



“What’s Growing On...”

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Pest Alert: Emerald Ash Borer



RUTGERS COOPERATIVE EXTENSION ON THE RADIO

For agriculture news and horticultural tips, listen to me, Pam Burton, on the RCE Agricultural Program on Monday, Wednesday & Thursday on WSNJ AM 1440 & 1240 at **11:30 pm** announcing local workshops, seminars, and horticultural tips.

From The Desk of Pam Burton

It’s now summer and I think back to this past winter when it was so cold I thought I’d never be warm again, yet look at how the change of seasons have brought with it so many flowers in bloom and fruits & vegetables to harvest. I am still into my first year here as the Home Horticulture/Master Gardener Program Coordinator, and have enjoyed wondering what new thing will I learn today?

When the kids are out of school, hopefully you can put them to work in the garden and instill in them the precious gift of the love of nature the way my Gram and Mom did for me. The perennial structures of our gardens make the perfect backdrop to the bright pop of color that the annuals bring to the landscape. Try something new in your garden that you’ve never grown before or make a fun summer project. One summer I enjoyed planting mammoth sunflowers in a large circle, and left a couple feet empty for an “opening”. Between every sunflower I planted a climbing plant...I think it was morning glory...and I let the plant trellis up the sunflower stalks as they quickly grew tall and proud. When the sunflowers reached about 4 feet tall, I gently pulled the tops together and secured them with twine to make a cool sunflower house getaway. You will need a lot of space for this happy project, but it surely is a lot of fun.

I’m hoping that people who bought the strawberry plants from 4H in the past are enjoying the rewards of harvest with some old-fashioned strawberry short-cake!

Last year was a very hard year on our beloved lima beans which resulted in flat pods. Let’s hope this summer is better so we can look forward to succotash at Thanksgiving. Baby limas, white corn, lots and lots of butter and salt. That’s called living!

My summer wish for you is to be able to spend some of your hot hazy days lazing in a hammock with a tall glass of homemade lemonade and a good gardening book. Take a break to cool off by running through the sprinklers! Happy Gardening!

Poison Ivy

Not everybody is allergic to Poison Ivy, and some people are more allergic than others. I fall into the latter category and I'd venture to say that most of us who love the outdoors have experienced the uncomfortable and even serious rashes caused by contact with poison ivy. The painful irritation usually occurs within 12-48 hours after exposure to the plant and is a result of the oily toxin called urushiol, which is in all parts of the plant and remains active even after the plant dies. The plant has to be damaged in some way for the toxin to be released but poison ivy is very fragile and breaks easily so even an insect chewing on the plant can release the toxin. It is an important food source for animals including white-tailed deer and muskrat which eat the leaves as well as many birds that enjoy the fruit, so there are plenty of opportunities for the plant to secrete the toxin. It's important to note that the sticky oily substance is easily transmitted so you can indirectly get a rash from poison ivy from the fur of your family pet, which happened to me, or even from the tennis balls you throw for your family dog in a friendly game of catch. Also take extreme caution in burning any wood that may have a poison ivy vine attached to it.

In the spring, summer and early fall we can go by the old saying "Leaflets three, let it be" for identification of poison ivy. But did you know that the leaves of this deciduous plant are considered to be quite pretty in the fall as they change color before dropping off the plant. Identification can become very difficult then, but it remains important to be very vigilant and on the lookout for poison ivy during our late fall and early winter clean up. The vine of poison ivy can be seen growing on trees and it has aerial roots along the stem that give it the appearance of a "fuzzy rope." Also, for identification in the fall, there may be very attractive clusters of berry-like fruit which are greenish-white and smooth with a waxy appearance. Not all poison ivy plants bear fruit as some plants contain only male flowers.

If you know you have come in contact with poison ivy, wash the area as soon as possible with a strong alkali soap and be sure to use cool water since warm water may cause the toxins to be absorbed into the affected areas. However, warm, soapy water should be used immediately to wash tools, gloves, shoes, and clothing and then follow with a thorough rinse of plain, cool water. It is recommended to wash these clothes separately from your other clothing and to rinse out the washing machine afterward to eliminate the possibility of contaminating other clothing.

There are two excellent Rutgers Fact sheets regarding poison ivy: FS1019 and FS355.

References:

Iowa State University; <http://www.extension.iastate.edu/publications/pm773.pdf>

Ohio State University; <http://ohioline.osu.edu/hyg-fact/1000/1015.html>

University of Florida; <http://edis.ifas.ufl.edu/ep220>

University of Missouri; <http://extension.missouri.edu/p/G4880>

Fairfax County Public School (Virginia); http://www.fcps.edu/islandcreekes/ecology/poison_ivy.htm



Container Gardening with Vegetables

Rutgers Fact Sheet FS055

If you don't have any garden space, it is still possible to plant some of your favorite vegetables, flowers and herbs in containers.

Here are a few tips to help you with the success of your vegetable container garden: first try and pick dwarf or low-growing varieties of the vegetable. Taller varieties will tend to spread out and are unsuitable for container growing. There are some vegetables that do not adapt to growing in containers such as sweet corn and watermelons. To maximize space and production, you can sprinkle a few seeds of a fast-maturing crop like lettuce around the edge of a slower growing variety. I like to plant a small herb like basil at the base of a rangier plant like a tomato.

Second: the container you select should be large enough for root considerations and needs to provide adequate drainage. Drainage can also be helped by placing stones or crushed rock in the bottom of the container. It's recommended that a synthetic mix be used for this type of gardening for several reasons. The medium is better aerated and doesn't pack as tightly as soil from the garden. It is disease and pest free and weighs considerably less than garden soil. The location of the planted container is dependent on the lighting requirements of the vegetables grown. However, the other consideration is the placement of the container. It should be at least 12 inches away from stone and masonry due to the reflection of the heat from those walls.

Third: by far the most difficult aspect of growing vegetables in containers is the upkeep in watering. The restricted volume of the container makes it necessary to water frequently. It is not uncommon to have to water 2-3 times a day. Be careful - It is easy to over fertilize plants in a container because of the small amount of growing medium. The extra care paid to growing vegetables in a container garden will pay off when you get to harvest them.



Black Vultures

Rutgers has two Fact Sheets that may provide references for issues with black vultures. The first FS1017 entitled "Regulations Governing the Management of New Jersey Wildlife" and the second FS887 is titled "Who to Call Regarding Wildlife Damage".

FS1017 indicates that black vultures are non-game, migratory species and are managed by the US Fish & Wildlife Service and the NJ Division of Fish & Wildlife. If black vultures are causing property damage, the property owners must obtain necessary permits if lethal control is necessary. The Fact Sheets provide information where applications are available.



Benefits of Mulches for Vegetable Gardens

Rutgers Fact Sheet FS058

There are many beneficial uses of mulch in gardens, including the conservation of soil moisture, which helps decrease the amount of water you need to apply. By keeping the soil moisture more uniform you can reduce the drought-induced problems such as blossom end rot in tomatoes. For any person who has ever experienced blossom end rot of tomatoes, this is reason enough to consider mulching your garden. Natural mulches can also allow any rainfall to penetrate the soil slowly thereby controlling runoff in any heavy rainstorms.

Reduction of weed growth with the side result of less time spent weeding is another benefit of mulching your garden.

The third benefit is the modification of the soil temperatures. Clear and dark colored synthetic mulches elevate the soil temperatures, whereas light colored natural and synthetic mulches help with the moderation of soil temperature even in the hottest of summer.

Mulches have the benefit of decreasing disease problems. Mulch provides a barrier from disease organisms splashing from the soil to the fruits of plants such as tomatoes, squash and cucumbers. Cleaner fruit make fewer rotting problems.

Mulches are aesthetically pleasing and for those of us who spent many hours in our gardens that can be an important factor.



Mulch Mounds

Rutgers Fact Sheet FS099

Mulching is a recommended cultural maintenance practice with many benefits, however too much of a good thing is still too much and over mulching can result in a slow but sure death of a tree. Over mulching can cause death to a tree or shrub and is an unnecessary waste of money.

How does over-mulching kill a tree? There are actually several ways, including oxygen starvation through suffocation of the roots. When piles of mulch are mounded directly against the stems or trunk of trees and shrubs it can result in inner bark or phloem death. The tissue in the root flare and trunk differs from root tissue. It needs to breathe through lenticels and cannot tolerate a constantly moist environment. Mulch mounds can contribute to the spread of fungal and bacterial diseases by creating a moist environment. Additionally, mulch mounds can begin to heat up and prevent the plant from hardening off for the winter. The pH of the soil can be affected by mulch mounds, and mulch mounds can inadvertently provide cover for rodents who may feast on the bark over winter.

Since the negative results of over mulching can take time to show, it is often too late to correct the problem and the plant dies.

So, what is recommended for mulching? As a "standard", mulch depth should not exceed 3 inches in depth. Keep in mind, coarser textured mulches can be placed a bit deeper however you may need only a 1 or 2 inch layer of finer textured mulches.

If you determine that you have a problem with too much mulch, lightly rake the mulch to break through the crusted or compacted layers that may be repelling the water. Pull the mulch back from the plant stems and trunks. For young plants, allow 3 to 5 inches away and for mature trees, allow for 8 to 12 inches away. Expose the root flare so it is visible and remove all soil or mulch up to the root collar.

Ticks

Rutgers Fact Sheet FS443

As you may have already found out the hard way, ticks are plentiful this year and you would be doing yourself a favor to exercise as much personal protection and precautions as possible.

Knowing the habitat of the ticks is helpful in avoiding them. Unfortunately the hobbies that you enjoy may also be found as the high risk factors for the risk of a tick bite. If your activities encourage wildlife near your home, you may inadvertently be posing yourself to the risk of a potential tick bite. For instance, picture a lovely yard surrounded by dense woods for hiking, camping and hunting. The yard includes tree-houses and swingsets and is within a reasonable walk to the lake for fishing. Deer are often seen in the beautifully landscaped yard which includes plenty of rock walls and birdscaping. The wildlife is often wary of the family pets who come outside to play and inside to stay. Sound like utopia? Yup and also utopia for ticks to find a host.

We don't have to discontinue all outdoor activities but we do need to be smart and reduce our exposure for potential tick bites as much as possible. Several ways of doing this are to avoid tall grass and shrubby areas. Remove brush piles and keep grasses mowed. If you do have to hike through the woods, widen the trails to 6 feet if at all possible and thin out low shrub vegetation in the woods. Your hiking gear needs to include light colored clothing so you can see the ticks. Wear long pants tucked into socks.

Wear tick repellent but before applying read the label carefully to see if it is labeled as safe for clothing and skin. After any outdoor activity be sure to take a shower and check carefully every night to see if there are any ticks on yourself and/or your children.

If you are bit by a tick, remove the tick with tweezers by applying a steady backward force until the tick is dislodged. Please note, alcohol, nail polish, hot matches, or other methods should not be used as they might only agitate the tick and cause additional problems.



Mosquitoes

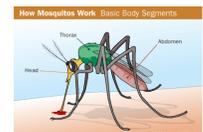
Rutgers Fact Sheet FS780

There are more than 60 different kinds of mosquitoes but we can be thankful that not all of them can be found around our homes.

Of those that do come to visit, the most common mosquito is the northern house mosquito called *Culex pipiens*, but the eastern tree-hole mosquito may also be found around the home, as well as a few others. It must be noted that a female mosquito has to find a host and blood feed before she can lay her eggs.

As I have mentioned before, knowing the habitats of a pest helps in determining the control of the pest. The northern house mosquito will lay her eggs in any receptacle that contains water rich in decomposing organic material and the eastern tree-hole mosquito will lay her eggs in tree-holes or discarded tires. Therefore, the breeding habitats can include discarded tires, unwashed bird baths, clogged rain gutter and plastic wading pools that are allowed to stagnate. Mosquitoes are most attracted to foul water that has grass clippings and dead leaves and decaying organic matter. They will not lay their eggs in clear water.

Given that list, you can already begin to formulate the ways to help reduce the annoyance of mosquitoes around your home. Mosquitoes will develop in any puddle that lasts for more than 4 days. Dispose of anything that is a water-holding container around your home including those that have become overrun with aquatic vegetation. Turn over plastic wading pools and wheelbarrows when not in use. Don't let water in your birdbaths become stagnant. Clean your roof gutters annually and drill holes in the bottom of recycling containers that are left out doors. Rutgers FS780 notes that the used tire has become an important domestic mosquito producer in this country, so be certain to remove any discarded tires. One single discarded tire can produce thousands of tree-hole mosquitoes in one season alone. Aerate ornamental pools or stock them with fish and be certain to clean and chlorinate your swimming pools making arrangements for care while you are away for any length of time. Lastly, use landscaping to help eliminate standing water in your yard.



Purple Martins

There is quite a bit of interest in purple martins in South Jersey and in some communities it's considered a very special feat if they choose to shelter in martin houses or gourds located in your yard, especially since they often return to the same nesting site where they lived the previous year. I have had the rare treat of helping to band the babies with both state and federal bands.

Purple martins are migratory birds that travel in colonies and are most active at dawn and at dusk, when you can clearly hear their melodic songs. In reality eleven vocalizations have been identified that purple martins use for different reasons. They socialize together exploring their environment by visiting nearby water sources and searching for food.

In the 21st century purple Martins have become accustomed to human interaction and live in close proximity to humans. They are insectivores and prefer open spaces near water sources. Their in-flight diet includes fruit flies, mosquitoes, wasps, beetles, ants, grasshoppers, cicadas and dragonflies. Research shows they may eat 2000 mosquitoes in a day.

Along with communicating by song, the purple martins communicate visually, as well. If threatened they will adopt a horizontal threat posture and orient their bodies to run parallel with the surface while pressing their feathers close to their bodies. They may also resort to other mechanisms such as lunging and bill snapping.

Predators include snakes, owls, hawks, cats, squirrels and raccoons. Owls have been known to shake the nest so the purple martin will leave the nest, making them vulnerable to an owl attack. Snakes will climb the bird house pole and eat the eggs and the young. House sparrows and starlings will also compete with the purple martin for housing.

The vocalizations and perceptions of the purple martin have contributed to its status as one of the most beloved birds in North America.

Resources:

Cornell Lab of Ornithology: http://www.birds.cornell.edu/Publications/Birdscope/Winter2002/A_Home_for_the_Purple_Martin.html

University of Michigan: http://animaldiversity.ummz.umich.edu/accounts/Progne_subis/



Composting

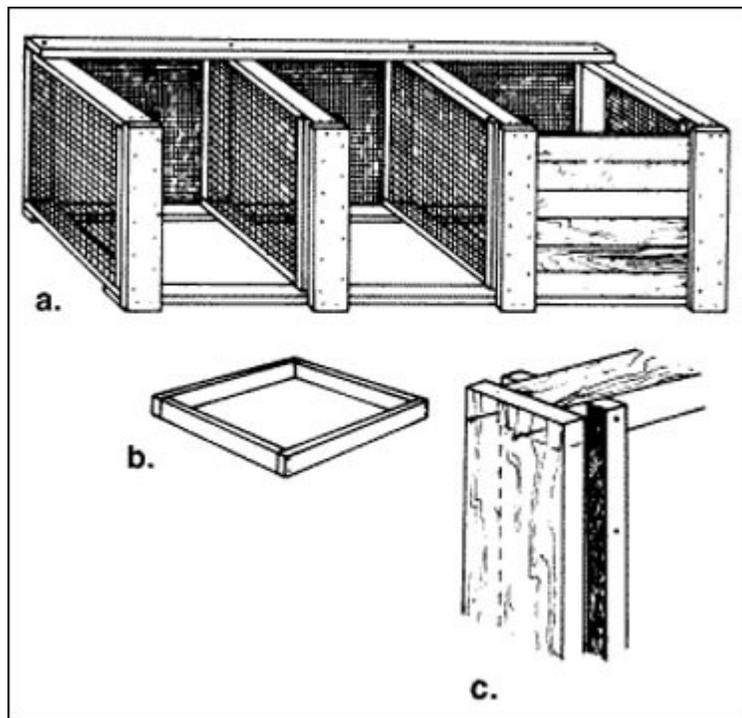
Rutgers Fact Sheet FS811

"...Composting is a natural process where organic materials decompose and are recycled into a dark, crumbly, earthy smelling conditioner known as 'compost'..." Compost can be used as mulch around flowers, vegetables, trees and shrubs to help with water retention, weed control and to prevent soil erosion. As a soil conditioner, 1 to 3 inches of compost can be mixed into beds prior to planting and this will return organic matter to its original form. Compost is also used as a potting mix by using equal parts of decomposed, screened compost and sand.

It is helpful to have a designated compost bin that is either homemade or store bought. This will help contain the compost area for those conditions needed for rapid decomposition. In keeping with the concept of reduce, reuse, recycle, homemade compost piles can be made from wooden pallets or snow fences.

When composting, make sure to water the pile as needed. It should be as moist as a wrung out sponge. Keep in mind that a good balance of carbon and nitrogen can be maintained by mixing 2 parts nitrogen rich green materials (grass clippings) to 1 part carbon rich brown materials (ie leaves). Materials added can include vegetable food scraps, grass clippings, leaves, flowers, weeds, sawdust, and coffee grounds with filters. Do not add meat scraps, diseased or infected plants, or food with grease or soap residues. Turn the pile at least once a month to provide oxygen to the microorganisms so they can thrive and heat up the compost. If a branch is $\frac{1}{4}$ inch or more in diameter consider chopping it to expose more surface material. The compost pile should be between 3 x 3 to 5 x 5 to allow the pile to hold microbial heat while ensuring that air can reach the microbes at the center of the pile.

Composting has many benefits including monetary savings, helping the environment, promoting soil fertility, and aids in soil erosion.



A wood and wire three bin turning compost unit

White grubs

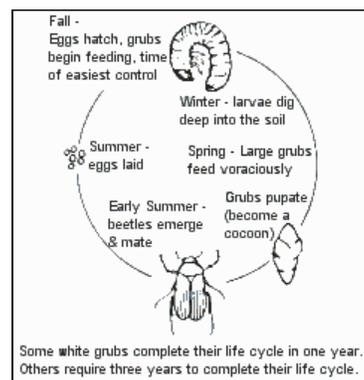
Rutgers Fact Sheet FS293

You know what I mean ... it's those C-shaped creepy looking critters with a shiny smooth creamy white body and usually have a brown head. These are the larvae of the scarab beetles, including May or June beetles, European chafer beetles, Japanese beetles and the oriental beetle.

In the larvae stage the grubs are root feeders of many vegetable plants and root crops. The grubs will prune the roots of the vegetable plants completely and the plant will turn yellow, wilt and die. With root crops, the damage will not be noticeable until harvest. Either way, it's disappointing and frustrating. Grubs have been known to enjoy a feast of corn, bean, beets, potatoes, spinach and turnips.

A 3 year life cycle of May or June beetles is the most common in New Jersey where the adults overwinter in the soil and emerge in the spring from the ground at dusk to feed and mate. The eggs are laid and hatch in several weeks and the grubs will feed until cooler weather. In the spring of the second season they will feed in early spring through fall to again overwinter in the soil. It's during the third season where the mature grubs feed until June and then pupate. The beetle emerges from the pupal case but remains in the soil overwinter to emerge in the spring of the fourth year.

In the management of grubs a late summer or early fall plowing will either kill grubs or expose them to predators. Keep a clean, weed free garden with good drainage. Grubs prefer to lay their eggs in soil that is moist and well covered with vegetation. From a planning perspective locate the vegetable gardens away from specific host plants that the grubs prefer. One of the best methods of control is hand collection of the grubs when the soil is prepped for your garden. Destroy the grubs, as they are likely to crawl their way back into the soil if you don't!



Raingardens

Rutgers Fact Sheet FS5136

A rain garden is "...a landscaped, shallow depression that allows rain and snowmelt to be collected and seep naturally into the ground..." Rain gardens provide an attractive alternative to recharge the groundwater supply. When it rains, rainwater goes into stormdrains and then travels to local bodies of water taking along pollutants like pesticides and fertilizers which have accumulated on lawns and streets. The concept of a rain garden is to capture the rainwater and allow it to soak into the ground where the pollutants are filtered out, the nutrients are used by plants and the pesticides are broken down. By landscaping your raingarden with native plants, you will also be creating a habitat for birds, butterflies and beneficial insects.

Spring is an optimum time to start construction. Pay attention to your grounds during spring showers and notice where there are puddles, where the water does not drain well and where the runoff of water is flowing to help you decide the site selection of your rain garden. You can consider locating a raingarden near downspouts, or along driveways and sidewalks. Rain gardens should NOT be directly over a septic system. Good drainage is important and if you chose a site with full or partial sunlight you will afford yourself a wider selection of plants.



Remember before any excavating or digging is done, you MUST contact New Jersey's one call system for a mark out of underground gas, water, sewer, cable, telephone and electric lines.

Victory Gardens

You may have heard me mention before that mine is a military family and so I first want to express my many thanks to all who have served and are serving our Country. A personal note of appreciation and thanks to my brother and sister-in-law.

In 1944, Franklin D. Roosevelt stated in a speech and I quote...“I hope every American who possibly can will grow a victory garden this year. We found out last year that even the small gardens helped...” He continues “...The total harvest from victory gardens was tremendous. It made the difference between scarcity and abundance. The Department of Agriculture surveys show that 42% of the fresh vegetables consumed in 1943 came from victory gardens. This should clearly emphasize the far-reaching importance of the victory garden program. Because of the greatly increased demands in 1944, we will need all the food we can grow. Food still remains a first essential to winning the war. Victory gardens are of direct benefit in helping relieve manpower, transportation, and living costs as well as the food problem. ..”

Victory gardens were a way during the world wars that Americans all united with a goal no matter how big or small to help with the efforts of supplying an adequate food source supply for civilians and troops. Public support was rallied for war-time food conservation efforts and civic interest led to the federally guided victory garden campaign. The Food Fights for Freedom promoted gardening, recycling, canning and volunteer farm work. It was meant to express patriotism and build morale.

Memorabilia in the forms of posters, seed catalogs, film clips and newspaper articles are all that is left of these victory gardens, which ranged in size from a windowbox to whole community gardens. The concept was for children and adults to plant, maintain and harvest backyards, vacant lots, parks and ballfields to provide enough fresh vegetables for the neighborhood throughout the summer and beyond. Even government agencies, private foundations, businesses, schools, and seed companies combined their efforts to assist in providing the resources for communities to grow food.

As we enjoy the harvests of the season take a moment out of your day to remember those days gone by and to thank our military for their sacrifices.

Resources:

Rutgers: <http://ljlawson.rutgers.edu/assets/pdf/UGPIecture.pdf>

University of California Cooperative Extension: http://celosangeles.ucanr.edu/UC_Master_Gardener_Program/Grow_LA_Victory_Garden_Initiative/

University of California: <http://www.presidency.ucsb.edu/ws/?pid=16505>

Smithsonian Institution: <http://amhistory.si.edu/house/yourvisit/victorygarden.asp>

Horseshoe crabs

Actually a horseshoe crab is really not a crab, but is a member of the arthropods, with spiders and scorpions being closely related. They have remained relatively unchanged in appearance for the past 350 million years. We are lucky that we live near the Delaware Bay, which is an excellent spawning area for crabs with its sandy beaches that are protected from harsh wave action.

Horseshoe crabs play an important ecological role, have had a positive impact on the biomedical industry and have had an effect on commercial fishery. Because we are aware of its' importance and value to the ecosystem measures have been taken to protect horseshoe crab populations at a sustainable level. Migratory shorebirds are dependent upon the exposed eggs of the horseshoe crabs as the primary food source for their long trip along the Atlantic Flyway. Each bird who feasts on these eggs can virtually double it's weight in less than two weeks by eating thousands of horseshoe crabs so they can fuel up for their flight onto their summer breeding grounds in the Arctic.

Medically, scientists have researched the eyes of the horseshoe crab for significant breakthroughs in the studies of vision. Chitin is a substance found in the exoskeleton of the horseshoe crabs and it has a wide variety of uses including the ability to inhibit bad cholesterol and boost good cholesterol, and promote the healing of ulcers and lesions. Additionally, the blood of horseshoe crabs holds an important role in human medicine because it contains primitive large blood cells called amoebocytes. Long story short, a clotting agent called Limulus Amoebocyte Lysate is derived from the amoebocytes of the horseshoe crab which is used to test drugs for harmful bacteria.

Lastly, fisherman use horseshoe crabs as bait for conch and American eel fisheries.

Who knew that prehistoric looking creature could have so many significant positive effects on the ecosystem? Given that the Atlantic States Marine Fisheries Commission developed a horseshoe crab management plan including quotas, along with innovative bait conservation techniques. It may take some time for the population to increase, since horseshoe crabs do not breed until they are nine years old or more!

Resources:

University of Florida: <http://www.marine.usf.edu/pjocean/packets/f01/f01u5p3.pdf>

US Fish & Wildlife Service: <http://www.fws.gov/northeast/pdf/horseshoe.fs.pdf>



"Where have all the monarchs gone?"

One of the several contributing factors is the loss of milkweed from the corn and soybean belts of the Midwest. Monarchs are specialist feeders on milkweed in their larval stage and without milkweed they will not survive. Herbicide-tolerant crops have been developed and are being widely used in the corn and soybean belts of the Midwest, which used to be the most productive habitat for monarch butterflies. So, in lieu of tilling, crops that are tolerant to herbicides allow for eradication of so-called undesirable plants such as milkweed, which may have otherwise survived some tillage.

Add to the mix that international prices of corn and soybean have risen along with the demand for bio-fuel, and the result is that the farmers are utilizing even marginal land such as grassland and range lands, which used to be pollinator habitats. Field margins are becoming narrower and closer to the edge of the road which is another area that milkweed used to grow. Studies have also shown that monarchs lay more eggs on milkweeds if they are in cultivated fields.

What can we do? We can start a grass roots effort by planting milkweed in our own yards and surrounding areas, so the monarch larvae can have it's lunch and eat it too. This won't solve the entire problem by a long stretch, but it can possibly make a small difference in our little corner of the world.

Resources:

Yale: http://e360.yale.edu/feature/tracking_the_causes_of_sharp_decline_of_the_monarch_butterfly/2634/

Penn State: <http://extension.psu.edu/plants/gardening/news/2013/where-are-the-monarchs>

Ohio State University: <http://ocvn.osu.edu/news/monarch-migration-plunges-lowest-level-decades>

University of Minnesota: http://www1.umn.edu/news/features/2012/UR_CONTENT_378473.html
<http://monarchnet.uga.edu/Partners/WWF-Mexico/index.htm>



Termites

Rutgers Fact Sheet FS338

There are notable differences between termites and flying ants but perhaps the most obvious distinction is the shape of the body. Flying ants are wasplike and the abdomen is separated from the rest of the body by a thin stem. On the other hand, termites are not wasplike with the abdomen joined snugly to the body without a stem. There are several other areas of distinction in identifying the differences between flying ants and termites and they include the size of the wings, the kind of wing veins, the shape of the body and the size of the insect.

The best goal is to prevent a termite attack. Several construction factors make building susceptible to termite attacks, so remove all wood debris from around the site, including stumps, and branches. Likewise don't bury scrap lumber or leave it under buildings and porches. Termites like it wet, so keep the soil level at least 6 inches below woodwork and be certain to provide for good drainage and water removal. Watch for any cracks in the foundation. Termites can enter walls of stone, hollow concrete block, hollow tile and brick through cracks. There should be at least 18 inches of ample cross ventilation between floor joists and soil under an unexcavated part.

Porch supports and the bottom of any wooden steps should rest on a poured concrete base projecting at least 6 inches above the soil. Do not allow latticework under the porch to be in contact with the soil. Termites have been known to enter brick houses where the sole point of entry was wooden cellar window frames. Where possible use steel and provide adequate drainage for window wells. Doors are frequently sources of termite attacks so do not extend the frames through concrete. The use of wood to finish basement areas can be another source for termite infestation. Termite shields are highly recommended and the Rutgers Fact Sheet FS 338 goes into detail about the use of termite shields.

Garden Tips for June

- Allow the tops of spring-flowering bulbs to completely wither and turn brown.
- Protect ripening strawberries from birds with netting or row cover fabric. FS97 & 98
- Make plans to pick locally grown strawberries.
- Thin developing fruit on fruit trees if there seems to be an excessive amount. This will result in larger fruits.
- Prune fruit trees to eliminate suckers and watersprouts.
- Plant more gladiolus bulbs for a succession of bloom.
- Repot and begin fertilizing house plants.
- Plant seeds of cabbage, cauliflower and broccoli directly in the garden for fall garden transplants.
- Check plants carefully and regularly for insect pests.
- Cabbage worms can be safely and effectively controlled with Bt.
- Be sure to thin vegetables, particularly root crops, so they will have room to grow properly. FS561
- Tomatoes that are supported with stakes or cages tend to have cleaner and larger fruits. FS678
- Harvest established asparagus beds through the end of the month. FS221 & NE221.
- As perennials finish blooming, cut off the blooms and fertilize the plants.
- Stake perennials as needed.
- Apply mulches around shrubs, perennials and annuals to maintain soil moisture and an even soil temperature.
- Apply a labeled fungicide every 7 to 10 days to protect roses from black spot.
- Prune climbing roses after they have bloomed. Remove dead and older canes. FS944
- Fertilize roses during their first bloom.
- Pinch established chrysanthemums to develop fuller and stockier plants.
- Balled and burlapped or container trees and shrubs can still be planted. FS376
- Take softwood cuttings of shrubs to start new plants. FS49
- Remove spent flower clusters or forming seed pods from azaleas, lilacs and rhododendrons.
- Shape the growth of pines by snapping out one half to two thirds of the new candle growth.
- Raise the mower blades to a height of 2 to 2½" and mow frequently. Remove no more than 1/3 of the total length of the grass blade.
- Lawn and garden areas need a minimum of 1" of water in the form of rain or irrigation each week.
- Move some houseplants to a screened porch or shaded location outdoors.
- Use bark mulch around young trees to protect them from lawn mower damage.
- Various pest problems can occur in May. If you have plants that you suspect may be facing a pest problem, bring in a representative sample to your local county agricultural extension agent and they will help diagnose the problem and recommend the appropriate control.
- Fruit trees should be on a regular spray program. See your local extension website for tree spray program bulletin.
- You can also plant vegetables in containers and grow them on decks, patios or other small spaces. Use potting mix when planting.
- Fertilize zoysia lawns now with Merrifield Premium 26-4-12.
- You can move houseplants outside to the deck or patio and enjoy them outdoors for the summer. It is best to gradually introduce them to more direct sunlight to prevent the leaves from being burned.
- Feed houseplants with a good quality indoor plant food such as Osmocote (slow-release granular).
- If needed repot root bound houseplants to a larger pot. Use potting mix when repotting houseplants.
- Hibiscus, Jasmine, Oleander and Mandevilla are just some of the flowering tropical plants you can add to your deck, patio or balcony.
- Enjoy the early spring season!

Gardening Tips for July

- Attend the Cumberland County Fair.
- Transplant new chrysanthemum plants.
- Start a compost pile. FS74
- Sidedress rhubarb with well-rotted manure or humus from the compost pile.
- Plant seeds of early cabbage, ornamental kale, and broccoli in cell packs early in the month for transplanting to the fall garden in early August.
- Cabbage worms can be safely and effectively controlled with Bt. FS231 & FS277
- Continue pulling weeds. Put them in the compost pile.
- Train staked tomatoes to 1 or 2 vines by removing all other branches as soon as they appear.
- Thoroughly water your newly planted trees and shrubs. FS786
- As perennials finish blooming, cut off the blooms and fertilize the plants.
- Stake perennials as needed.
- Apply mulches around trees, shrubs, perennials and annuals to maintain soil moisture and an even soil temperature. Cover the soil 2" thick. Keep mulch away from the trunks of trees and shrubs. FS122
- Apply a labeled fungicide every 7 to 10 days to control black spot on roses.
- Prop branches of heavily loaded fruit trees.
- Renovate established strawberry plantings.
- Pinch established chrysanthemums to develop fuller and stockier plants early in the month.
- Make another planting of snap beans, beets, carrots, cucumbers and zucchini. FS562 & FS57
- Harvest vegetables regularly for continued production. FS988
- Remove spent flowers from annual flowers to keep them flowering.
- Divide clumps of crowded iris and Oriental poppies.
- Continue to mow the lawn at 2½".
- Water the lawn and garden deeply or don't water at all. FS829 & EB431
- Fertilize your roses. FS944
- Apply all pesticides according to label directions.
- Many plants are easily propagated by layering. Verbenas, euonymus and climbing roses are a few plants that will root if the stems are fastened down and covered with soil.
- Cutter flowers are best done with sharp shears or a knife which will help avoid injury to the growing plant. A slanting cut will expose a larger absorbing surface to water and will prevent the base of the stem from resting on the bottom of the vase. It is best to carry a bucket of water to the garden for collecting flowers rather than a cutting basket.
- A brown or grayish cast over a lawn can be caused by a dull or improperly adjusted mower blade that shreds grass rather than cuts it.
- Store pesticides in a safe place in their original containers, away from children and pets. Use pesticides carefully in your garden. Read the labels and follow the directions. The warnings and precautions are for your protection.
- If needed, apply a weed control to the lawn to kill actively growing weeds.
- Apply a fungicide to the lawn to control turf diseases such as brown patch dollar spot.
- Stop pinching Chrysanthemums by July 16th.
- Control mosquitoes by eliminating all sources of stagnant water.
- Check the soil moisture of container grown vegetables and flowers daily. As the temperature rises, some plants may need water twice a day.
- Continue attracting insect eating birds to the garden area by providing them with fresh water.
- Perennials that provide interest in the month of July include Daylillies, Rudbeckia, Phlox, Veronica, Ligularia, and Tickseed.
- Have a Great July!

Gardening Tips for August

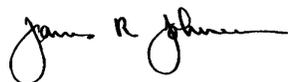
- Enjoy fresh fruits and vegetables from local farms.
- Fertilize your roses the first week of the month and then don't fertilize them any more this year.
- Be alert for wasp nests when mowing and gardening.
- Deadhead annuals to keep them blooming.
- Control weeds before they flower and produce seeds.
- Gather herb leaves before their flowers bloom.
- Divide overcrowded spring-flowering perennials.
- Make plans for your fall planting of trees, shrubs and perennials.
- Apply 1" of water to your lawn and gardens weekly during dry periods.
- Collards, kale, leaf lettuce, mustard, spinach, radishes, turnips and bok choy are good crops for your fall garden.
- Early September is an ideal time for sowing grass seed or establishing a new lawn. Prepare now to renovate that tired lawn.
- Divide and transplant garden lilies and lilies-of-the-valley.
- Sow seeds of California poppy, columbine, delphinium and gloriosa and Shasta daisy.
- Watch for garden supply sales.
- Take cuttings of begonias, coleus and impatiens for winter houseplants.
- Remove melon blossoms at the end of the month that won't have time to set fruit. Ripening melons will then be larger.
- Donate vegetables to a hunger center.
- Colorful plastic golf tees can be stuck in the ground to mark the location of dormant plants such as spring bulbs or perennials.
- Check on water needs of hanging baskets daily in the summer. Wind and sun dry them much more quickly than other containers.
- Clean up fallen rose and peony leaves. They can harbor disease and insect pests over the winter if allowed to remain on the ground.
- Pick summer squash and zucchini every day or two to keep the plants producing.
- Remove old plants which have stopped producing to eliminate a shelter for insects and disease organisms.
- Water the garden early in the day so plants can absorb the moisture before the hot sun dries the soil. Early watering also insures that the foliage dries before night. Wet foliage at night increases susceptibility to fungus diseases.
- To reduce the number of pests on your fruit tree for the coming year, pick up and destroy all fallen fruit.
- Every weed that produces seed means more trouble next year. Control weeds before they go to seed.
- Do not add weeds with mature seed heads to the compost pile. Many weed seeds can remain viable and germinate next year when the compost is used.
- Plants and trees that provide color in the month of August include Crape Myrtles, Pee Gee Hydrangeas, Viburnums, Hypericum and Butterfly bush. Visit your local nursery and see these beautiful plants in bloom.
- Fall mums are in—plant now for colorful autumn.
- Gator bags provide a great way to keep trees watered during the hot and dry months. These bags, which can hold up to 20 gallons of water, are secured to the trunk of the tree, where they release the water slowly to the root ball over the course of 15-20 hours.
- Various pest problems can occur in August. Use Diatomaceous Earth to control crawling insects such as cockroaches, ants, slugs, silverfish, earwigs, fleas, spiders, millepedes, centipedes and carpet beetles.

Rutgers Cooperative Extensions Fact Sheets

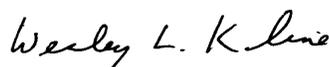
FS #	Fact Sheet Name
Fact Sheet 55	Container Gardening with Vegetables
Fact Sheet 57	Cucumber, Squash and Melon Fruit Setting
Fact Sheet 58	Mulches for Vegetable Gardens
Fact Sheet 74	Backyard Leaf Composting
Fact Sheet 99	Problems with Over-mulching Trees and shrubs
Fact Sheet 122	Tree Problems Caused by People in the Suburban Landscape
Fact Sheet 221	Asparagus Beetles
Fact Sheet NE221	Asparagus tips for the home gardener
Fact Sheet 231	Cabbage Looper
Fact Sheet 277	Cabbage Maggot
Fact Sheet 293	White Grubs
Fact Sheet 295	Beneficial Insects of the Home Garden
Fact Sheet E310	Diagnosing and Managing Important Cucurbit Diseases in the Home Garden
Fact Sheet 338	Subterranean Termites
Fact Sheet 355	Poison Ivy and Its Control
Fact Sheet 376	Transplanting Trees and Shrubs
Fact Sheet 443	Prevent Tick Bites: Prevent Lyme Disease
Fact Sheet 547	Diagnosing and Controlling Fungal Diseases of Tomatoes in the Home Garden
Fact Sheet 548	Diagnosing and Controlling Phytophthora in the Home Garden
Fact Sheet 560	Growing Sweetpotatoes in the Home Garden
Fact Sheet 561	Growing Cole crops in the home garden
Fact Sheet 562	Growing Beets and Carrots in the Home Garden
Fact Sheet 626	Fertilizing the Home Vegetable Garden
Fact Sheet 678	Growing Tomatoes in the Home Garden
Fact Sheet 679	Growing Potatoes in the Home Garden
Fact Sheet 780	Controlling Mosquitoes Around the Home
Fact Sheet 786	Six Ways to Keep your Newly Planted Tree Alive and Healthy
Fact Sheet 797	Soil Testing for Home Lawns and Gardens
Fact Sheet 811	Home Composting
Fact Sheet 829	How to protect water quality and have a beautiful lawn
Fact Sheet 887	Who to Call Regarding Wildlife Damage
Fact Sheet 944	Roses and their care
Fact Sheet 988	Picking vegetables in the home garden
Fact Sheet 1017	Regulations Governing the Management of NJ Wildlife
Fact Sheet 1019	Poison Ivy and Brush Control Around the Home Grounds
Fact Sheet 1102	Stake and Weave Training System for Tomatoes in the Home Garden
Fact Sheet 1123	Vegetable Insect Control Recommendations for Home Gardens
Fact Sheet 1163	Mail order vegetable seed sources for the NJ gardener

Call 856/451-2800 x4 ask for Pam Burton. When calling to request a fact sheet refer to the Fact Sheet by FS# or by name. All fact sheets are free unless otherwise noted.

What's Growing On is prepared by Pam Burton, Horticultural Assistant, Rutgers Cooperative Extension of Cumberland County.



Sincerely,



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For important announcements concerning the Cumberland County Extension Center visit:
<http://Cumberland.njaes.rutgers.edu>

Visit the newly activated website to see what activities are happening in the
Home Horticulture and Agriculture Departments.

If you have any questions concerning the website, please call our office at
856-451-2800 x1 for agriculture and
856-451-2800 x4 for Home Horticulture and Master Gardeners

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Emerald Ash Borer



A beetle from Asia, *Agrilus planipennis* Fairmaire (Coleoptera: Buprestidae), was identified in July 2002 as the cause of widespread ash (*Fraxinus* spp.) tree decline and mortality in southeastern Michigan and Windsor, Ontario, Canada. Larval feeding in the tissue between the bark and sapwood disrupts transport of nutrients and water in a tree, eventually causing branches and the entire tree to die. Tens of millions of ash trees in forest, rural, and urban areas have already been killed or are heavily infested by this pest.

A. planipennis has been found throughout Michigan, across much of Ohio, and in parts of Indiana, Illinois, Maryland, Missouri, Pennsylvania, Virginia, West Virginia and Wisconsin. Infestations have also been found in more areas of Ontario and in the province of Quebec. The insect is likely to be found in additional areas as detection surveys continue. Evidence suggests that *A. planipennis* is generally established in an area for several years before it is detected.

The broad distribution of this pest in the United States and Canada is primarily due to people inadvertently transporting infested ash nursery stock, unprocessed logs, firewood, and other ash commodities. Federal and state quarantines in infested states now regulate transport of these products.

Identification

Adult beetles are generally larger and brighter green (Fig. 1) than the native North American *Agrilus* species. Adults are slender, elongate, and 7.5 to 13.5 mm long. Males are smaller than females and have fine hairs, which the females lack, on the ventral side of the thorax. Adults are usually bronze, golden, or reddish green overall, with darker, metallic emerald green wing covers. The dorsal side of the abdomen is metallic purplish red and can be seen when the wings are spread (Fig. 2). The prothorax, the segment behind the head and to which the first pair of legs is attached, is slightly wider than the head and the same width as the base of the wing covers.

Larvae reach a length of 26 to 32 mm, are white to cream-colored, and dorso-ventrally flattened (Fig. 3). The brown head is mostly retracted into the prothorax, and only the mouthparts are visible. The abdomen has 10 segments, and the last segment has a pair of brown, pincer-like appendages.

Biology

A. planipennis generally has a 1-year life cycle. In the upper Midwest, adult beetles begin emerging in May or early June. Beetle activity peaks between mid June and early July, and continues into August. Beetles probably live for about 3 weeks, although some have survived for more than 6 weeks in the laboratory. Beetles generally are most active during the day, particularly when it is warm and sunny. Most beetles appear to remain in protected locations in bark crevices or on foliage during rain or high winds.

Throughout their lives beetles feed on ash foliage, usually leaving small, irregularly shaped patches along the leaf margins. At least a few days of feeding are needed before beetles mate, and an additional 1 to 2 weeks of feeding may be needed before females begin laying eggs. Females can mate multiple times. Each female probably lays 30-60 eggs during an average lifespan, but a long-lived female may lay more than 200 eggs. Eggs are deposited individually in bark crevices or under bark flaps on the trunk or branches, and soon darken to a reddish brown. Eggs hatch in 7 to 10 days.

After hatching, first instar larvae chew through the bark and into the phloem and cambial region. Larvae feed on phloem for several weeks, creating serpentine (S-shaped) galleries packed with fine sawdust-like frass. As a larva grows, its gallery becomes progressively wider (Fig. 4). Beetle galleries often etch the outer sapwood. The length of the gallery generally ranges from 10 to 50 cm. Feeding is usually completed in autumn.

Prepupal larvae overwinter in shallow chambers, roughly 1 cm deep, excavated in the outer sapwood or in the bark on thick-barked trees. Pupation begins in



Figure 1. Adult emerald ash borer.



Figure 2. Purplish red abdomen on adult beetle.



Figure 3. Second, third, and fourth stage larvae.



Figure 4. Gallery of an emerald ash borer larva.



Figure 5. D-shaped hole where an adult beetle emerged.



Figure 6. Jagged holes left by woodpeckers feeding on larvae.



Figure 7. Ash tree killed by emerald ash borer. Note the serpentine galleries.



Figure 8. Epicormic branching on a heavily infested ash tree.

late April or May. Newly eclosed adults often remain in the pupal chamber or bark for 1 to 2 weeks before emerging head-first through a D-shaped exit hole that is 3 to 4 mm in diameter (Fig. 5).

Studies in Michigan indicate 2 years may be required for *A. planipennis* to develop in newly infested ash trees that are relatively healthy. In these trees, many *A. planipennis* overwinter as early instars, feed a second summer, overwinter as prepupae, and emerge the following summer. In trees stressed by physical injury, high *A. planipennis* densities, or other problems, all or nearly all larvae develop in a single year. Whether a 2-year life cycle will occur in warmer southern states is not yet known.

Distribution and Hosts

A. planipennis is native to Asia and is found in China and Korea. It is also reported in Japan, Mongolia, the Russian Far East, and Taiwan. In China, high populations of *A. planipennis* occur primarily in *Fraxinus chinensis* and *F. rhynchophylla*, usually when those trees are stressed by drought or injury. Other Asian hosts (*F. mandshurica* var. *japonica*, *Ulmus davidiana* var. *japonica*, *Juglans mandshurica* var. *sieboldiana*, and *Pterocarya rhoifolia*) may be colonized by this or a related species.

In North America *A. planipennis* has attacked only ash trees. Host preference of *A. planipennis* or resistance among North American ash species may vary. Green ash (*F. pennsylvanica*) and black ash (*F. nigra*), for example, appear to be highly preferred, while white ash (*F. americana*) and blue ash (*F. quadrangulata*) are less preferred. At this time all species and varieties of native ash in North America appear to be at risk from this pest.

Signs and Symptoms

It is difficult to detect *A. planipennis* in newly infested trees because they exhibit few, if any, external symptoms. Jagged holes excavated by woodpeckers feeding on late instar or prepupal larvae may be the first sign that a tree is infested (Fig. 6). D-shaped exit holes left by emerging adult beetles may be seen on branches or the trunk, especially on trees with smooth bark (Fig 5). Bark may split vertically over larval feeding galleries. When the bark is removed from infested trees, the distinct, frass-filled larval galleries that etch the outer sapwood and phloem are readily visible (Fig. 4 and Fig. 7). An elliptical area of discolored sapwood, usually a result of secondary infection by fungal pathogens, sometimes surrounds galleries.

As *A. planipennis* densities build, foliage wilts, branches die, and the tree canopy becomes increasingly thin. Many trees appear to lose about 30 to 50 percent of the canopy after only a few years of infestation. Trees may die after 3 to 4 years of heavy infestation (Fig. 7). Epicormic shoots may arise on the trunk or branches of the tree (Fig. 8), often at the margin of live and dead tissue. Dense root sprouting sometimes occurs after trees die.

A. planipennis larvae have developed in branches and trunks ranging from 2.5 cm (1 inch) to 140 cm (55 inches) in diameter. Although stressed trees are initially more attractive to *A. planipennis* than healthy trees are, in many areas all or nearly all ash trees greater than 3 cm in diameter have been attacked.

Resources

For more information on the emerald ash borer and related topics...

• Visit the following Web sites:

Multi-agency Emerald Ash Borer Web Site:

www.emeraldashborer.info

USDA Forest Service: www.na.fs.fed.us/fhp/eab/

USDA Animal and Plant Health Inspection Service:
www.aphis.usda.gov/plant_health/

• Contact your state Department of Agriculture, State Forester, or Cooperative Extension Office.



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