This is the 4th 2014 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.

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Plants of The Week

* Annual - Snapdragon (Antirrhinum spp)

Despite the fact that many hardware and home stores have annuals such as impatiens, marigolds, geraniums and other warm-season annuals on display and for sale, it's too early to plant into the landscape! Hold off on these as we are likely to have another frost or even a freeze (remember we live in Ohio!). If you are anxious to get some color in the garden, consider planting snapdragons. These cold-tolerant annuals can be planted right now because they tolerate cool soil temperatures and light frosts. In fact, they thrive in cooler temperatures and will shut down somewhat in the summer heat.

Snapdragons bloom and grow best in full sun. They tolerate light shade but bloom production decreases. The flowers get their common name from the fact that when one squeezes or pinches the flowers, the "dragon mouth" opens. Flowers are faintly fragrant. Taller varieties make excellent cut flowers. Shorter varieties are used for bedding plants or in borders. Deadhead on a regular basis to keep them fresh and blooming all season. There may be a period during the heat of summer where they just "sit there and do nothing," but be patient as they return to full glory with cooler fall temperatures. They are great in mass plantings in ornamental beds or in containers.

For More Information:
Missouri Botanical Garden Kemper Center for Home Gardening snapdragon information
http://www.mobot.org/gardeninghelp/plantfinder/plant.asp

* Perennial - Wild Columbine (Aquilegia canadensis)

This native North American plant is beginning to bloom in central Ohio nature preserves and is a great plant for shady woodland and natural areas as well as the perennial garden. Wild columbine grows around 1 - 3’ tall (top of the bloom stems) and have red and yellow bell-like flowers that are attractive to hummingbirds. The plants grow on a range of soils (dry to moist) and are adaptive to a variety of conditions including full sun to part shade. They are excellent in areas that one wants to naturalize as they spread prolifically under good growing conditions. However, in the garden where one might want to maintain control, columbine can re-seed and become a problem. Therefore, deadhead the flowers before the seeds develop.

The foliage is soft and somewhat frilly and quite attractive after flowering, as long as soils aren't completely dry. In addition, wild columbine appears to be less susceptible to leafminer feeding which devastates other species and hybrids.
**Woody - Korean Spice Viburnum (Viburnum carlesii)**

Korean spice viburnum, an Asian shrub, is a great fragrant shrub for well-drained, slightly acidic soils. This plant thrives in full sun to partial shade and can reach 5 - 8' in height and 4 - 8' in width. Plants have satiny dull green colored leaves which are very pubescent on the surface of the leaf. In the fall, leaves turn to a dark red or purple color. The flowers of Korean spice viburnum have a semi-snowball arrangement and are pink to red in bud and white when blooming. This plant has a few pests/diseases such as bacterial leaf spot, viburnum borer, aphids and nematodes. Plants should be pruned after blooming.

The cultivar 'Cayuga' is noted for its shiny, dark-green foliage that does not flower all at once. 'Diana' is a compact cultivar with purple leaves and reddish-purple petioles.

For More Information:
- Clemson University Cooperative Extension
  [http://www.clemson.edu/extension/hgic/videos_posters/videos/korean_spice_viburnum.html](http://www.clemson.edu/extension/hgic/videos_posters/videos/korean_spice_viburnum.html)
- Korean Spice Viburnum
  [http://courses.missouristate.edu/pbtrewatha/koreanspice_viburnum.htm](http://courses.missouristate.edu/pbtrewatha/koreanspice_viburnum.htm)

**Vegetable - Asparagus (Asparagus officinalis)**

As the ground temperatures climb over 50F, now is the time to closely watch for asparagus spears to emerge. This early perennial vegetable can produce 0.5 lb. of edible spears per year per crown and can continue to produce for 15 years or more. It is well worth planting quality crowns in well-drained soil for a crop that produces delicious vegetables followed by an attractive tall fern-like plant that can add interest to the landscape.

Asparagus, which is in the Lily (Liliaceae) family and native to the Mediterranean, prefers soils with a pH of 6.5 - 7.5. It will not thrive in soils with a pH less than 6.0; therefore, soil testing is recommended before planting to determine what amendments may be needed. By selecting all-male hybrids such as 'Jersey Knight' and 'Jersey Giant' you can increase your harvest. Male plants produce more spears than varieties with male and female plants such as 'Mary Washington'.

When the soil is about 50F, plant one-year-old healthy asparagus crowns 6" deep and 18" apart, fertilize and cover with soil. Although asparagus is a drought tolerant plant, new plants should be well watered if rainfall is scarce. Harvest asparagus for only 3 - 4 weeks during the 2nd year of its growth. The 3 year old plants can be harvested for 6 - 8 weeks. It is important to allow the plant to produce mature ferns and to let the ferns remain through the fall. The following year's harvest depends on the food produced by the ferns and stored in the crowns during the current year. Ferns will grow to 3 - 4' high and should be allowed to die naturally.

For More Information:
- OSUE FactSheet HYG 1603-94, Growing Asparagus in the Home Garden
  [http://ohiolink.osu.edu/hyg-fact/1000/1603.html](http://ohiolink.osu.edu/hyg-fact/1000/1603.html)
- Cornell University Vegetable Growing Guide
  [http://www.gardening.cornell.edu/homegardening/scence3ed.html](http://www.gardening.cornell.edu/homegardening/scence3ed.html)

**Weed - Henbit (Lamium amplexicaule)**

This winter annual, which is part of the mint family, is creating a purple show in many fields and ditches this week. Commonly confused with PURPLE DEADNETTLE (Lamium purpureum), henbit does not have red or purple tinted upper leaves like purple deadnettle, but rather a purplish, square stem. Henbit grows approximately 4 - 12" tall and is covered with sparse, fine hairs.
The leaves are oppositely arranged and are heart-shaped with rounded toothed margins. The upper leaves of the plant clasp the stem thus why the Latin name is amplexicaule, which means 'clasp.' Seeds of Henbit germinate in either fall or early spring. Plants occur in early spring with flowers being produced into early summer.

Controlling henbit is easily done by promoting a healthy, thick turf or by applying a mulch layer. Once henbit is established, seed production of henbit can be controlled by hand-pulling, tilling, or mowing. Henbit as well as purple deadnettle are overwintering hosts of soybean cyst nematode.

For More Information:
Utah State University Extension
Virginia Tech Weed Identification Guide
https://uteextension.tennessee.edu/publications/Documents/W165.pdf

Hort Shorts »

What's Up in the World of Wildlife?
As the weeks of April roll by and warmer days fill the calendar, the mating season for many species of wildlife is underway. RACOONS, SKUNKS, and OPOSSUMS will be searching for dens to spend the summer in and birth their young in. Now is a great time to do a walk-around of the exterior of your home and any other buildings on your property, scoping for access points and openings around the foundations. These make great dens for critters looking for a den. Seal up any openings with concrete, rocks, or cover with a galvanized wire mesh.

GROUNDHOGS are also excavating their summer burrows. Be on the lookout for burrows with entrances roughly 8 - 15" in diameter located along the edges of woodland and fields, or under the foundations of buildings. Groundhog burrows are easily identified by the mound of freshly excavated soil as the base of the burrow entrance. At this time of the year, burrows are easier to find as the grasses, shrubs, and forbs that can conceal burrows haven't fully greened up yet. Trapping is often one of the best management tools for nuisance groundhogs. If you are uncomfortable trapping, there are many qualified trappers who can help. For a list of nuisance wildlife animal control operators by county, visit: http://wildlife.ohiodnr.gov/portals/wildlife/pdfs/licenses%20&%20permits/CNWACO%20Current%20License%20Holders%203-20-2014.pdf.

For those of you that enjoy watching birds, the RUBY-THROATED HUMMINGBIRD has been making its way north from wintering ground in Central America. This tiny jewel-colored bird undergoes a migration of close to 3,000 miles two times a year in order to survive! There is no doubt hummingbirds will be hungry when they arrive back in Ohio. If you haven't pulled out your hummingbirds feeders yet this year, do it soon! Sightings of hummingbirds in Lawrence, Franklin, and Lucas counties have been reported. For a detailed look of the progression of hummingbirds from the south, check out www.ebird.org, click on 'Explore Data', then type in 'ruby-throated hummingbird', and select the current month and year. The result will be pinpoints on a map showing locations where hummingbirds have been spotted.

Hummingbirds aren't the only migratory bird traveling back to Ohio. The woods are getting noisier with the songs and calls of many songbirds as more and more arrive and begin their mating season. A couple weeks ago, the woods were choroused by woodpeckers, nuthatches, cardinals, and chickadees. Now, WOOD PEEWEEES, EASTERN PHOEBES, EASTERN TOWHEES, YELLOW-THROATED WARBLERS, and many more can be heard singing throughout the woods. If you are a woodland owner interested in attracting more songbirds to your woods, remember there are professionals available to help you. The Ohio Division of Wildlife private lands biologists will walk your woods with you and offer management suggestions. To contact the private lands biologist nearest you, visit: http://wildlife.ohiodnr.gov/species-and-habitats/private-lands-management.

But I'm Not an Orphan!
Spring to early summer is the time of year when one may stumble upon a nest or den of young wildlife babies. Perhaps it's a tightly woven grass nest filled with tiny, newly hatched birds or possibly a small depression under a bush lined with fur and filled with 4 - 5 young and fuzzy rabbit kits (baby rabbits are called kits, which is short for kitten). Many times, the parents are absent when wildlife young are stumbled upon, and unless something is amiss, for example a nest knocked out
of a tree or wounds/bleeding present on the young, the best thing you can do is leave the babies alone.

Many times, the parent or parents will leave their young alone to search for food. For example, female cottontail rabbits will often leave their kits alone yet concealed while she feeds during the day, only returning at night to care for them. Female deer also employ this same strategy, which also serves to protect the young from being found by predators.

Sometimes wildlife babies appear incapable, but are in fact self-sufficient. Rabbit kits mature very quickly, leaving the nest after 3 weeks as small versions of their parents. A small baby rabbit with erect ears and open eyes does not need assistance. Neither does a young bird with feathers fully covering their body. At this point, the young bird is a fledgling and learning to fly. Although it may appear to be alone, the parents are often nearby to help if there is trouble. On the other hand, nestling birds that lack feathers and are covered with down are not able to fly or perch on their own. These nestlings should be placed back in their nest, or if the nest has been destroyed, a new nest can be constructed.

Wildlife parents are generally very committed to their young and will usually only abandon them if there is an injury or death. Be sure to give the parents plenty of time to recover their young. If the young animal is not recovered, or if there are injuries present, contact a wildlife rehabilitator. A list of country rehabilitators is available on the Ohio Division of Wildlife's website (see link below). Always think before you act - even a young animal can bite or scratch, and in the process potentially spread a disease or parasite. Leave the capturing and caring for injured or truly abandoned animals to the trained rehabilitators. If you have any questions, call the Ohio Division of Wildlife before taking action at 1-800-WILDLIFE.

For More Information:
Division of Wildlife - Wildlife Orphans: Think Before You Act
http://www.dnr.state.oh.us/Portals/9/pdf/pub310.pdf
List of Ohio Wildlife Rehabilitators by County

Ask a Master Gardener Volunteer
Ask a Master Gardener Volunteer (AaMGV) on-line questions are increasing as gardeners and homeowners make plans for spring. The on-line service by OSU Extension utilizes specially trained Master Gardeners to respond to consumer horticulture questions to provide Educators and Specialists time to respond to commercial questions. Thirteen additional Master Gardener Volunteers will graduate at the end of April from AaMGV training.

The popular consumer questions in April included: winter damage to trees and shrubs, when to take soil tests and lawn heath questions. The on-line service allows questions to be asked 24 hours a day, 7 days a week. Responses are returned by email. Questions can be asked at: http://mastergardener.osu.edu/.

Winter Freeze Injury
This winter has delivered more than a few punches to the landscape. BYGLers have reported multiple instances of winter injury to flowering and evergreen landscape plants as a result of the winter wallop. While it is not unusual to see some freeze damage after an Ohio winter, this year the extent and severity was notable.

For early flowerers, timing was everything. Damage was reported on blossoms of magnolia, redbud, forsythia, and hyacinth. This occurred sporadically around the state and severity of damage seemed to depend upon where plants were in their blooming phase when the freeze hit and their location in the state. Flower buds that were still tight may pull through.

Winter burn was also noticed on many evergreen plants across the state from Cincinnati to Northern Ohio. This winter burn occurs when water is lost from the living tissue faster than the roots can replenish it. When the ground is frozen, the roots are unable to transfer water into the leaf or needle tissues exposed to biting winds and the winter sun. This results in leaf and needle desiccation that appears as bleaching, yellowing or browning, and leaf drop. Damaged plants observed with winter burn include: white pine, arborvitae, rhododendron, boxwood, ivy, weeping cherry, and magnolia. Turfgrass was also affected by the freeze with BYGL writers reporting patches of brown grass the size of dinner plates throughout lawns in Ohio. A video on turf winter burn can be viewed on the Ohio Turfgrass Foundation’s YouTube site http://go.osu.edu/OTF.
These freeze injuries can often be confused with salt injury from treating icy roads. In general, if the browning plant is near a sidewalk or roadway where salt or brine could be splashed, sprayed, or become airborne drift, chances are the damage is the result of a chemical burn caused by salt or a combination of salt and freeze. Salt damage may appear as yellowing or browning and is likely to be one-sided (the side facing the road). Freeze injury will appear as yellowing, bleaching, browning, or crisping up as well. Winter burning may, but not always, appear more uniformly across the exposed plant, or on the windward side. Segments of plants below the snow line may bloom due to the insulating effects of the snow on the buried limbs. If a plant is not near a roadway, winter freeze damage is likely the culprit of early spring browning. Also consider the native range of the plant in question. Some varieties planted in Ohio may be in the northernmost reach of their range and be more susceptible to winter injury.

Here is a list of the species with winter damage found in Ohio by at our BYGL writers this week in one or more counties: magnolia, redbud, white pine, arborvitae, boxwood, ivy, Foster’s Holly, Japanese umbrella pine, rhododendron, forsythia, Canaan & Fraser Fir, yews, weeping cherry, viburnum, spruce, and turf.

For More Information:
University of Maryland Winter Damage Factsheet
http://extension.umd.edu/learn/winter-damage-landscape-plants
University of Kentucky Leaf Scorch and Winter Drying
http://www2.ca.uky.edu/agcollege/plantpathology/ext_files/PPFShtml/PPFS-OR-W-17.pdf
eXtension Factsheet
http://blogs.extension.org/gardenprofessors/2014/04/14/feel-the-burn/
Salt damage Purdue
https://www.extension.purdue.edu/extmedia/id/id-412-w.pdf

**Planting Raspberries in the Home Gardens**

Raspberries are known to be highly nutritious and are not too difficult to grow. There are several types of raspberries. Raspberries can be classified by color. They can be black, red, purple or yellow. They can also be classified by growth habits. They are primocane bearing raspberries and floricanes bearing varieties. It is very important to remember the name of the raspberry varieties and their growth habits.

Some of the common primocane bearing varieties are 'Autumn Britten,' 'Heritage,' 'Caroline,' 'Himbo Top,' and 'Joan J'. These varieties produce a crop during the first year in the fall. They are also capable of producing a late spring/early summer crop and a fall crop in the second and subsequent years. Black raspberry ('Jewel'), summer red ('Nova') and purple raspberry (e.g., 'Royalty') are floricanes bearing varieties. They typically produce one crop a year. However, there are raspberry varieties that produce a summer crop and a fall crop on the same floricanes in the same year (e.g., 'Prelude').

All raspberry plants require excellent soil drainage, and should be planted in raised beds when soil drainage is poor. Spring is a good time to plant raspberry plants. Container grown plants are easier to transplant. However, bare rooted plants will also do quite well. Bare rooted plants typically come with a "handle," an old cane from the year before. This "handle" can be cut back to 2" long at planting since new shoots normally arise from the base of the plants. Refer to OSU Extension Bulletin #940, "Midwest Home Fruit Production Guide" for more information.

**How Cold is Cold Enough to Kill EAB?**

This winter was one to remember. Many records were broken across Ohio including record low temperatures. With that said, was it cold enough to kill the overwintering larvae of the EMERALD ASH BORER (EAB) (*Agrilus planipennis*)?

EAB larvae, which are primarily phloem feeders, spend the winter in ash (*Fraxinus* spp.) trees just underneath the tree's bark. Many spend the winter in what is described as pre-pupa, folded over like the letter "J", just waiting for spring to pupate and emerge as adult beetles.

There are two scientific articles that address the cold hardness of EAB - a question that many people in Ohio have been asking. So, was the long winter enough to control EAB?
The study described in the first article was designed to assess the cold hardiness of EAB larvae. Researchers measured the temperatures at which larvae freeze - also called supercooling. The second article focused on the effects of climate, primarily cold temperatures, on EAB and ultimately the potential survivability of the ash (Fraxinus spp.) genus. Both complete articles are available online at the US Forest Service website at http://www.nrs.fs.fed.us/pubs/.

While there is no denying that Ohio experienced a snowy and cold winter in 2013/2014, the buckeye state was likely not cold enough to negatively impact EAB as determined in both studies. However, the results did indicate that there may be some hope for the northern ranges of ash. Cold temperatures may play a role in maintaining lower levels of EAB populations, which may slow the spread and rate at which EAB devastates ash species in the US. However, only time will tell to what extent EAB larva have been impacted. Some preliminary data from tree dissections in our area appear to show little effect as a result from the cold temperatures.

This winter was not a silver bullet for EAB invasion. While there may have been some effect from the cold, it will not wipe out EAB. It is still advisable to monitor your ash trees for signs of decline in the canopy, and "D" shaped exit holes. If you have been treating your trees, continue to follow the recommendations of your arborist or tree service for continued protection. Continue to follow all quarantine regulations regarding the movement of firewood and other regulated items.

For additional information about EAB, check out the regional EAB website at www.emeraldashborer.info.

For More Information:
Research Article on the Cold Hardiness of EAB
Research Article on the Effects of Climate on EAB
http://www.nrs.fs.fed.us/pubs/44254
Regional EAB Website
http://www.emeraldashborer.info

Winter Injury or Boxwood Leafminer?

Curtis Young and Joe Boggs reported that overwintered boxwood leafminer (Monarthropalpus flavus) larvae have resumed their feeding activity in northwest and southwest Ohio, respectively. This non-native leaf mining fly was accidentally introduced into North America from Europe and has become common in the southern and central parts Ohio. It was once rarely observed in the northern part of the state; however, Curtis reported noticeable populations in northwest Ohio in 2012 and 2013 (BYGL 2012-08, 05/24/12; BYGL 2013-04, 04/25/13).

Adults emerge from leaf mines when accumulated growing degree days reach 440; around the time red horsechestnuts are in full bloom. Except for their bright orange abdomens, adults superficially resemble miniature mosquitoes. The females use their sharp ovipositors to insert eggs between the upper and lower leaf surfaces of boxwood leaves. Several eggs may be laid per leaf. The resulting yellowish-orange fly larvae (maggots) spend the remainder of the season developing through the 1st and 2nd instar stages as they consume interior leaf tissue to produce blister-like mines; however, infested leaves remain green so the damage is barely noticeable. Winter is spent as 3rd instar larvae inside the blister mines. In the spring, the larvae resume feeding and they develop through a 4th instar stage. During this time, mines expand rapidly, and damage becomes evident.

As mined leaves change colors in the spring, the damage is sometimes blamed on winter injury, and vice versa. It's important to distinguish between leafminer damage and winter injury because the boxwood leafminer re-infests plants, so the damage continues. Harsh winter conditions did cause damage to a wide variety of trees and shrubs including boxwoods. However, freeze damage has caused leaves to turn tan to light brown; they look bleached. Leaves that are
being damaged by boxwood leafminer typically have green areas on the upper leaf surface that surround irregularly shaped
to circular blotches. The blotches occur above the blister mines and gradually change color over time from light green, to
yellow, to orangish-yellow, to reddish-orange. Heavily damaged leaves drop from infested plants sometimes causing
noticeable defoliation.

Effective control options for boxwood leafminer involve applications of neonicotinoids such as imidacloprid (e.g. Merit and
generics); clothianidin (e.g. Arena or Aloft); and thiamethoxam (e.g. Meridian). An application this spring will prevent
damage during the upcoming season by killing 1st instar larvae. Timing the application until after boxwood blooms have
dropped will prevent insecticide exposure to pollinators.

For More Information:
NC State Entomology Insect Note
http://go.osu.edu/NCstate

Participants at this week's Southwest Ohio BYGLive! Diagnostic Walk-About were "treated" to a mass emergence of overwintered
BOXELDER BUGS (*Boisea* (= *Leptocoris*) *trivittata*) from a landscaping far from their namesake host. The observation
demonstrated two things. First, although this bug is notorious for invading homes in the fall in search of protected overwintering
sites, they do not require human structures to successfully survive the winter. After all, these bugs were surviving winters long
before people started building structures!

Second, despite their common name, both the adults and nymphs
of this seed-feeding bug will use their piercing-sucking mouthparts draw juices from the seeds of other trees in the genus
*Acer* as well as ash. They have also been observed feeding on elder, apple, buckeye, cactus, geranium, grape, honeysuckle,
lilac, linden, oak, peach, plum, spirea, strawberry, and tulip. As seed-feeders, the bug causes no harm to the health of their
host trees. However, their feeding activity on tree fruit and strawberries has been known to reduce fruit quality. The
boxelder bugs wide-ranging feeding activity simply demonstrates that insects pay little attention to their common name.

The 3/4" long boxelder bug adults are narrow-shaped, flat-backed, and dark gray or dark brownish-black. They have three
highly visible orangish-red stripes running lengthwise on the pronotum, the area behind the head; "trivittata" is Latin for
"three-striped". The abdomens of the oblong-shaped nymphs are bright red with a faint orange line running down the
middle, and an obvious orange spot in the middle of the line. Their antennae, head, thorax, legs, and wing-pads are bluish-
black. When encountered in a home, the nymphs are sometimes mistaken for bed bugs.

Over the past two seasons, we reported on the occurrence throughout Ohio of the GOLDENRAIN TREE BUG (*Jadera
haematoloma*); a boxelder bug look-alike. This bug is another seed-feeder that belongs to the same family (Rhopalidae) as
boxelder bugs. They also practice the same nuisance behavior as their boxelder brethren with large numbers appearing *en
masse* on landscapes around homes. The goldenrain tree bug is very similar to boxelder bugs in size, shape, and overall
color. The key to separating the two bugs is included in their scientific names. The specific epithet, "haematoloma," is
Greek for "blood-fringed," and clearly describes the deep red "shoulders" (the edges of the pronotum) on the goldenrain tree
bugs. Also, as their common name implies, goldenrain tree bugs are specific to their namesake host.

For More Information:
Colorado State University Fact Sheet
http://www.ext.colostate.edu/pubs/insect/05522.html
Oklahoma State University Digital Diagnostics Fact Sheet
http://entoplp.okstate.edu/ddd/insects/boxelder.htm

When Is a Bee Not a Bee?

When it is a fly, of course! There are a number of flies that mimic bees in order to escape their enemies and many of these
flies are important predators as adults, or parasites and parasitoids as larvae. These include ROBBER FLIES (Order:  Diptera;
family:  Asilidae); HOVER FLIES (family:  Syrphidae); and BEE FLIES (family:  Bombyliidae). Curtis Young reported encountering
One of the more common species found in Ohio is the LARGE BEE FLY (*Bombylius major*) which is sometimes called the greater bee fly. These large flies have robust bodies that measure around 1/2” in length. Their abdomens are covered in fine light brown to yellowish-brown hairs. As with all flies, the large bee fly only has two wings (Diptera: di- = two; -ptera = wing) and this flies wings have striking dark gray markings across the entire leading edges of their wings. Adults are considered important pollinators; they are equipped with a long, needle-like proboscis to aid in their flower feeding. However, their larvae are sometimes a serious enemy of pollinators!

In last week’s BYGL (2014-03, 04/17/14), we reported that GROUND-NESTING BEES (Order: Hymenoptera; Family: Andrenidae) were commencing their annual soil excavations in Ohio to construct underground nests. We noted that these bees are considered one of our most important pollinators. Regrettably, the larvae of ground-nesting bees are also a favored target of the larvae (maggots) of the large bee fly. The female bee flies flick their eggs onto to ground near the entrance to a ground-nesting bee burrow, or they lay eggs on flowers visited by pollinators including the bees.

Once the bee fly eggs hatch, the maggots either crawl into the burrows or hitch a ride on the bees from flowers back to their burrows. The bee fly maggots then remain inactive while they wait for the bee larvae to pupate. Once bee pupae are available, the maggots crawl onto the pupae to feed as an "ectoparasite" by extracting blood; they ultimately suck the bee pupae dry killing them. The entomological term used to describe the unusual larval behavior of the large bee fly is "hypermetamorphic" which means different larval instars are specialized for different life-styles. In this case, the first instar maggots are specialized for locating a host, and the later instars are specialized for feeding on the host. Large bee fly maggots will also locate and feed on other solitary bees and wasps as well as some species of beetles.

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**Millipede Stampede**

Marne Titchenell reported receiving a question from her father-in-law in northern Ohio about large number of MILLIPEDES suddenly appearing inside his garage. These worm-like arthropods occasionally beat-feet in large groups for reasons that are not entirely understood. It has been speculated that millipede stampedes may be in associated with mating behavior, or in response to dramatic temperature changes, drought, or flooding. Fortunately, such mass migrations are short-lived and those that wander into homes will dry-out and die quickly becoming easy fodder for vacuum cleaners.

Millipedes range in color from tan to brownish-black. When disturbed, they curl their bodies into a spiral "watch-spring" configuration. Their armored segments each possess two pairs of legs; however, the legs in some species are hidden beneath the body causing the millipedes to appear to float as they undulate over the ground. Millipedes feed on decaying organic matter, so the most effective long-term management option is to reduce the proximity of organic matter (e.g. mulch) near foundations. An 8 - 12” mulch-free zone near structures is recommended. Also, irrigation should be closely managed to avoid providing a continual wet-zone near buildings; ideal habitat for millipedes.

For More Information:
Colorado State University Extension FactSheet
http://www.ext.colostate.edu/pubs/insect/05552.html

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**Disease Digest »**

**Fungi Growing on a Tree Trunk Could Spell Trouble**

There are several fungi that can infect the wood of standing live trees and produce decay that compromises the stability of the tree. Their presence in a tree is frequently evidenced by the production of fungal reproductive structures ("fruiting bodies") on the outside of the tree (i.e. mushrooms, shelf fungi, conks, etc.). These reproductive structures represent a fraction of the overall body of the fungus growing within the tissues of the tree. Hand
removal of these structures off of the tree does next to nothing for managing the infection that is potentially destroying the interior of the tree.

Depending on the species of fungus growing on and in the tree, several different fungal diseases can occur and are described as root rots, heart rots, butt rots, brown rots, white rots and soft rots. Several common Ohio fungi that are associated with these rots include SULFUR FUNGI (a.k.a. CHICKEN OF THE WOODS) (*Laetiporus sulphureus*), HONEY MUSHROOMS (*Armillaria mellea*), ARTIST’S CONK (*Ganoderma applanatum*), LAQUERED POLYPORE (*G. lucidum*), COMMON SPLIT GILL (*Schizophyllum commune*) and DRYAD’S SADDLE (a.k.a PHEASANT’S BACK MUSHROOM) (*Polyporus squamosus*).

Typically these fungi gain entry into the tissues of the tree through wounds produced by mechanical injury from lawn mowers, cars, weed whips, and pruning equipment or from natural causes of injury such as deer rubbing, rodent feeding, frost cracks, and storm breakage. Some fungi can enter the tree through its roots like the honey mushrooms that produce *armillaria* root rot.

Fungi growing on the main support structures of a tree indicate some level of internal decay has been developing. The extent of the decay is difficult to determine if there is not an open cavity through which to visualize the problem. The only way to assess the level of decay in a standing live tree is to have the right tools to do so. Those people who have the right tools and training to use them correctly are tree professionals such as foresters and/or certified arborists. It is highly recommended that a homeowner with concerns for the structural stability of a tree should find one of these trained individuals to assess their tree. The International Society of Arboriculture (ISA) provides a search engine on their website (http://www.treesaregood.org) to help people find a certified arborist in their area.

Homeowners should try to protect their trees from infection by these opportunistic fungi by avoiding injury to the trees especially the bark of the tree. The bark of a tree is its primary defense from infection and invasion by fungi and insects. Keep lawn care equipment away from the bases of trees and tree roots. A mulch ring around the base of the tree will reinforce the no equipment zone. Protect trees from deer rubbing and rodent damage with fencing during fall and winter. Use proper pruning cuts when pruning trees. Prune storm damaged limbs to a proper pruning point to speed along the wound healing process. A clean pruning cut can be encapsulated by the healing process faster than a jagged broken branch.

For More Information:
Wood Decay Fungi in Landscape Trees

**Turf Tips »**

**Turfgrass Freeze Damage**

Joe Rimelspach reported that he and others with the OSU Buckeye Turf team began receiving reports last week from throughout the state of freeze damage to turfgrass. The symptoms were sometimes subtle appearing as random areas of light tan to brown turfgrass with no discernable pattern, of dramatic appearing as irregularly shaped to almost circular patches of highly noticeable brown grass. The turfgrass canopy appeared thin within the affected areas. A close examination revealed blade tips that were shriveled and discolored; some described the blades as looking like they had been dipped in bleach. The damage extended part way down the blade, or all the way down to the base of the blade. The magnitude of the damage varied widely with turfgrass age, species, and location.

Joe explained that the "setup" for the damage started a few weeks ago with ample rainfall and warm temperatures stimulating lush, spring growth. The rapidly growing turfgrass had required mowing in some parts of the state, particularly in southern Ohio where high profile turfgrass was mowed 2 - 3 times by early last week. Of course, all of this is "normal" for an Ohio spring. However, what wasn't normal were the crashing temperatures that occurred on April 16 throughout the state. Most areas experienced temperatures in the mid-to-upper 20's with some northern areas seeing record-setting temperatures in the teens. Although the deep freeze didn't last long, it was long enough to damage the tender new turfgrass growth. Mowing added to the freeze susceptibility by exposing lush undergrowth.

Mild damage symptoms began to appear almost immediately; however, the true extent of the damage was not revealed until
late last week and into the weekend with dramatically worsening symptoms becoming very obvious. Turfgrass managers may have been challenged with making a correct diagnosis because some species, such as turf-type tall fescue, was generally more susceptible compared to other species which enhanced the variability of symptoms within mixed stands of turfgrass. Indeed, Joe reported that symptoms were blamed on a wide range of causes including nefarious herbicide applications!

The good news is that the damaged turfgrass should eventually out-grow the symptoms as long as the crowns were not damaged. Joe urged that turfgrass managers should closely examine turfgrass crowns to make sure they remain healthy; if the crowns are dead, recovery will require re-seeding. While it is rare for cool-season turfgrass to be damaged in Ohio by a spring freeze, such is not the case for warm-season grasses in the southern states. Indeed, Joe noted that the symptoms were exactly like those he and others have observed when lush growing Bermuda grass has been exposed to freezing temperatures.

Joe produced an instructive video describing this rare spring event. Here is the web address for Joe's video: https://www.youtube.com/watch?v=DPTAKTv9hM&feature=youtu.be.

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**Mud Chimneys are Rising**

Curtis Young and Joe Boggs reported that mud "chimneys," the nuisance handiwork of TERRESTRIAL or BURROWING CRAYFISH, are rising above turfgrass in northwest and southwest Ohio, respectively. They both noted that the number and sizes of the chimneys are becoming truly impressive with Curtis describing being briefly hobbled by sticky mud globing onto his shoes after walking through a crayfish "mine field!"

There are several species of burrowing crayfish, but most belong to two genera: *Cambarus* and *Fallicambarus*. Like their aquatic cousins, these crayfish use gills to extract oxygen from water. However, unlike their water-soaked cousins, burrowing crayfish spend most of their lives on land. They must dig their burrows down to ground water so they have a ready source of oxygen. This connection to a high water table explains why most burrowing activity occurs in poorly drained soils near streams or around shallow ditches.

The crayfish throw soft mud up around their exit holes as they excavate the soil. These chimney-like structures may tower 3 - 8" above the soil surface and can present a real hazard to mowing. Indeed, hitting a sun dried brick-hard crayfish chimney with a mower dulls mower blades and sends up a huge cloud of dust … often accompanied by a stream of expletives. Unfortunately, there is little that can be done to directly control these terrestrial "mud bugs." Pouring materials down the holes to kill the crayfish is strongly discouraged since the burrows extend down to ground water which could become contaminated.

Management generally focuses on physically reducing the high profile of the chimneys, patience, and habitat modification. The chimneys can be stomped or raked smooth prior to mowing. Patience focuses on recognizing that most of the crayfish's excavation activity occurs early in the season, and will subside as the season progresses. Habitat modification focuses on improving water drainage to lower the water table. This may involve lowering nearby drainage ditches.

A more direct approach to managing these annoying crustaceans is to apply a little stealth to hunt them down and kill them. The omnivorous crayfish may range several feet from their burrows at night in search of plant and animal food, living or dead. They are not fast as they crawl across the ground and are highly susceptible to a well-aimed foot.

For More Information:

N.C. State Ornamental and Turfgrass Fact Sheet
http://go.osu.edu/mudchimneys

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**Industry Insight »**

**Get the Dirt on Soils by Testing Them**

There is a sage old adage to which most, if not all Extension Educators readily subscribe, that states, "Don't Guess - Soil Test." This initial step is both essential and critical to clearly define specific soil characteristics. These soil characteristics, like fertility, need to be known to successfully grow desirable plants of...
any type. Soil tests should be used to determine the concentrations of certain nutrients and elements present in soils. These tests can also help to determine what nutrients may be limited, deficient or excessive, as well as the amounts specific crops extract for their needs in a given year. Levels of soil fertility will fluctuate not only from year to year, but within a given year these levels will actually vacillate throughout the entire growing season. These fluctuations may be the result of using soil amendments like manures, leaf humus, composted organic matter and mulches; as well as the use of any fertilizers, lime or sulfur, along with any leaching losses caused by both rainfall and irrigation. Typically, if the crop to be grown is specified, most soil testing businesses will also give recommendations to adjust any of the identified nutrient deficiencies.

A typical soil test provides information like soil pH, cation exchange capacity (CEC), lime requirements, if needed, and the base saturation (percentage of CEC which a particular cation occupies). Also measured are the current soil nutrient amounts of phosphorus (P), potassium (K), calcium (Ca), and magnesium (Mg). If desired, available for additional fees, there are also other tests which will measure micronutrients like iron (Fe), zinc (Zn), manganese (Mn), or the amount of soluble salts, nitrates, and organic matter content. Don't wait to see if plants will survive the soil they are planted in - do a soil test and make sure they are given the greatest chance to not only survive, but thrive!

For More Information:
Ohio State Fact Sheet- "Soil Testing is An Excellent Investment for Garden, Lawn, and Landscape Plants and Commercial Crops"

WeatherWatch

Weather Update

The following weather information summarizes data collected at various Ohio Agricultural Research Development Center (OARDC) Weather Stations spanning the dates from April 1 - 23, 2014, with the exception of the soil temperatures which are readings from Wednesday, April 23, 2014 at 5:20 p.m.

Last week's cold weather, including low record temperatures in several area of the state, was still a topic on this week's BYGL. Damage to turfgrass was reported across the state (see Turf Tips for related story). Speaking of turfgrass, Joe Boggs’ reported already making several trips across his lawn. Curtis Young mentioned that many mowers in NW Ohio remained in garages and sheds as spring growth is slow to start.

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For More Information:
OARDC Weather Stations
http://www.oardc.ohio-state.edu/centernet/weather.htm

Growing Degree Days (GDD)
Coming Attractions

Emerald Ash Borer University (EAUB) Spring Schedule

Be sure to tune into EABU this spring to learn more about EAB and other related topics. Sessions can be accessed through the Regional Emerald Ash Borer website http://www.emeraldashborer.info. Here is a listing of the live sessions scheduled this spring:

- May 8, 2014, 11:00 AM (EST) In Defense of Urban Forestry - Lindsey Purcell, Urban Forest Specialist, Purdue University
- May 19, 2014, 11:00 AM (EST) EAB101- What Happened and What's Happening Now - Amy Stone, Extension Educator, Ohio State University and Robin Usborne, Communication Manager, Michigan State University

Have questions about EABU? Contact Amy Stone at stone.91@osu.edu.

Tree School

Tree School is an all-day workshop on all things trees! It takes place May 3, 2014 at the Ohio State Mansfield Campus. Are you a woodland owner, Christmas tree grower, gardener, wildlife enthusiast, landscaper, or just interested in learning more about trees? Tree School features 12 different educational sessions on a variety of tree-related topics - including things like tree planting, the top landscape trees, mapping your property and invasive species management and more!

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 106 to 243.

Following is a report of GDD for several locations around Ohio as of end of the day of April 23, 2014: Painesville, 106; Cleveland, 116; Toledo, 118; Canfield, 122; Findlay, 119; Van Wert, 123; Wooster, 136; Coshocton, 166; Columbus, 174; Springfield, 166; Dayton, 173; Cincinnati, 218; Ironton, 242; Portsmouth, 243; and Piketon, 240.

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.

Manchu cherry, first bloom, 93; northern lights forsythia, full bloom, 94; Norway maple, first bloom, 116; border forsythia, full bloom, 116; chanticleer callery pear, first bloom, 123; sargent cherry, first bloom, 127; larch casebearer, egg hatch, 128; Japanese pieris, full bloom, 129; saucer magnolia, first bloom, 133; common flowering quince, first bloom, 137; Bradford callery pear, first bloom, 142; European pine sawfly, egg hatch, 144; weeping Higan cherry, first bloom, 145; P.J.M. rhododendron, first bloom, 147; chanticleer callery pear, full bloom, 149; Norway maple, full bloom, 149; inkberry leafminer, adult emergence, 150; sargent cherry, full bloom, 151; star magnolia, full bloom, 151; Allegheny serviceberry, first bloom, 153; Manchu cherry, full bloom, 155; spring snow crabapple, first bloom, 155; apple serviceberry, first bloom, 159; spruce spider mite, egg hatch, 162; Bradford callery pear, full bloom, 164; Allegheny serviceberry, full bloom, 169; saucer magnolia, full bloom, 174; P.J.M. rhododendron, full bloom, 178; boxwood psyllid, egg hatch, 179; weeping Higan cherry, full bloom, 179; Koreanspice viburnum, first bloom, 185; regent serviceberry, first bloom, 186; Japanese flowering crabapple, first bloom, 189; eastern redbud, first bloom, 191; gypsy moth, egg hatch, 192; Koreanspice viburnum, full bloom, 205; azalea lace bug, egg hatch, 206; 'Spring Snow' crabapple, full bloom, 209; common flowering quince, full bloom, 214; birch leafminer, adult emergence, 215; 'Coralburst' crabapple, first bloom, 217; elm leafminer, adult emergence, 219; common chokecherry, full bloom, 221; alder leafminer, adult emergence, 224; honeylocust plant bug, egg hatch, 230; sargent crabapple, first bloom, 230; common lilac, first bloom, 234; Ohio buckeye, first bloom, 245; common horsechestnut, first bloom, 251; hawthorn lace bug, adult emergence, 253; hawthorn leafminer, adult emergence, 260.

For More Information:
Growing Degree Days and Phenology for Ohio http://www.oardc.ohio-state.edu/gdd/
Understanding and Using Degree-Days http://ohioline.osu.edu/sc165/sc165_14.html
Registration is now open at: http://www.woodlandstewards.osu.edu and closes April 25, 2014.

Wildlife in Your Woods

Interested in learning more about the wildlife that is in your woods? Want to learn how to attract deer, birds, and amphibians to your woods? Then this class is for you! Come to the Ohio State Mansfield campus on May 9, 2014 to spend a day learning how to not only attract a variety of these species to your woodlot with proper management but also how to monitor them! We will begin indoors in the morning and end outdoors with a walk through the woods where we will further discuss monitoring techniques, management tips, and search a vernal pool for frogs and salamanders.

Registration is now open at: http://www.woodlandstewards.osu.edu and closes May 2, 2014. Don't wait - register now!

The Buckeye Lady Beetle Blitz 2014!

The Agricultural Landscape Ecology Lab is hosting three sessions of a workshop this year in May to kick off The Buckeye Lady Beetle Blitz 2014! This workshop will focus on the 'secret lives' of beneficial garden arthropods. You will learn about the diversity of predators, parasitoids, and pollinators that inhabit your garden. They will discuss foraging strategies, courtship, parental care of young, shelter and nest building, and much more! Participants can also get involved with two exciting research projects, the Buckeye Lady Beetle Blitz and a NEW study examining pollination services in home gardens!

They have three locations for this workshop:

- May 14, 2014 at OARDC's Fisher Auditorium, 1680 Madison Ave, Wooster, OH
- May 15, 2014 at the Rocky River Nature Center, 24000 Valley Parkway, North Olmsted, OH
- May 16, 2014 at the Civic Garden Center, 2715 Reading Road, Cincinnati, OH

For more information visit: http://gardinerlab-dev.cfaes.ohio-state.edu/node/31/person-workshop-new-and-existing-blbb-volunteers.

Byglosophy »

"Watching something grow is good for morale. It helps us believe in life." - Myron S. Kaufman

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