

## OSU Extension - Auglaize County Weekly Horticulture Newsletter – 5-22-20

### Nutrients for Vegetables



Last week I discussed the basics of soil fertility and sources of nutrients. As we hopefully get closer to working in our gardens, it is time to start thinking about how to apply fertilizer to our vegetables.

This week I want to talk about the amounts of nutrients needed for vegetables and when it should be applied. When purchasing a fertilizer it will have three numbers on it. The numbers represent the amount of nitrogen – phosphate – and potash in that order as a percentage of the weight of the bag. I will give the fertilizer rates in pounds active ingredient per acre (# ai/A). You will need to convert this to the number of pounds of product/A based upon the analysis of the fertilizer you are using. For example if you need 120 pounds of  $P_2O_5$  (phosphate)/A and you will use 0-46-0 then you need to divide 120 by 0.46 (because analysis is based on a percent) to obtain 261 pounds of 0-46-0 per acre. Next multiply 261 by 0.002295 to convert pounds per acre to pounds per 100 square feet. Therefore you need to apply 0.6 pounds of 0-46-0 per 100 square feet.

Apply 20 and 30 pounds of nitrogen/A to peas and green beans, tomatoes, peppers, and sweet potato, respectively, before planting. Apply a small amount of a liquid solution of nitrogen to tomato and pepper plugs before transplanting and put a small amount of nitrogen solution in the hole when transplanting sweet potato, but do not put too much in because you will burn the roots. Apply 50 pounds of nitrogen/A to cucurbits (squash, pumpkin, and melons), 60 pounds of nitrogen/A to leafy greens, root crops (carrot, turnip, beets) and sweet corn, 70 pounds of nitrogen/A to onion, 120 pounds of nitrogen/A to cole crops (broccoli, cauliflower, cabbage, Brussel sprouts, and 135 pounds of nitrogen/A to potatoes, herbs and mint before planting. In addition to the preplant nitrogen applications some species need additional nitrogen later in the season. When making a second application use a fertilizer that only contains nitrogen. Be sure to incorporate

the fertilizer to keep it from volatilizing. In the second application, apply 30 to 40 pounds nitrogen/A to pumpkins and squash when vines start to run. For melons, apply 45 pounds of nitrogen/A when vines start to run. Apply 35 pounds of nitrogen/A to peppers and tomatoes 3 to 4 weeks after transplanting and another 35 pounds of nitrogen/A 6 to 8 weeks after transplanting. Apply 40 pounds of nitrogen/A to sweet corn at the 10 to 15-inch stage, 50 pounds of nitrogen/A to leafy greens and herbs about 3 weeks after planting, and 60 pounds of nitrogen/A to root crops 4 to 6 weeks after planting.

If the soil test value for phosphorus is greater than 129 parts per million with Mehlich III extraction method then no phosphorus is required for any crop! If the soil test value for phosphorus is greater than 70, but less than 129 parts per million Mehlich III, apply 20, 25, and 50 pounds  $P_2O_5$ /A to root crops and herbs, onion and cole crops, and potato, respectively. If the soil test value for phosphorus is greater than 70 parts per million Mehlich III, no phosphorus is needed for any vegetable crop not mentioned above. If soil test phosphorus values are not known or are below 46 parts per million Mehlich III, apply 40 pounds  $P_2O_5$ /A to sweet potato, 50 pounds  $P_2O_5$ /A to green beans, peas, corn, and mint, 75 pounds  $P_2O_5$ /A to cucurbit species, 90 pounds  $P_2O_5$ /A to root crops, 110 pounds  $P_2O_5$ /A to cole crops, 115 pounds  $P_2O_5$ /A to onion, 120 pounds  $P_2O_5$ /A to pepper and tomato, 125 pounds  $P_2O_5$ /A to leafy greens and potato, and 150 pounds  $P_2O_5$ /A to herbs. If soil test phosphorus values are below 28 parts per million increase all  $P_2O_5$  rates by 30%.

If soil test potassium values are greater than 200 parts per million with the soil having a CEC of 10 or potassium values are greater than 220 parts per million for CEC greater than 20, then no potash ( $K_2O$ ) is needed for any vegetable, except potato which needs 50 pounds  $K_2O$ /A and herbs need 100 pounds  $K_2O$ /A. If soil test potassium values are at 75 parts per million at a CEC of 10 or 115 parts per million at a CEC of greater than 20, then apply 50 pounds  $K_2O$ /A to green beans and peas, 100 pounds  $K_2O$ /A to cucurbits, leafy greens, and root crops, 125 pounds  $K_2O$ /A to cole crops, onion, corn, and sweet potato, 150 pounds  $K_2O$ /A to tomato, green pepper and herbs, and 175 pounds  $K_2O$ /A to potato. If soil test potassium values are below 60 parts per million at a CEC of 10 or below 90 parts per million at a CEC of greater than 20, then increase all rates by 30%. If soil test potassium levels are greater than 110 parts per million at a CEC of 10 or greater than 155 parts per million at a CEC greater than 20, then reduce the above rates by 30%.

The reasons to follow these guidelines are to reduce nutrient loss in the environment, maximize production, and reduce fertilizer costs. Happy gardening. Let's hope we can get the rest of the garden planted soon.



## Local Observations



**Current stage of my spinach**



**Current stage of my carrots**



**My asparagus starting to emerge**



**Current stage of my peas**





**Star-of-Bethlehem (friend or foe?)**



**Tulip**



**A peach! Some made it!**



**Apples survived too!**





**Columbine**



**Iris**



**Buckeye in flower**



**Sea thrift**

Good afternoon! I pray you are well.

What a change! Wow, it is wet! We received rainfall **6** days this past week! Rainfall on Friday, May 15<sup>th</sup> ranged from 0.09" near Feikert and St. Rt. 385 roads to 1.0" near Kossuth. Rainfall on Saturday ranged from

0" at 7 locations to 0.18" near Tri-Township and Lock Two roads. Rainfall on Sunday ranged from 0" near Kettlersville and Santa Fe-New Knoxville roads to 0.38" near Brown and Pusheta roads. Rainfall on Monday ranged from 1.19" near Santa Fe-New Knoxville and Shelby-Fryburg roads to 2.6" near Bloody Bridge. Rainfall on Tuesday ranged from a Trace near Feikert and St. Rt. 385 roads to 1.02" near Santa Fe-New Knoxville and Shelby-Fryburg roads. Rainfall on Thursday ranged from a Trace near Bloody Bridge to 0.2" near St. Rt. 197 and Mercer Line roads. Rainfall for the week ranged from 1.99" near Feikert and St. Rt. 385 roads to 4.03" near Glynwood and Townline-Kossuth roads. The average rainfall for the week was 3.15", 2.65" more than last week. Looks like it could be wet next week as well with a greater than 25% chance of rain for 6 of the next 7 days.

A little warmer week! The average high temperature now is 73 degrees F, 2 degrees higher than last week. Temperatures were above normal for **3** day and below normal for **4** days this past week. Temperatures ranged from 59 degrees F to 79 degrees F. The average high temperature for the week was 68.4 degrees F which is 9.8 degrees F warmer than last week but still 4.6 degrees F lower than the historical average high. Temperatures will be way above normal for most of the next week.

Nothing has emerged that I planted last Wednesday! That means I will not get any lettuce again more than likely! This time due to using 2019 seed. My asparagus started to emerge, so I had to start covering it. I lost one tomato plant maybe from a cutworm, but unsure of this. The rest of the tomatoes and the peppers are looking good. I sure hope it dries out soon so I can get the remainder of the garden planted! My sweet potato plants arrived, but they look to be in very bad condition.

Flowers of all species are really popping now. My tulips are still flowering! My columbine is in full flower.

## Weekly Weed Photos





**Cressleaf groundsel**



**Common lambsquarters**



**Catchweed bedstraw**



**Thymeleaf speedwell**





**Giant ragweed**



**Ladysthumb (smartweed)**

## Special OSU Horticulture Meetings

### **Horticulture Lunch and Learn and Horticulture Happy Hour**

During this period of COVID-19 OSU Extension is offering a Horticulture Lunch and Learn Program and a Horticulture Happy Hour Program. If you are interested, visit the following web address: <http://go.osu.edu/MGVlearn> The Lunch and Learn occurs every Tuesday and Thursday from noon to 1:00 PM and the Happy Hour is Wednesdays from 4:00 to 5:00 PM.

## VegNet

**Beware of armyworm on early sweet corn and other crops!**



May 16<sub>2020</sub>

Share

We have detected an extremely large population of armyworm moths in Columbus during the past week. This pest prefers to feed on grasses, including corn, wheat, rye, and grassy weeds, but if those plants are in shortage and if populations of armyworm are large, it can infest other crops including alfalfa, beans, cabbage, cucumbers, lettuces, onions, peppers, and radishes. Infestation can be worse in no-till fields than in tilled fields. Any early-planted fields of these crops should be scouted for presence of armyworm. Scouting is best done near dawn or dusk because armyworm larvae are nocturnal and hide in the soil during the day. The name armyworm is given because of the ability of older larvae to form large aggregations that move together from field to field. Infestations can appear quite suddenly in a field, and much damage can occur in a short period of time.

The proper common name of this pest is just 'armyworm' but it is often called the true armyworm or the common armyworm, to differentiate it from other species such as fall armyworm, beet armyworm, and yellow-striped armyworm. Its scientific name is *Mythimna unipuncta*, formerly *Pseudaletia unipuncta*. It is a member of Order Lepidoptera, Family Noctuidae.

Armyworm larvae are striped, as shown below in Figures 1 and 2. The body is greyish-green or greyish brown with broad dark stripes down its back and along each side, and with a light stripe below the dark stripe on each side. The head is yellow or yellow-brown, marked with net-like brown lines. The body is about 35 mm (1.4 inches) long when fully grown. The larval period lasts about 3 weeks. There are about 2 or 3 generations per year in Ohio. The adult is light brown with a white dot near the center of each forewing, as shown below in Figure 3.



Figure 1. Armyworm larva. Photo credit: James Kalisch, University of Nebraska, Bugwood.org.



Figure 2. Armyworm larva. Photo credit: Frank Peairs, Colorado State University, Bugwood.org.





Figure 3. Armyworm adult. Photo credit: Pest and Diseases Image Library , Bugwood.org. The adult is a moth that can be detected in blacklight traps and pheromone traps. We have had a blacklight trap operating in Columbus since the first week of April. We detected quite a few armyworm moths (0-32 moths per night) throughout April, but there was a large surge on 5/14 when there were 210 armyworm moths in the trap after a single night. Dr Dave Shetlar has been tracking various species of moths in blacklight traps at several locations for several decades, and he thinks that 210 armyworm moths in one night is a new record high number.

The link to our pheromone trap reports is here: <https://docs.google.com/spreadsheets/d/10gh3rHahdxLKkXQapGyEPxWsjHYRmgsezOoFHnwtYeo/edit#gid=1122468773>

The link to our blacklight trap reports is here: <https://docs.google.com/spreadsheets/d/10gh3rHahdxLKkXQapGyEPxWsjHYRmgsezOoFHnwtYeo/edit#gid=1114468121>

Sweet corn and field corn that is transgenic due to presence of B.t. should have protection from armyworm feeding. Seed treatments on corn by clothianidin, thiamethoxam, or imidacloprid can offer some suppression from caterpillars such as armyworm, but they are primarily for control of beetles. For sweet corn that is not transgenic, insecticide treatment is suggested if more than 35% of plants show infestation by armyworm during the seedling or early-whorl stages. Insecticides that can be used for armyworm control on sweet corn

are pyrethroids (Asana, Baythroid, Brigade, Mustang, Permethrin, Proaxis, Warrior), or Blackhawk, Coragen, Intrepid, Lannate, Lorsban, Radiant, or B.t. products such as Dipel and Javelin.

-by Celeste Welty, Extension Entomologist, 16 May 2020

## BYGL

I did not include all of this week's articles in this newsletter. To see all of them go here:  
<https://bygl.osu.edu/>

## Ant Wars

**Authors**

Joe Boggs

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### Pavement Ant War



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"Ant swarms" are most commonly associated with ants mating and the subsequent establishment of new colonies. However, non-native pavement ants (*Tetramorium caespitum*) may also swarm for a more nefarious purpose: to conduct full-blown, no-holds-barred ant wars.

### Pavement Ant War



Joe Boggs, OSU Extension©

## For Love and Food

The vast majority of the individuals found in ant colonies in Ohio are wingless sterile females; the "workers." Only queens can lay eggs but once they start their colonies, they never leave.

Periodically, fertile winged ants, both males, and females are produced. These are called "alates" and the new queens will establish new colonies. The alates fly off to mate and their departure is accompanied by swarms of workers to see them off. Pavement ants generally produce mating swarms in the late spring to early summer.

Pavement ants were introduced to the U.S. from Europe over 100 years ago. They are sometimes mistakenly considered to be natives owing to their general establishment throughout a wide swath of North America. I've referred to them as a single species, *Tetramorium caespitum*. However, their exact taxonomy remains tangled. Most ant resources refer to pavement ants as a species complex.

Their habit of locating their underground colonies beside or beneath sidewalks gives rise to their common name. Mounds of loose soil particles emerging from sidewalk cracks or expansion joints are often the work of pavement ants.







The ants scavenge for a wide variety of food including tiny pieces of bread crumbs and other detritus in our kitchens, live and dead insects, honeydew from aphids, grease, etc. The worker's ability to range widely to locate food and find their way unerringly back to their colonies while laying down a chemical trail for their sisters is phenomenal.



As with other hymenopteran stinging insects (e.g. wasps and bees), pavement ants have stingers that are actually modified ovipositors (ovi = eggs). Their stingers are too small to penetrate our skin; reports of skin rashes are generally associated with their bites. However, the pavement ant's stingers do play an important role in laying down a chemical trail. Their stingers are broadened at the tip which acts a bit like a spatula in depositing trailing pheromone.

## Bare-Tarsal Brawls

Springtime is also battle time for the pugnacious pavement ants. Instead of "make love, not war," they make love and war. Look closely at pavement ant swarms and if you don't see ants with wings, love is not in the air. You're seeing a full-blown ant war.





Pavement ants are very protective of their feeding territory and intolerant of nearby colonies. They are well-known for their bare-tarsal brawls. Battles may occur as a massive, swirling clash of six-legged combatants or as a series of smaller pitched skirmishes with constantly shifting battle lines.







A close examination of the melee will reveal ants locked mandible-to-mandible in ruthless combat. Battlefield injuries range from crushed abdomens to dismemberment. Ant wars provide questionable antertainment and I've often wondered if the Romans got their gladiatorial ideas by watching pavement ants.



Some ant wars arise as territorial disputes resulting from scavenging workers based in adjacent colonies continually bumping into each other. Others occur as colonies try to expand their territories with two colonies "planting their ant flags" in each other's territories. These disputes are settled on a neutral battlefield between the two colonies, presumably with ant-drums and bugles blowing.

The most brutal battles happen when one colony decides to raid a nearby colony. These fights are bloody affairs with macerated bodies quickly piling up.

Colony raids occur right on top of the colony that's having a bad ant day. The defending colony quickly pours all available combatants into the fray. Even winged alates may be seen mixing it up with the opposing force. Although alates are much larger than their colony kin, they are built for love, not war. They do not fare well with their farewell marked by disassembly.

**Pavement Ant War  
Alate Under Attack**



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**Pavement Ant War  
Alate With Wings Ripped Off**



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Most ant wars are settled quickly. The engagements are over after a few hours with nothing left on the battlefield to mark the epic confrontation. That's because the spoils of war for ants include the bodies of the defeated which are trundled off to feed the victor's colony ... a different twist on carry-out.

# Holey Elms

**Authors**

Joe Boggs

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## Elm Flea Weevil Damage American Elm



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Holes can appear in the leaves of native, non-native, and hybrid elms at this time of the year owing to damage caused by the non-native elm flea weevil (*Orchestes steppensis*). This weevil was incorrectly identified as the European elm flea weevil (*O. alni*) for many years. That's because *O. steppensis* was an unknown Eurasian species that is almost identical in size, color, life cycle, and lifestyle to *O. alni*.



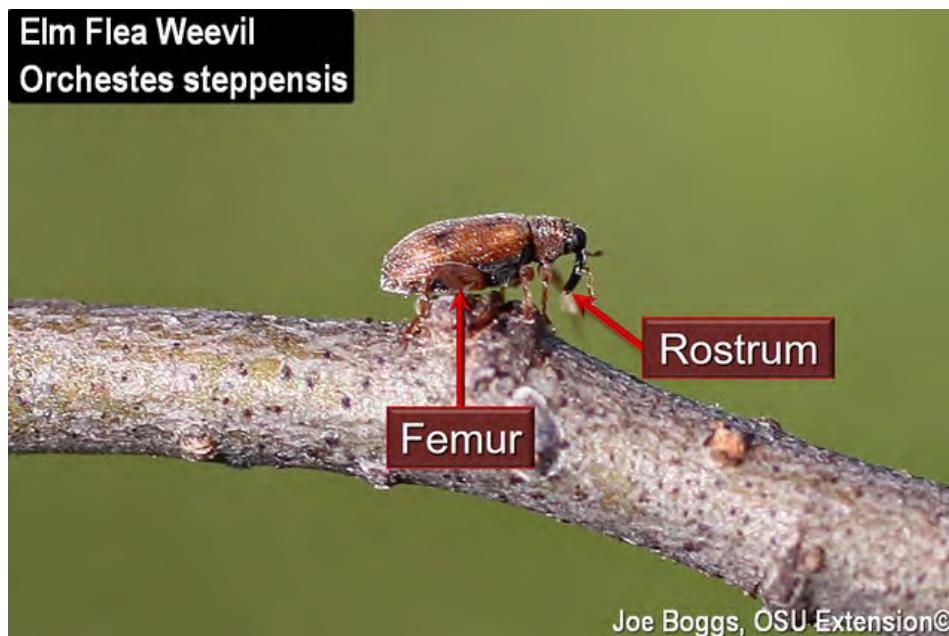


However, in a backward non-native discovery, it was eventually found that the weevils in the U.S. were morphologically identical to an unnamed weevil species found in Eurasia. This led to the eventual description of the species as *O. steppensis* and the recognition that this was the true U.S. invader, not the European elm flea weevil which has not yet been found in North America.

On the upside, all of the observations and research reports published between 2003 and 2016 regarding the flea weevil affecting elms in the U.S. remain valid even if the information applies to *O. steppensis* and not to *O. alni*. On the downside, *O. steppensis* has not yet been given an approved common name through the Entomology Society of America (ESA). In the meantime, I'm going to use "elm flea weevil" for *O. steppensis* even though this common name has not been recognized by the ESA.

## Weevil Wreckage

Weevils are beetles with a snout (rostrum) and their chewing mouthparts are located at the tip of their snout. If you use a hand lens, you clearly see the snouts on elm flea weevils. If you're very careful, you will also see that their hind femurs are thickened to hold powerful muscles allowing them to jump like a flea. If you're not careful, the flea weevils will flee.



The elm flea weevil has one generation per year; however, adults cause damage at two different times during the growing season. The weevil spends the winter as adults in protected locations such as beneath bark plates of their elm hosts.



They emerge very early in the spring to feed and frolic (mate). The weevils use their mouthparts at the end of their snouts to create small pit-like holes on the undersides of newly emerging leaves. The holes expand as the leaves expand to produce a characteristic "shothole" effect on elm leaves.

**Elm Flea Weevils Mating**  
***Orchestes steppensis***



Joe Boggs, OSU Extension©



Females also use their chewing mouthparts to chew small notches in mid-veins and major lateral veins of the leaves into which they lay eggs. Damage caused by oviposition may be noticeable with leaves failing to fully expand beyond the wounded leaf vein and the affected area becoming distorted.





Once the eggs hatch, larvae feed as leafminers tunneling through the leaf tissue toward the margins to produce "blotch" type mines. The leafmining activity usually occurs over about a three week period, then the larvae pupate inside their leaf mines.





The new adults that emerge from the mines produce the second round of seasonal leaf damage. These adults feed heavily for about a month adding substantially to the leaf-holes produced by the spring adults.



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The majority of these adults eventually drop from the trees around mid-summer and appear to become dormant (aestivate) for much of the summer. However, a few adults may continue to be found in the canopy until leaves drop in the fall. It's this second round of adults that overwinter to get the ball rolling next spring.

Although the leaf damage produced by the adults is very noticeable, it has not been observed to be severe enough to cause harm to the overall health of landscape trees. Thus, insecticide applications are not warranted. In fact, topical insecticide applications could make things worse by killing bio-allies. According to various reports in the U.S., parasitic wasps may be capable of keeping populations well below acceptable levels.

Of course, trees grown in nurseries are different matter particularly if they are scheduled for sale this fall. IR-4 Project insecticide trials conducted in 2013 measured efficacy on American elm (*Ulmus americana* 'Patriot') in three categories: leaf area affected; percent canopy affected; and presence of leafmining activity. The trials revealed that soil drenches of the systemic neonicotinoids imidacloprid (e.g. Merit, Xytect) and dinotefuran (e.g. Safari, Transect, Zylam) provided adequate control with imidacloprid being the most effective.

# Holey Oaks

## Authors

Joe Boggs

## Published on

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What's making holes in newly expanding oak leaves in Ohio? The common name of the oak shothole leafminer (*Japanagromyza viridula*, syn. *Agromyza viridula*) clearly describes both the culprit and the damage they do to oaks. This small fly belongs to the family Agromyzidae; the leaf miner flies.

The name of the genus may imply its non-native. However, the oak shothole leafminer is a native fly that is grouped in a genus that also includes several Asian species. Of course, it's likely they all share a common ancestor somewhere in the genetic woodpile.

The oak shothole leafminer produces two types of leaf damage: holes and dark brown "blotch mines." The females use their sharp ovipositors (ovi = egg) to pierce the leaf epidermis releasing nutrient-rich sap which they then ingest using their lapping mouthparts.

They may skewer newly expanding leaves or nascent leaves furled in the bud. If the flies spear leaf tissue in the bud, the resulting holes on one half of the leaf will match holes on the other half. Although the feeding holes are very small at first, they expand as the leaves expand to eventually give the leaves a characteristic "Swiss cheese" appearance.







The leafmining larvae (maggots) produce "blotch mines" by consuming interior leaf tissue between the upper and lower epidermis. This causes the upper and lower leaf surfaces to delaminate; a tell-tale symptom of leafmining activity.

Active blotch mines are usually most evident in early to mid-May in Ohio. Once larvae complete their development, they leave their mines and drop to the soil where they pupate and spend the rest of the summer and the winter. There is one generation per season, so there will be no more flies to produce additional damage this season.



**Oak Shothole Leafminer  
Active Blotch Mine**



Joe Boggs, OSU Extension©

The leafmines are light green to tan but turn dark brown to blackish-brown once they're abandoned. The damaged tissue eventually drops from the leafmines to produce large, sometimes ragged-edged holes. Like the female feeding holes, the leafmining damage will remain evident throughout the rest of the growing season.



The blotch mines may be mistaken for oak anthracnose and vice versa. Of course, the fungal infections don't cause the upper and lower leaf surfaces to delaminate. Also, the anthracnose symptoms are usually centered on leaf veins and early infections cause the leaves to curl. However, separating the two types of damage becomes more challenging once the necrotic tissue produced by leafmining and leaf infects starts falling apart.

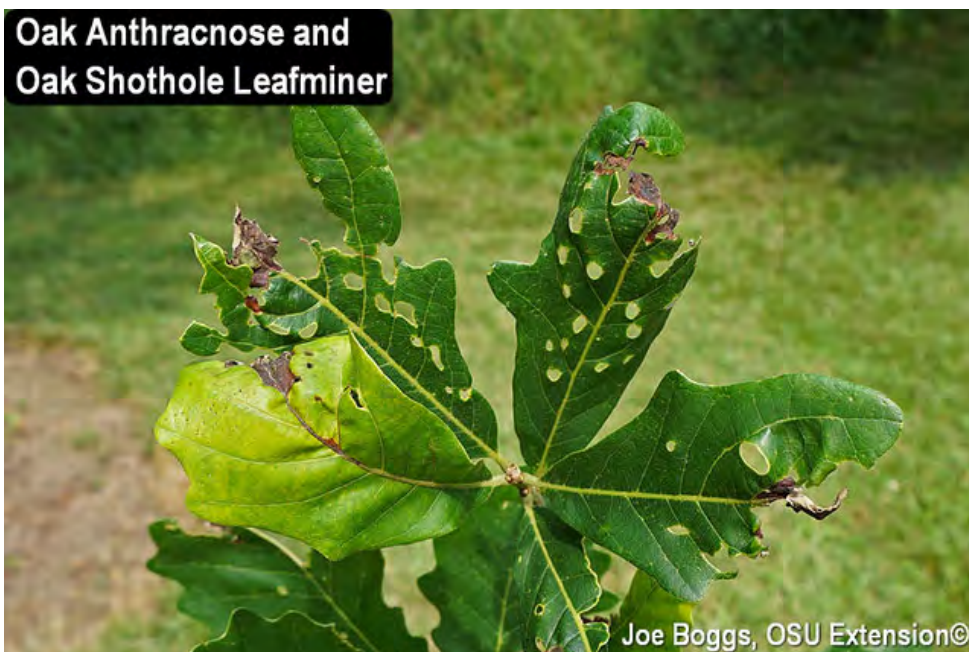


**Oak Anthracnose and  
Oak Shothole Leafminer**



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**Oak Anthracnose and  
Oak Shothole Leafminer**



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Oak shothole leafminer populations appear to be very high this spring throughout much of Ohio. As the season progresses, the leafmining damage may combine with the old female feeding holes to produce tattered leaves. Although the shothole / leafmining damage can detract from the aesthetics of heavily affected trees, the leaf injury appears to cause little to no harm to the overall health of the oak hosts. Of course, there's nothing that can be done about it once symptoms are evident.







## A Tattered Tale

A disorder called "oak tatters" was reported in the early 1980s in a number of Midwestern states including Ohio and recurrence of the condition continues to be reported. Oak tatters has been described as leaves on affected trees losing the majority of their interveinal leaf tissue resulting in "leaf skeletons".

No clear cause has ever been determined. However, possible candidates have included early-season herbicide damage and freeze damage to the buds causing cells in the nascent leaf tissue to die producing missing leaf parts on expanded leaves.

Unfortunately, images of "oak tatters" posted on the web often show clear evidence of heavy damage caused by the oak shothole leafminer as well as oak anthracnose, or a combination of both. I'm not suggesting that leafminer and/or anthracnose symptoms are the true cause of oak tatters. However, I'm cautioning that we must separate these known causes of tattered oak leaves from the possible unknown cause(s) behind oak tatters.

# Have No Fear, Even When a Honey Bee Swarm Is Near!

## Authors

Beth Scheckelhoff

## Published on

May 19, 2020



© Beth Scheckelhoff, OSU Extension

This weekend I was called out to a friend's house where a swarm of honey bees hung from a maple tree. The homeowners were hopeful that someone could safely move the bees to another location...preferably further away from their house! I was so excited to collect the swarm that I almost forgot to take pictures.





Honey bee swarms are common this time of year. They often go unnoticed because swarms do not stick around for very long, usually one to three days at most. A honey bee swarm is a natural process of one hive splitting into two. As a honey bee colony grows within a hive, it becomes crowded. The bees instinctively begin to nurture a new queen while preparing for the current queen to leave.



*A frame from a honey bee hive showing the different types of cells made - a new queen cell (elongated and extending over the end of the frame), drone cells (raised caps), and worker bee cells (will be capped level with the top of the cell).*

Once she is ready, the existing queen leaves the hive in search of a new location for her colony. She takes hundreds to thousands of worker bees (all female) and some drones (all male) with her, and together, these form a swarm.



Worker bees that are good at foraging for food are called scout bees. Scout bees find a suitable place for the queen to rest until they go off and identify a more permanent location to call home. The queen is often led to a tree or shrub branch or another object not too far from the original hive. Worker bees follow, milling around her to keep her safe and warm.



© Beth Soheckelhoff, OSU Extension

*A honey bee swarm with several thousand bees. We suspect this swarm came from a local beekeeper located just a few miles down the road. Once it was collected, the beekeeper relocated it to his bee yard.*

Scout bees search for an ideal location to begin the new hive. The swarm will stay put until the scouts report back and signal that they have located a suitable new home. While the honey bees wait, the swarm can be collected and relocated. If the swarm is not collected and left alone, it will move on once the suitable nesting site has been identified. This can take one to several days.

During this time, homeowners should not fear. Honey bees in a swarm are generally docile. They do not have growing brood in a hive to protect and are simply keeping the queen comfortable. Have patience, and the swarm will move on within a few days. If you are concerned about a bee swarm, however, please contact your local extension office, a local beekeeper, or a beekeeping association. The extension office may have a list of local

beekeepers that wish to collect bee swarms. In most cases, beekeepers will travel to collect the swarm at no cost to you.

Once the swarm reaches its new home – whether that be a hollowed-out tree or a beekeeper's hive box, the colony will begin to grow as the queen lays new eggs.

If you have an interest in honey bees or other types of bees, you may wish to check out the Ohio State University's Bee Lab website: [u.osu.edu/beelab](http://u.osu.edu/beelab). It is full of information on bees of all types – including honey bees and native bees. There are many presentations posted as well for you to watch and learn about all things bees!

#### **More Information**

The Ohio State University Bee Lab  
<https://u.osu.edu/beelab>

# Boxwood Leafminer Adults

#### **Authors**

Joe Boggs

#### **Published on**

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#### **Boxwood Leafminer Adult**



Joe Boggs, OSU Extension©

Swarms of boxwood leafminer (*Monarthropalpus flavus*) adult flies are flitting around their namesake host. I visited a boxwood planting this past weekend that had so many flies flitting around it was difficult not to inhale a few when standing near the infested plants.

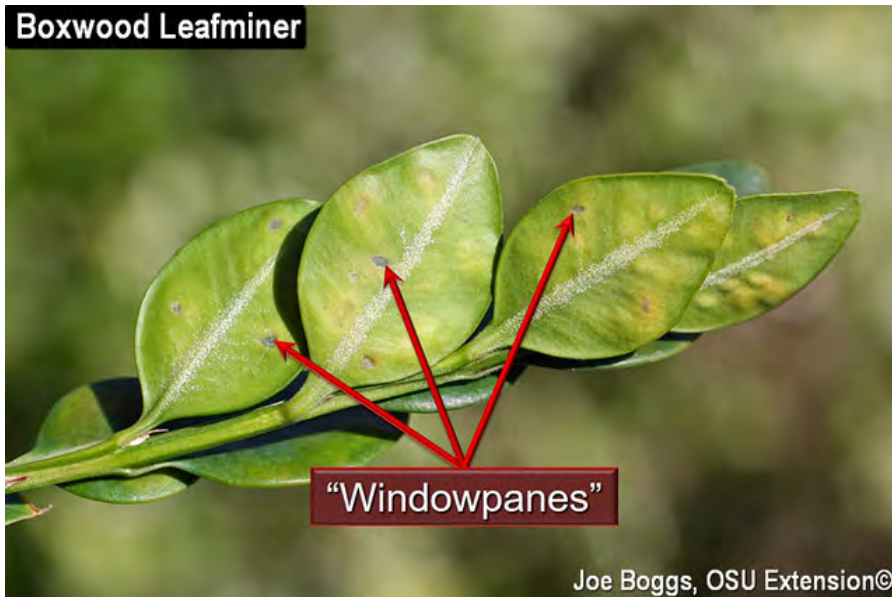
The tiny flies are a type of wood midge and belong to the same family (Cecidomyiidae) as gall midges. Except for their bright orange abdomens, the adults superficially resemble miniature mosquitoes both in body form and flight behavior.

The tiny flies begin to emerge from their leafmine abodes once the accumulated Growing Degree Days reach 440. This is about the same time red horsechestnuts (*Aesculus x carnea*) and doublefile viburnums (*Viburnum plicatum*) are in full bloom.



The flies emerge from last season's leaves with their emergence heralded by peg-like pupal skins protruding from small translucent "windowpanes" created by the larvae in the lower leaf surface. The pupae will wiggle through these weak points to ease the emergence of fragile adults. Adult emergence is confined to a 10 – 14 day period with the adults living for just 24 hrs.







The females use their needle-like ovipositors to insert eggs between the upper and lower leaf surfaces of this season's new boxwood leaves. Consequently, heavy spring growth can mask previous leaf damage reducing the detection of even a heavy leafminer infestation. However, I've found that adults suspended in spider webbing can aid in detecting a boxwood leafminer problem.







Each leaf may contain multiple oviposition sites with several eggs per site. The eggs hatch in early summer and the resulting larvae spend the remainder of the season consume interior leaf tissue as they develop through the 1st and 2nd instar stages. Most of these first-season mines appear as slightly raised "blister mines."





Winter is spent as 3rd instar larvae inside the leafmines. The larvae resume feeding in the spring and develop through a 4th instar stage. Much of the leaf damage occurs in early spring with the ravenous larvae rapidly expanding their leafmines. Multiple blister mines may coalesce causing the upper and lower leaf surfaces to delaminate over the entire leaf. Individual mines may turn reddish-green with heavily mined leaves turning from yellow to orangish-brown causing the leafmining damage to be mistaken for winter injury.

**Boxwood Leafminer Maggots**



Joe Boggs, OSU Extension©

**Boxwood Leafminer Damage**



Joe Boggs, OSU Extension©

## Management

Boxwood leafminer can be managed through properly timed insecticide applications or through plant selection which provides a more long term solution. A helpful research-based listing of the relative susceptibility of boxwoods to the leafminer was published in 2014 by the American Boxwood Society in their "The Boxwood Bulletin."

You can access this publication by clicking on this hotlink:

[https://boxwoodsociety.org/uploads/54\\_1\\_2014\\_Summer.pdf#page=9](https://boxwoodsociety.org/uploads/54_1_2014_Summer.pdf#page=9)

Topical and systemic insecticide applications should be delayed until after boxwood there are no viable boxwood blooms. Boxwood blooms attract a wide range of pollinators; blooming plants can literally buzz with their activity. Fortunately, boxwoods are finished blooming in southwest Ohio.



Properly timed topical applications of pyrethroid insecticides targeting the adults before eggs are deposited are effective in reducing first-season leafmining damage. However, these foliar sprays may also kill beneficial insects.

Systemic neonicotinoids such as imidacloprid (e.g. Merit, Marathon, and generics) or dinotefuran (e.g. Safari or Zylam) can kill early instar leafmining larvae before they produce significant damage. These will have a lower impact on beneficial insects.

# Wilted Buckeye Leaves

## Authors

Joe Boggs

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## Buckeye Petiole Borer Caterpillar



Joe Boggs, OSU Extension©

A number of trees and shrubs in Ohio suffered frost/freeze damage this spring with symptoms ranging from blasted flowers to wilted, blackened leaves, to twig dieback. Wilted leaves on buckeyes may mimic frost/freeze damage, but a close look at the petioles will reveal the true culprit: the buckeye petiole borer (*Zeiraphera claypoleana*, family Tortricidae).



### Buckeye Petiole Borer Symptoms



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Buckeye tree (*Aesculus* spp., family Sapindaceae) canopies tend to be remarkably free of insect pest damage except for the depredations of some general defoliators and oddballs like buckeye lace bug (*Corythucha aesculi*). However, if you're cruising Ohio woodlands this spring, you may run across the depredations of the petiole borer. Although the literature notes this native moth is specific to Ohio buckeye (*A. glabra*), I've also observed petiole boring activity on yellow buckeye (*A. flava*).

As their common name indicates, the buckeye petiole borer tunnels through leaf petioles to feed on the vascular tissues. The damage causes leaves to droop, wilt, and turn dark green to black. Damaged leaves eventually detach producing mild defoliation.



Look closely for a slight swelling, a spot-like discoloration, and a small hole in the petioles of affected leaves. Small quantities of sawdust-like frass (insect excrement) may hang from the hole. Clean holes usually indicate the caterpillars have completed their development and have exited for pupation.

**Buckeye Petiole Borer with  
Frass from an Active Tunnel**



Joe Boggs, OSU Extension©

**Buckeye Petiole Borer  
Exit Hole**



Joe Boggs, OSU Extension©



Trees usually only suffer a few damaged leaves. The hit-or-miss nature of the wilted leaves provides good evidence that it's not frost/freeze injury.



Beth Scheckelhoff (OSU Extension, Putnam County) has reported that the handiwork of the buckeye petiole borer has been very evident this spring in northwestern Ohio. I'm seeing the same thing in the southwest part of the state. Both of us have observed something that's been reported in past BYGL's: the moth appears to select understory trees growing in wooded areas along streams. Neither of us is seeing the damage on trees in landscapes.



Damage by this borer may appear conspicuous; however, the caterpillars seldom cause enough leaf loss to affect the overall health of infested trees. So, no chemical control recommendations are currently available.

On the other hand, there are two generations per season in Ohio with the damage caused by the second generation becoming more severe. However, populations can be effectively reduced through digital suppression.

Hand removal of infested leaves containing first-generation caterpillars can reduce the damage caused by second-generation caterpillars later this spring. Of course, the infested leaves must be destroyed and stomping is highly effective. Thus far, no populations have become resistant to this control method.

## Woodland Wonders: Understory Edibles

### **Authors**

Beth Scheckelhoff

### **Published on**

May 18, 2020



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Many woodland plants are prized for their ornamental **and** edible attributes for wildlife and, in some cases, humans. Some of these magnificent plants can now be found among the woodlands and woodlots of Northwest Ohio. More specific information on human use of many native plants can be found on Penn State's [Virtual Nature Trail](#). While some have been used by ancient cultures, none should be consumed unless identification is certain.

False Solomon's Seal (*Maianthemum racemosum*, formerly known as *Smilacina racemosa*). False solomon's seal is a vibrant, leafy perennial in the asparagus family that spreads via rhizomes into large colonies. The young shoots, roots and fruits are edible. Young shoots have been likened to asparagus when boiled. Native American cultures reportedly dried roots to make tea. Wildlife enjoy red ripened berries in the summer to fall.





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*Vibrant foliage of False solomon's seal*



© Beth Scheckelhoff, OSU Extension

*False solomon's seal ready to bloom.*

Wild Ginger (*Asarum canadense*). Wild ginger is not the same plant as true ginger used for culinary purposes (*Zingiber officinale*). Wild ginger roots impart a ginger-like smell and were used by early Americans as a ginger substitute. This native plant makes an excellent groundcover for shaded areas, though it is slow to grow. Flowers appear close to the ground and are generally obscured from view.



© Beth Scheckelhoff, OSU Extension

*Wild ginger on the woodland floor. But where, o where are the flowers?*





© Beth Scheckelhoff, OSU Extension

*Wild ginger flowers tucked away and resting just above the ground.*

Wild Gooseberry (*Ribes rotundifolium*). Also known as Appalachian gooseberry, this native currant can be found throughout the mid and eastern US from Tennessee to New York. Interestingly, it is considered a species of special concern (low population level) in Connecticut while a noxious weed in Michigan. It can be used to make jams, pies, and in pickled goods.



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*Wild gooseberry flowers are petite and almost go unnoticed.*



© Beth Scheckelhoff, OSU Extension

*The developing fruit appear to intimidate, perhaps hinting of their tart flavor?*

Wild Strawberry (*Fragaria virginiana*). Wild strawberry is a parent of the modern-day hybrid market strawberries we all know and love. These low growing perennials form a sprawling groundcover that grows best during the cooler temperatures found in the spring and fall. Wild strawberry generally grows on woodland edges and in open meadows. Plants may form small, tart berries in the early summer.





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*Tiny, perfect wild strawberry flowers.*



*Wild strawberry sprawling along the edge of a woodlot.*

## Other Articles

# How and Why We Grow Lettuce in Containers



**MEGHAN SHINN**

UPDATED: APR 7, 2020

ORIGINAL: MAR 24, 2020

- Source: <https://www.hortmag.com/edible-gardening/grow-lettuce-in-containers>

Container gardening offers great possibilities, especially to people without suitable ground for a garden. It's not without its challenges, however. Happily, there is a plant that's pretty, useful and very amenable to life in a pot: lettuce.



A mixture of different kinds of lettuce grow with chives in a balcony pot.



Lettuce will grow in a smaller, more shallow container than many other edible plants. Because it is grown for its leaves, not fruit, it can take much more shade than many others. In fact, some shade can be beneficial in keeping lettuce cool and prolonging its season. Lettuce is a cool-season crop, with high temperatures turning it bitter.

Lettuce also takes well to succession planting to prolong the season. You can sow a few pots of lettuce seeds in early spring. A few weeks after they've sprouted, sow a few more pots. After you harvest your first batch, sow another round of seeds in its pots. With this routine you can ensure that you never have too much lettuce ready at once.

Lettuce is also versatile in that you can use baby leaves from some plants while letting others mature before harvesting them.

## How to grow lettuce in containers

Choose a pot at least six inches deep. Make sure it has drainage holes. You can grow single heads in narrow pots, or grow multiple plants in a wide bowl. Use a fertile, easy-draining potting mix. Mulching the top of the mix will conserve moisture and maintain an even temperature. Site your pots in full sun or part shade and keep the potting mix evenly moist. As summer weather arrives, pull your containers into more shade to keep the plants cooler.

Pots of lettuce can be dressed up by mixing different kinds and colors of lettuce together or by adding flowering plants. Pansies are a good choice because they enjoy similar growing conditions, and their flowers are edible, too!

# Velvet Viking Is a Hardy Red Japanese Maple

MEGHAN SHINN

MAY 12, 2020

- Source: <https://www.hortmag.com/plants/velvet-viking-japanese-maple>

**Virtues:** Velvet Viking Japanese maple offers stunning red-purple, finely cut foliage from spring through fall. Its dramatic weeping/spreading form provides interest over the winter when its branches are bare. This cultivar is lauded as hardier and more tolerant of full sun (outside of the South) than other cutleaf varieties.



**Common name:** Velvet Viking cutleaf Japanese maple

**Botanical name:** *Acer palmatum* var. *dissectum* 'Monfrick'

**Exposure:** Full sun to part shade

**Foliage:** The deciduous leaves show reddish-purple color throughout the growing season. The colors intensify in the fall. The leaves offer incredible fine texture, thanks to their deeply cut segments.



**Habit:** Velvet Viking Japanese maple is a very compact tree, growing just three feet tall and five feet wide, with branches that spread outward and then weep. Its short stature and dramatic shape make it a candidate for foundation plantings or to anchor a bed.

**Origin:** This cutleaf Japanese maple comes from Minnesota, where it was discovered by Craig Frick, co-owner of Superior Lawn and Landscape, a garden center in St. Bonifacius. It was introduced by Monrovia in 2019.

**How to grow it:** Sit Velvet Viking Japanese maple in full sun or part shade. It is more accepting of full sun in cooler, northern climates; a part-shade location would be better in the South, particularly one that protects it from hot afternoon sun. It requires regular water, so provide some during dry spells and intense heat. USDA Zones 4–9.

**Prepared by Jeff Stachler**

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