"My pepper plants look terrible"; "something is eating my tomato plants"; there are brown spots all over my cucumber leaves". These are a few of the many laments that HGIC staff hear during the summer. We teach the integrated pest management (IPM) approach and the first step in IPM is correct identification of the problem. In many cases, the problem is fleeting or results in very little real injury to the plant. Gardeners can often correct or prevent problem with simple techniques- removing infected leaves or plants, hand-picking an insect pest, covering plants with a floating row cover, etc. Applying pesticides is rarely warranted in a food garden. But some pest problems can greatly reduce plant growth and harvest if not managed.

Here are two commercially available organic pesticides you may find useful if faced with significant insect and disease problems. In this context, the word "organic" simply means approved for organic farming by certifying organizations. Home gardeners can find these products at garden centers, hardware stores, big box stores, and via the internet.

**Copper Fungicides**

When different formulations of copper are dissolved in water, copper ions are released into solution. These copper ions are toxic to fungi and bacteria because of their ability to destroy proteins in plant tissues. However, because copper can kill all types of plant tissues, the use of copper fungicides carries the risk of injuring foliage and fruit of most crops. Factors contributing to injury include: 1) the amount of actual copper applied, and 2) cold, wet weather (slow drying conditions) that apparently increases the availability of copper ions and, thus, increases the risk of plant injury.

**Diseases copper will control:** it’s a fungicide/bactericide and will control a wide range of common vegetable diseases including anthracnose (leaf and fruit); early blight and Septoria leaf spot of tomato/potato; bacterial leaf spot of pepper; powdery mildew, downy mildew, angular leaf spot, gummy stem blight of cucurbits. Copper fungicides have shown limited effectiveness in preventing late blight infections.

**Products:**

Bordeaux- copper sulfate (also known as blue vitriol or bluestone) was the original copper fungicide. When this mined material was combined with lime in French vineyards, it became known as Bordeaux mixture.

Fixed copper fungicides: following the discovery and use of Bordeaux...
mixture, several relatively insoluble copper compounds or fixed coppers were developed. Fixed copper formulations (e.g. tribasic copper sulfate) are available in liquid or dry form and are less injurious to plant tissues than Bordeaux mixture.

- Bonide Liquid Copper Fungicide- 10% Copper Octanoate (Copper soap); 1.8% metallic copper
- Ortho Garden Disease Control-.08% Copper Soap
- Kocide (dry/flowable or wettable powder)- cupric hydroxide (20-50% metallic copper)
- Ready-to-use (RTU) copper fungicides are also available.

**How to use:** it is a protectant and must be applied prior to infection. It will not “cure” infections- just prevent new ones. The smaller the particle/droplet size the better. Don’t apply on very hot days and don’t over-apply. Typical rates are 1-3 teaspoons per gallon of water. The dried spray will degrade and needs to be re-applied in 7-10 days. Don’t mix with other pesticides. Cautions: although safe to use with a long storage life, copper can build up in the soil and become a contaminant- use it sparingly. It should be used as a last resort for persistent vegetable diseases.

**Spinosad (Insecticide)**

Spinosad was developed in the mid-1990s. It’s a secondary metabolite from the aerobic fermentation of *Sacharopolyspora spinosa* (a naturally occurring soil microorganism). Spinosad is a nerve and stomach poison and must be ingested to kill insects. Paralysis and death occur within minutes although insects may remain on the plant for up to two days. Spinosad has limited translaminar activity, meaning it can move somewhat into leaf tissue. This makes it effective against leafminers that feed within leaves. It has very low toxicity to non-target organisms including pollinators and other beneficial insects.

Spinosad will control: caterpillars (e.g. armyworms, European corn borer, cabbageworm, corn earworm, cutworms, hornworm) and borers, thrips, leafminers, sawflies, Colorado potato beetle. Less effective on beetles and not effective against sucking insect pests such as bugs and aphids.

**Products:**

- Monterey Garden Insect Spray - 16 Oz. Concentrate
- Bonide Captain Jack's Deadbug Brew Ready to Spray .5%
- Bonide Colorado Potato Beetle Beater-Concentrate .5%
- Gardens Alive- Bulls-Eye (http://www.gardensalive.com)

**How to use:**

Only a small amount per gallon is required- about 4 tablespoons per gallon of water. It’s very important not to spray spinosad more than 2—3 times per growing season to reduce the risk of pests developing resistance to the active ingredients. Organic farmers alternate spinosad with B.t. for controlling caterpillar pests.

If you enjoy receiving the HGIC e-newsletter, stay in touch more often by “liking” us on Facebook and following us on Twitter.

Is all this social media technology new to you? Facebook is an online gathering spot where you can connect with friends and people who have similar interests. Go to [HGIC’s facebook page](http://www.facebook.com) for a preview. Like what you see? Click the Facebook Sign Up button to get started. If you are already on Facebook, enter Home and Garden Information Center in the search field and click on the like button. Once you “like” the HGIC page, you can read posted comments, post questions, and comment on posts by others.

Twitter is another way we are communicating with Marylanders. Tweets are very short messages (140 characters or less) and often include hyperlinks to other web sites or publications. To learn more visit [our twitter page](http://www.twitter.com) and click the Join today button.
Baptisia or False Indigo, *Baptisia australis*

Baptisia is a very hardy and tolerant perennial for the urban landscape. It is native to large areas of the US, very reliable, heat tolerant, drought tolerant with few pests, and is available in several colors with long lasting flowers. This slow to medium growing large perennial is hardy from zones 3-8. It can reach 2-3 feet tall and 3 feet wide. The leaves are divided into 3 segments with a grayish to blue green appearance. Flower spikes of pea-like blue flowers are long lasting spring through early summer. Seed pods are brown to black and persist on plant until fall, can be used in dried arrangements. Baptisia prefers full sun, will tolerate partial shade, and needs good drainage.

**Other Species:**
- *B. alba* – white flowers
- *B. tinctoria* – yellow flowers

**Cultivars:**
- *B. australis* ‘Big Ben’, taller with blue flower stems,
- *B. ‘Purple Smoke’, hybrid between *B. australis* and *B. alba* with nearly black stems and violet flowers,
- *B. Prairieblues™ series includes the cultivars ‘Midnite’, ‘Twilite’, ‘Starlite’ and ‘Solar Flare’ that offer a greater variety of colors and extended bloom period.

---

Foam Flower, *Tiarella cordifolia*

Also known as Allegheny foam flower is a very hardy and tolerant small perennial for the woodland landscape. It is native to a large area of the US, and an ideal groundcover for woodland settings. It is hardy in zones 3-8, a medium to fast grower that reaches 6-12 inches tall by 3 feet wide. It spreads by underground stems. The foliage is semi-evergreen to evergreen heart shaped 3-5 lobed leaves with long petioles, many variations of leaf color markings, and leaves that may turn bronze in winter. Dainty flower spikes in white to pink appear in spring, and last through early summer. Foam flower prefers shade and moist soil, can tolerate brief periods of drought, and is an ideal ground cover for shade.

**Other Species:**
- *T. trifoliata* – Three leaved foam flower, less tolerant of heat and humidity, foliage has 3 leaflets, white flowers
Cultivars:
- *T. cordifolia* var. *collina* (*T. wherryi*) Wherry's foam flower, is a clump forming variation,
- *T. cordifolia* 'Brandywine', bold red leaf veins, *T. cordifolia* 'Filagree Lace', lacy cut foliage
- *T. cordifolia* 'Heronswood Mist', light gray leaves with cream and pink colors
- *T. cordifolia* 'Mint Chocolate', leaves with purple color
- *T. cordifolia* 'Pirate's Patch', slightly cut leaves with a purple spot
- *T. cordifolia* 'Winterglow', leaves flecked with red and winter foliage color is golden yellow

**Joe Pye Weed, Eutrochium purpureum (sometimes known as Eupatorium)**
A tall, very hardy native perennial for the meadow garden or for the back of the perennial bed that attracts butterflies. It is hardy in zones 4-8, a medium to fast grower that can reach 4-7 feet tall by 3 feet wide. The foliage is 3-5 whorled around the stem, coarsely serrated and pointed, and has a vanilla scent when crushed. There are multiple flower heads that are usually massed into 12-18 inch compound flower arrangements, purple, and long lasting in fall. Spent flowers develop into fluffy seed heads. It prefers full sun and moist soil.

Other Species:
- *E. maculatum* – spotted Joe Pye weed, purple flowers
- *E. purpureum* var. *album*, white flowers

Cultivars:
- *E. maculatum* ‘Gateway’, purple flowers
- *E. purpureum* 'Joe White', white flowers
- *E. purpureum* ‘Little Red’, purple flowered dwarf form (4 feet)
- *E. dubium* ‘Little Joe’ smallest form, at 2-3 feet in height

**Showy Stonecrop (formerly sedum), Hylotelephium spectabile**
A very hardy perennial for hot dry areas. This drought tolerant perennial gives showy long lasting color for the fall garden. It is hardy in zones 4-8, and a medium to fast grower that reaches 1-2 feet tall by 1 foot wide. Hardiness Zones: 4-8. The foliage is fleshy, and alternate to whorled around the stem. The flowers are large with flat topped flower heads, pink to deep red, long lasting in fall, and will dry on the stem. This plant prefers full sun or light shade and well-drained soil

Other Cultivars:
- *H. spectabile* 'Autumn Fire', slightly shorter with brighter flowers
- *H. spectabile* 'Atropurpureum', dark bronze foliage with rose-red flowers
- *H. spectabile* ‘Brilliant’, deep pink flowers
- *H. spectabile* 'Iceberg', white flowers
**Christmas Fern, *Polystichum acrostichoides***

A tough evergreen for the shade garden and good companion to other shade loving perennials. It is hardy in zones 4-8. This small to medium perennial is a medium to fast grower that reaches 12-18 inches tall by 1 foot wide. The foliage is coarse stiff evergreen fronds that appear as fiddleheads in the spring. The fertile fronds have spores arranged in rows on the undersides of the uppermost fronds. Christmas fern prefers partial shade to shade and moist soil.

**Questions and Answers**

*by Debra Ricigliano, Certified Professional Horticulturist*

**Question:**
I have been gardening for many years in a community garden and over the years I have seen many different types of insects. The other day I noticed this unusual bug. It looked like a black stink bug with red markings. I have attached a photo for you to look at. Can you identify this for me? Should I be concerned that this will injure my plants?

![](image)

**Answer:**
What you have found is a twospotted stink bug (*Perillus bioculatus*). This happens to be a beneficial species that is a predator of the Colorado potato beetle. Therefore, finding these in the garden is a good thing. There are other species of stinkbugs that cause injury on vegetables such as tomato, pepper, bean, okra, corn, eggplant, pea, and squash. Brown and southern stink bugs are the most common ones that cause problems in mid-Atlantic area gardens. The damage they cause is called ‘cloudy spot’ and happens when the bug inserts its mouthpart into the fruit and injects an enzyme before sucking out the contents of plant cells. This damage is superficial and can be cut out.

**Question:**
We bought a ‘Tuscarora’ variety of Crape Myrtle two years ago. It is planted in a partly shaded area in our backyard. When we purchased it, it was loaded with beautiful dark coral colored blooms. The tree is watered properly and I fertilize it every spring. The tree has not bloomed since. It puts out lots of new growth and appears to be healthy. Any ideas why it is not blooming?

**Answer:**
Crape myrtles are low maintenance plants that have few pest or disease problems. The cultural demands for this plant are low and once they become established are quite drought tolerant. They grow well in average well-drained garden soil. The major reason why they do not bloom is they are not receiving sufficient sunlight. For best bloom they need eight hours of full, direct sun. Also, hold off on giving the plant fertilizer as this sometimes produces lots of lush green growth and no flowers. You mention that it is planted in partial shade and because of this it may never bloom. If this is the case, you may want to transplant in early spring to a sunnier location.
Lightning bugs or fireflies remind us of our childhood when we filled glass jars with them. These jars made a really cool light for your room. Did you know that these unique insects are neither a 'fly' or a 'bug' but a true beetle? They are beetles in the family Lampyridae and produce a "cold light" through a chemical process called bioluminescence, that is almost 100% efficient!

Various species of fireflies are found on almost every continent. There are sixteen species of lightning bugs in Eastern North America. Some species actually do not produce light. The blinking light is an important part of their courtship ritual. It's a means of communication between the sexes, although the larvae use it as a warning to scare off predators. The males fly while the females live closer to the ground on plants. Each species has its own distinctive light signal. Sometimes the female will fake another species signal to attract the male and eat it. It is thought that lightning bug adults feed on nectar as well as on scale crawlers, aphids and other soft-bodied insects. Females lay their eggs just below the surface of the soil. Eggs hatch in about four weeks, the larvae then overwinter in the soil and emerge the following spring, but some species will remain as larvae for several years.

Lightning bug larvae, also called "glowworms", live on the ground, in moist areas. There they eat smaller insects, snails and slugs and are scavengers on decaying organic matter. The larvae are capable of killing larger prey by injecting a paralyzing substance and also attacking their prey together.

Where do lightning bugs go during the day? They definitely are out there but are well hidden under leaves, in cracks and crevices, under loose bark, etc.

There seems to be an abundance of lightning bugs this summer and they started appearing a little earlier than in previous years. It is assumed that the early activity was due to the warm weather, but exactly why they are so numerous is not yet known. Courtship decreases as the summer progresses. In our region, the fireflies' light show is usually finished by late August.

Do you have a plant or insect pest question?
Call the Home and Garden Information Center
800-342-2507 (in-state)
410-531-1757 (out-of-state)
How is YOUR garden growing?

By Ria Malloy, Home and Garden Information Center

Reports have been coming in from all over Maryland. In addition to the usual vegetables and herbs, people are growing different types of vegetables or trying different techniques to great success. We are hearing that there are many brand new gardeners out there. Hooray and Welcome! There is more demand than ever for space in community gardens. Vegetable gardens are being established in schools to teach environmental science, sustainability, food safety, and more.

Have a gardening story to share? GIEI is featuring YOUR stories in Growing Great Gardens. July’s topic is Edible Landscaping and the topic for August is Tomato Heaven. Drop us a line and include a digital image to grow.eat@gmail.com and we’ll post it on Growing Great Gardens. As always, if you have a question about anything in your garden, Send a Question to the Home and Garden Information Center.

The Grow It Eat It team led by Master Gardener Erica Smith is working to bring more gardening information to you every day. The GIEI Bloggers are having a blast posting photos of their harvests, the pests and how they deal with them, recipes, personal success stories and just about anything and everything having to do with what’s in the garden. Thanks for all of the great posts everyone!

The GIEI video production team has been fast and furiously capturing footage, editing and getting creative with effects, and posting new how-to videos every week. There are 15 new videos in the GIEI video library in the last month alone! Check out some of the new titles: Pruning tomato suckers, Pepper pinching, Salad Table Gardening Parts 1 & 2, and many more!

Late blight of tomato was confirmed in St. Mary’s county this Spring. GIEI has been quick to bring you the latest updates as we hear them. We haven’t heard of widespread outbreaks, thankfully. Maybe the lack of rain has helped us in that respect.

Not into vegetable gardening but want to put local produce on your table? Check out Buying From Local Maryland Farms.

Thank you for joining the GIEI Food Gardening Network. There are over 5,600 people growing food in their gardens that have joined the network. Haven’t joined yet? Help us to reach our goal of 1 million food gardeners in Maryland. Click here to join.

GIEI strives to keep you informed on the latest happenings in the vegetable garden on the home page of the GIEI website. So come back and visit us often!
Every month we publish timely tips on our website. This year we will be highlighting some “best of” tips. If we pique your interest, please visit our website to read more (www.hgic.umd.edu) or call us with your questions - 800-342-2507. Be sure to click on the blue links to view related publications or photos.

**MONTHLY TIPS FROM HGIC**

**JULY**

**Lawns**

- **Mow ‘em high and let ‘em lie!”** Cut your cool-season turf (fescues and bluegrass) and zoysia to a height of 3-4 inches and leave the clippings on the lawn where they will decompose naturally, returning nitrogen to the soil.

- Broadleaf herbicides should not be applied during hot weather when turf and weeds are dormant. Weeds are more susceptible to herbicides when they are growing vigorously.

- Cicada killer wasps (photo) are becoming active. They are 2 inches long and resemble yellow jackets in coloration. These wasps are not aggressive and will not sting unless handled. These harmless wasps prey on cicadas and dig nests in soil. They are solitary insects but may congregate in large numbers. They prefer sandy soils in full sun to dig their nests. No controls are recommended.

**Ornamental Plants**

- Consider planting groundcovers where grass won’t grow, where you have heavy shade or tree root problems and on steep slopes. Select plants based on the amount of sun they require. Good choices include periwinkle, liriope, epimedium, sweet woodruff and native pachysandra.

**Fruits**

- Fruit plants have shallow root systems which are easily damaged by cultivation. Do not cultivate or dig into the soil around small fruits or tree fruits. Hand-pull the weeds and then apply organic mulches to control weeds.

**Vegetable Gardening**

- Perpetual spinach, Malabar spinach, and Swiss chard are good heat tolerant salad greens for Maryland. ‘Grand Rapids’, ‘Red Sails’, ‘Deer Tongue’, ‘Slobolt’, ‘Bronze Arrowhead’ and all oak-leaf type lettuces are some of the heat tolerant looseleaf lettuce varieties that can be sown now. Keep fertilized and watered. Cover with a shade cloth, or floating row cover. (GE004)

- The adults (photo), larvae (photo) and eggs of Mexican bean beetle can be handpicked. The adults have 16 spots, coppery-colored wing covers and resemble ladybird beetles.

- Cucumber vines that are wilting could be infected with bacterial wilt (photo), a fatal disease transmitted by cucumber beetles to cucumber and muskmelon plants. Cucumber beetles are either yellow with 11 black dots (photo) or yellow with 3 black stripes (photo). There is no cure for the disease. Pull up and dispose of vines. ‘County Fair” is a hybrid variety with in-bred resistance to bacterial wilt disease.

**Soil and Compost**

- Bare soil is very prone to erosion from summer thunder storms and should be covered with mulch, groundcovers or turf. Avoid the temptation to turn over or dig in wet soil. This can be done when the soil is dry. Other tips to keep erosion in check are using grass strips to protect exposed seams and installing terraces or swales

**Woody Ornamental Plants**

- Prune foundation shrubs back so they are at least 1 ft. from your house to help keep nuisance insects, like ants and earwigs, from getting into your home. You can thin and prune shrubs that have already flowered, like azalea and lilac. Be aware, however, that next year’s flower buds begin to develop in mid-July.

- Spruce spider mites (photo) are active this month feeding on evergreens, especially dwarf Alberta spruces. Control them with a strong stream of water or an application of ultra-fine horticultural oil. Be aware that oils will discolor blue spruces. Oil sprays should be applied to dry foliage only when temperatures are below 80° F.
cause long-term damage to the structure of your soil. If you want to grow vegetables, flowers or herbs next spring and your soil is especially poor, consider building a raised bed and filling it with a purchased mixture of topsoil and leaf compost.

- If your compost pile is overly wet and smelly, tear it apart and mix in some dry materials high in carbon, like shredded newspaper, straw or shredded leaves. Be sure to bury kitchen scraps deep inside your outdoor compost pile.

Outdoor Pests

- Mining bees (photo) are active now. They are solitary bees that nest in underground burrows, fly low over the ground and make ¼ inch holes in loose soil. They are not aggressive and the males have no stinger. To discourage their activity you can set up a lawn sprinkler.

Wildlife

- Remove bird nests attached to your house after the birds have left to prevent problems with bird mites coming into your home. These small mites do bite people.

August

Lawns

- Hot, dry weather will cause lawns to turn brown and go dormant. This is a natural response that helps turfgrass survive severe drought. Unless large amounts of water are routinely used, watering lawns will not reverse this process. The exception would be areas of very young grass that you seeded this spring. Keep it watered because it may not be established enough to go through dormancy. Lawns that go dormant will green-up and grow vigorously again in the fall.

- Crabgrass is forming seed heads at this time. It’s too late to apply post-emergent crabgrass herbicides. Control severe crabgrass problems next spring through the use of pre-emergent herbicides. Over-seeding your lawn this fall to thicken the turf will also help combat crabgrass next year.

Woody Ornamentals

- Tree branches should only be pruned now if they are dead or damaged. Wait until your trees are dormant, (when leaves have fallen from deciduous trees, usually no earlier than late October or November) for all other corrective and cosmetic pruning.

Herbaceous Ornamental Plants

- For an interesting alternative to traditional vines, try hops (photo). The plants grow vigorously if supported, either upward or sideways. Attractive, pleasant smelling cones or catkins are produced through most of the summer.

Aquatic Gardens

- Now is a good time to clean out excessive plant growth in your pond and remove dead or diseased leaves. If you have a circulator or fountain, turn it on during hot weather to increase the amount of oxygen available for your fish. Ponds may need topping off. If using public water do not add large amounts of water at one time. The chlorine added to public water systems may kill fish.

Fruit

- The typical heat and dryness of a Maryland summer has finally arrived and many fruit plants are showing symptoms of water stress, these include leaf browning, small fruit size and fruit drop. To help assure a good fruit crop keep all fruit plants well watered during these hot, dry periods. Most of them are also forming buds for next year’s crop. Prevent water stress now to prevent these important fruit buds from shriveling.

- Harvesting fruit before peak ripeness helps minimize problems with yellow jackets and sap beetles. Yellow jacket bottle traps are widely available and can help reduce their infestation of your fruit.

- Brown rot on stone fruits, like peaches, causes fruits to rot and mummify. Healthy looking fruits may be infected and begin to breakdown just before or after harvest. Remove and destroy affected fruits immediately. Next year, initiate a regular spray program beginning at the flowering stage.

Vegetable and Herb Gardening

- Sweet potatoes will continue to enlarge until frost so check root size to determine when to harvest.
Handle harvested roots gently and cure the roots by storing them at 85°F and high humidity for 4-7 days. Thereafter, your sweet potatoes can be stored in a cool, dry location.

- Leave watermelon on the vine until the first tendril next to the fruit has turned dark brown and there is a yellowish white spot on the bottom of the watermelon. Harvest a muskmelon when it twists easily off the vine.

- Harlequin bugs (photo), cabbage aphids, cabbage flea beetles and several different caterpillars are all significant pests of members of the kale and broccoli family. Handpick, use a floating row cover to exclude them, or be prepared to spray with an organic insecticide.

- Harvest the individual leaves of tarragon, rosemary, basil, sage and other culinary herbs and dry them indoors. Herb leaves are most intensely flavored right before the plant blooms. Fresh basil can also be frozen in plastic containers. Finely chop basil and cover with olive oil. Freeze in ice cube tray, pop out and store in freezer bags.

Compost and Fertilizer

- Many kinds of interesting invertebrates live in a compost pile including manure worms, centipedes, millipedes, pill bugs, and pseudoscorpions. They are part of the composting ecosystem and should be appreciated, not feared. Do not attempt to spray or otherwise kill these beneficial critters.

- Do not fertilize shade trees, fruit trees or shrubs at this time. It might promote new growth at a time when perennial plants are beginning to enter dormancy and could result in winter damage. Mature shade trees do not need to be fertilized every year.

Indoor and Outdoor Pests

- Populations of pantry pests, like Indian meal moths, cigarette beetles and carpet beetles can build up over the summer because most people do less baking and infested products go unnoticed until the fall and winter. No chemical controls are recommended. See our fact sheet on pantry pests (HG67) for additional information.

- Try to ignore hornet, bee and wasp nests found outside, especially if they are located in a tree. However, if a hornet or yellow jacket nest is a threatening nuisance such as under your deck or next to your door you can destroy it with labeled sprays at night. Do not spray during the day or all you will do is to make them really mad because they cannot get back to their nest! Contact a pest control professional if yellow jackets are nesting inside the walls or attic of your home.