar, the ants guard the flower buds against herbivorous insects that could damage or destroy the buds. Then the peonies would not have flowers. So, in a round-about way, the ants are indeed helping the peonies to flower!

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* Curtis Young and Dave Shetlar reported seeing or receiving calls about GIANT SILKWORM MOTHS. Over the past two weeks, Curtis has seen specimens of CECROPIA (Hyalophora cecropia), LUNA and POLYPHEMUS MOTHS, and Dave captured a Polyphemus moth in his light trap. These giant silkworm moths are truly impressive to discover and watch. Each has striking features in addition to their size such as "eyespots" on their wings, long tails (luna moth) extending from their hindwings and various colors. These moths may only live for 2 weeks or less. Their main goals in life are to find mates, mate and lay eggs for the next generation. Even though they are primarily active at night, because of their size, they tend to be easy targets for predation. The best time of the day to have a chance to spot one of
these giants is first thing in the morning. Look for them around buildings that have security lights on all night. The moths are attracted to the lights at night and may be found resting on the buildings in the morning.

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4. DISEASE DIGEST.

A. ALL ENVIRONMENTAL CONDITIONS ARE LOCAL. As in politics, it is also true with plant diseases that the most important environmental conditions with which to be concerned are the environmental conditions that are around one's immediate locale (i.e., not average regional or statewide conditions). To put it in terms of the disease triangle, specifically "THE ENVIRONMENT CONducive TO DISEASE" component of the disease triangle, the specific environment that the susceptible host plant and virulent pathogen face is what is important, not the average environment across a region or the state. As indicated in Joe Bogg's note on fireblight last week, the fact that fireblight reports are scattered this year probably means that a key environmental factor for this disease, namely moisture, was scattered, along with fairly constant warm weather during bloom that is key for this disease. We often wonder why some report the problem and others don't, but remember their specific, local environmental conditions vary. The same is true of some of our anthracnose diseases, such as sycamore anthracnose and ash anthracnose, which thrive on cool, wet conditions during leaf emergence for these plants. Where in the state or in the local area that these conditions occur on each of these plants is where we tend to see greater incidence of these diseases.

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5. TURF TIPS: No Report.

6. INDUSTRY INSIGHTS.

A. MONITOR FOR BAGWORMS. Readers in southwest Ohio should start monitoring for 1st instar COMMON BAGWORMS (*Thyridopteryx ephemeraeformis*). Joe Bogg reported that the Growing Degree Day (GDD) accumulation for his location in the southwest part of the state had reached 642 as of Tuesday of this week; the GDD that predicts bagworm egg hatch is 630. A percentage of the tiny 1st instar caterpillars will produce a strand of silk upon hatching from overwintered eggs. The silk catches the wind to transport the caterpillars to new locations. This method of distribution is known as "ballooning" and it is one of the reasons bagworms often appear on hosts that were not infested last season. Once the 1st instars find a suitable feeding site, either by ballooning or remaining on the host selected by their mother, they begin to construct their characteristic sack-like bags.

The 1st instar bagworm caterpillars carry their bags held upward making them look like tiny dunce caps. Also, major portions of the 1st instar bags are constructed of tiny pieces of reddish-brown, sawdust-like frass (excrement) stuck to the outside of the silk. The 2nd instar bagworm caterpillars, as well as all succeeding instars, carry their bags held downward like pine cones. From the second instar stage onward, the bags are constructed with plant debris woven into the bag's silk. The plant material provides structural stability and helps to camouflage the caterpillar bag-abodes.

Late instar bagworms can be highly destructive, particularly to evergreens. The best way to avoid damage is to monitor for egg hatch and target early instar caterpillars for control. It is a common misconception that bagworms only eat evergreens; however, the caterpillars can feed on over 130 different species of plants including a wide range of deciduous trees and shrubs. Indeed, deciduous trees and shrubs are sometimes overlooked during bagworm inspections allowing the plants to become
heavily damaged and to serve as reservoirs of bagworms that can spread to neighboring trees and shrubs.

Early instar bagworms can be effectively controlled using the naturally occurring biological insecticide *Bacillus thuringiensis* var. *kurstaki* (Btk) (e.g. Dipel, Thuricide, etc.). Unfortunately, Btk is most effective on small bagworms and becomes much less effective when bags surpass 3/4” in length. Fortunately, Btk does not kill bio-allies such as predators and parasitoids that help provide natural control of bagworm populations. Once eggs begin to hatch, bagworm populations should be closely monitored since egg hatch can occur over an extended period of time. Btk is a stomach poison which means it must be consumed to kill the caterpillars and it has short-live residual activity. Thus, two applications may be required. Once bags exceed 2/3” in length, standard insecticides will need to be used to suppress heavy infestations.

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

B. LECANIUM SCALES. Dave Shetlar reported that he is seeing some substantial infestations in landscapes in central Ohio of EUROPEAN FRUIT LECANIUM SCALE (*Parthenolecanium corni*) on crabapples and various trees in the *Prunus* genus and OAK LECANIUM SCALE (*P. quercifex*) on its namesake host. The mature females of both of these soft scales are reddish-brown, slightly oblong, and about 1/4” in length. They are often described by casual observers as looking like brown bumps growing from the twigs and branches of infested trees.

As with all soft scales, both the adults and nymphs (crawlers) of these scales 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.

Both of these scales has one generation per year and overwinters on twigs as partially developed nymphs. As spring progresses, the nymphs feed, molt, and mature into globular adults. Eggs are laid in late spring to early summer, and the hatching 1st instar nymphs migrate to the undersides of leaves where they attach themselves to veins to suck fluid from phloem vesicles. As fall approaches, the crawlers move back to stems where they overwinter.

The impact of these sap-sucking insects is enhanced by tree stress; healthy trees are able to withstand higher populations without suffering the branch dieback and canopy decline commonly associated with these soft scales. If populations justify the use of insecticides; the crawlers feeding on the underside of the leaves are the most vulnerable target. Trees should be closely monitored for the settled crawlers; usually mid-to-late June in Ohio around mid-to-late June. Topical applications of appropriately labeled pyrethroids including bifenthrin (e.g. Talstar) as well as soil drench applications of dinotefuran (e.g. Safari) have been reported in the literature to be effective. However, topical applications may also suppress beneficial insects that can naturally keep scale populations below tree health damage thresholds.

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

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 - 27, 2015, with the exception of the soil temperatures which are readings from Wednesday, May 27, 2015 at 11:10 a.m.
Warmer temperatures have produced isolated storms early this week. While spotty rain and high winds were coupled together, there was a tornado that caused damage in Greene County on Tuesday, May 26, 2015. With the current weather patterns, some areas have gotten rain, others remain dry. Put a shovel in the soil or a rain gauge in the garden to keep track of the amount of rain received in your particular area.

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<td>1.61&quot;</td>
<td>3.0&quot;</td>
<td>67.51/64.69</td>
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<tr>
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<td>Central</td>
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<td>55.1</td>
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<td>3.8&quot;</td>
<td>69.55/69.16</td>
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<td>3.9&quot;</td>
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For a link to the OARDC Weather Stations, visit: [http://www.oardc.ohio-state.edu/centernet/weather.htm]

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

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 456 to 685. Following is a report of GDD for several locations around Ohio as of end of the day of May 27, 2015: Painesville, 456; Cleveland, 490; Toledo, 522; Canfield, 496; Findlay, 524; Van Wert, 534; Wooster, 513; Coshocton, 597; Columbus, 681; Springfield, 624; Dayton, 627; Cincinnati, 667; Ironton, 684; Portsmouth, 685; and Piketon, 672.

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.

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; arrowwood viburnum, full bloom, 621; multiflora rose, full bloom, 643; northern catalpa, first bloom, 675; black vine weevil, first leaf notching due to adult feeding, 677; Washington hawthorn, full bloom, 731; and calico scale, egg hatch, 748.

Author: Curtis E. Young; young.2@osu.edu

8. COMING ATTRACTIONS.

A. 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].

B. 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. "Learning is not compulsory ... neither is survival." - W. Edwards Deming

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://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
Following are the participants in the May 26th conference call: 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); Dave Shetlar (Entomology); Nancy Taylor (C. Wayne Ellett Plant and Pest Diagnostic Clinic (CWEPPDC)); 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.

Where trade names are used, no discrimination is intended and no endorsement by Ohio State University Extension is implied. Although every attempt is made to produce information that is complete, timely, and accurate, the pesticide user bears responsibility of consulting the pesticide label and adhering to those directions.

CFAES provides research and related educational programs to clientele on a nondiscriminatory basis. For more information: [http://go.osu.edu/cfaesdiversity].