

## In this issue....

- [Frequently Asked Soil Test Questions](#)
- [Termite Swarms](#)
- [New Disease on Flowering Cherries](#)
- [A Rose is a Rose... Not Always!](#)
- [Grow It Eat It Update](#)
- [2010 Annual Report](#)
- [Q & A](#)
- [Monthly Tips from HGIC](#)

## Websites

- [Home and Garden Information Center](#)
- [Grow It Eat It](#)
- [Maryland Master Gardeners](#)

## Frequently Asked Soil Test Questions

*Jon Traunfeld, Extension Specialist, Fruits and Vegetables, and State Master Gardener Coordinator*

The importance of soil to plant growth can be summed up in the aphorism “it’s better to plant a \$2 tree in a \$25 hole, than a \$25 tree in a \$2 hole.” Soils contain the nutrients, water, and living organisms that help create healthy and sustainable gardens and landscapes. The first step to improving your soil is to invest a small amount of time and money to have your soil tested.

A basic soil test will tell you some important things about your soil that you cannot determine just by looking at it, smelling it, and feeling! And, it can save you money- less fertilizer used based on soil test results, and increased fertilizer efficiency by getting soil pH in the correct range. We receive hundreds of soil-related questions each year and here are some that are most frequently asked:

### What kind of test should I do?

Please read our [soil testing fact sheet](#). It covers the following important topics: *Taking a Soil Sample, Mailing in a Soil Sample, Interpreting Test Results, Abbreviations and Terms Found in Soil Test Reports, Fertilizing Responsibly for a Healthy Chesapeake Bay*. The last page contains a list of eight regional soil testing labs that we recommend. We also have a [video](#) that shows how to take a soil sample for testing.

Select the basic test offered by the lab that you choose. This typically includes pH (a measure of the alkalinity or acidity of your soil), phosphorous, potassium, calcium, and magnesium. The chemical symbols for these four nutrients are P, K, Ca, and Mg, respectively. These are important nutrients required by plants in large quantities. The basic soil test will probably also include other nutrients- sulfur (S), manganese (Mn), zinc (Zn), copper (Cu), iron (Fe), and boron (B), and some include a textural analysis (e.g. silty clay loam), % of organic matter, and cation exchange capacity (CEC).

Soil pH is one of the most important measurements. It plays a big role in the availability of nutrients to

### How to Collect a Soil Sample



# SAMPLE SOIL TEST REPORT



REPORT NUMBER:  
0000-S000-001

CUSTOMER NUMBER:  
00001

SEND TO: JOE GARDENER  
1234 SMITH RD.  
ANNAPOLIS, MD 21401

GROWER:

SAMPLES SUBMITTED BY:  
JOE GARDENER

Sample Number: 1      Page 1      Lab Number: 07103      Date Received: 6/1/2006      Date Reported: 7/1/2007

GRAPHIC SOIL ANALYSIS REPORT													
Very High												Soil Test Interpretation	
High													
Medium													
Low													
Very Low													
<b>TEST RESULTS</b>	P	K	Mg	Ca	S	Zn	Mn	Fe	Cu	B	Na	Soluble Salts	
	Phosphorus	Potassium	Magnesium	Calcium	Sulfur	Zinc	Manganese	Iron	Copper	Boron	Sodium		
ppm	33	50	49	231	16	1.7	61	121	0.4	0.3			
pH	ACIDITY	C.E.C	PERCENT BASE SATURATION				ORGANIC MATTER	NITRATE	CHLORIDE				
SOIL pH	H meg/100g	meg/100g	K %	Mg %	Ca %	Na %	H %	%	NO3-N ppm	Cl ppm			
4.9	7.0	8.7	1.5	4.7	13.3		80.5	4.3					
<b>SOIL FERTILITY RECOMMENDATIONS</b>													
FERTILIZER (lbs./1000 sq. ft.)													
CROP	YIELD GOAL	LIME	SULFUR Elemental	N Nitrogen	P2O5 Phosphate	K2O Potash	Mg Magnesium	S Sulfur	Zn Zinc	Mn Manganese	Fe Iron	Cu Copper	B Boron
LAWN		lbs./1000 sq. ft.											
		190		2-3		6.0	0.50	-0-	-0-	-0-	-0-	-0-	-0-

plant roots, nutrient run-off and leaching and microbial efficiency. Don't pay for extra tests, such as soluble salts, or specific micronutrients unless you have a very good reason.

Soil tests should be done every 3 years for lawns and vegetable gardens. Problem sites can be tested more frequently. Fall is a good time to test soil because any soil amendments that you add in fall, like lime and compost, will have time to improve the soil before spring. Use the same lab each time you have your soil tested because there are no set standards followed by all testing labs. They use different chemical extractants to determine nutrient levels which leads to different test results, and they use different units (e.g., lbs./acre vs. ppm) and bases (e.g., P vs. P<sub>2</sub>O<sub>5</sub>) for expressing those results.

***I think I have clay soil like most everyone else in my county. What can I do about it?***

Most Maryland soils are made up of mineral particles-sand, silt, and clay (about 45%); organic matter (about 1-5%); and air and water- pore spaces (about 50%). Soils are classified largely by their texture and that

is determined by the relative amounts of sand, silt, and clay. Clay gets a bad rap, but it is an important constituent of soil because it holds nutrients and water. But too much clay can cause problems. Soils high in clay (more than 50%) feel sticky, don't drain well, and become rock hard when dry. You can't change the texture of your soil (the percentage of clay) but you can improve soil structure (the arrangement of individual soil particles). Adding lots of organic matter such as compost, farm manure, or shredded leaves to clayey soil will allow it to drain more easily and hold the right amounts of water and air for better plant growth and increased biological activity.

***Should I add gypsum? The bag says it will break up clay soil.***

Gypsum is calcium sulfate. Despite what the bag proclaims, there is no scientific evidence to support it for the kind of soils we have in Maryland. It is a good source of soluble sulfur and calcium and can be useful to add to soils that are low in these two nutrients and are in the correct pH range (6.0-7.0 for most garden and landscape plants).

***Shouldn't I send a 12 inch deep slice of soil to the lab since roots go at least that deep?***

Actually, the top four to six inches of your soil contains most of the nutrients available to your plants. That is also the zone of greatest biological activity, where huge populations of soil critters consume organic matter and recycle nutrients. It's also where most plant roots are located.

***Is lead a problem outside of Baltimore?***

Vegetable gardens should be tested for lead levels regardless of their location. Although it is true that lead is more prevalent in cities, high levels have been measured in suburban and rural areas. Lead levels may be especially high in gardens next to busy roads from vehicle exhaust. Learn more about this issue by reading [HG 18 Lead in Garden Soils](#). The University of Massachusetts lab includes lead testing in their basic soil test.

***I read that phosphorous is one of the big Chesapeake Bay pollutants. My soil test came back very high in phosphorous. Will this hurt my plants? I want to do my part for the Bay so tell me how I can get the extra phosphorous out of my soil.***

High levels of nutrients will usually not harm plants. There are exceptions, such as when soils are very low in pH and high in aluminum or manganese.

Excessive amounts of nutrients like phosphorous cannot be physically removed. Plants remove some phosphorous each year through their growth processes. Phosphorous can move into waterways when soil washes off your property. Keeping soil covered at all times with plants, grass, or mulch is essential.

***How come my soil test results don't have a measure of my nitrogen levels? I thought nitrogen was important.***

Nitrogen is needed in relative large quantities and is often the nutrient that limits plant growth. It is not measured because it moves back and forth between organic (not available for plant uptake) and inorganic forms (available for plant uptake). This is affected by temperature, rainfall, soil texture and structure, biological activity and many other factors. Organic matter provides a slow release of nitrogen during the growing season.

***My soil test results gave two different pH readings- "5.8 pH" and "7.4 buffer pH"- how come?***

The 5.8 pH reading is the actual pH reading and

There are over 750 soil types (textures) in Maryland! Regardless of soil type here are some qualities of a good soil:

- The top soil is dark brown indicating lots of soil organic matter
- It breaks apart easily into "crumbs" when you bounce a small handful of soil in your hand.
- There are lots of earthworms in spring and fall
- Water does not stand after a hard, steady rain
- Plants grow well with roots penetrating eight inches or more into the sub-soil

measures "active" soil acidity. The buffer pH is a measure of the "stored" acidity. The buffer pH is important because it determines how much lime needs to be added to a soil to make a change in pH. Soils high in clay and organic matter have a lot of "stored" acidity because these particles have many negatively charged sites that hold positively charged hydrogen ions (cations). Hydrogen cations make the soil more acidic. Therefore it will take more calcium (lime) to raise the pH of a clayey soil than it would a sandy soil. Buffer pH is measured by adding a weak 8.0 pH base to low pH soil samples.

***My soil test results came back with a recommendation to apply 4 lbs. of nitrogen per 1,000 sq. ft. of lawn area. I thought you guys recommended less?***

Right you are! The UME recommendation for cool-season turf (fescue and bluegrass) is as low as 1 lb. of nitrogen per 1,000 sq. ft. Always follow [UME lawn fertilization guidelines](#), regardless of who tests your soil.

***I want to be more self-sufficient and knowledgeable so shouldn't I be doing my own soil testing with one of those store-bought kits?***

Using a professional lab is recommended because they can test wider range of nutrients with greater accuracy than a store-bought kit. These kits typically test soil pH, phosphorous, and potassium. Here is a brief 2007 summary of a comparison of the [accuracy of some commercially available home gardener soil test kits](#):

Please send us an [e-mail question](#) or call us (1-800-342-2507) if you have soil testing questions or need a soil test bag. We can also help you interpret soil test results and recommendations. The HGIC challenges YOU to have your soil tested this year!

## Oh No! It's That Time of the Year for Termite Swarms!!

Mary Kay Malinoski, University of Maryland Extension Specialist, Entomology

It's spring and that means termites! On a nice warm day you may see hundreds if not thousands of insects flying around your yard, landing on your car, and pretty much everything else. The wings fall off pretty easily and the little critters, that look superficially like ants, crawl around looking for a nice place to start a home and family. One way to tell the difference between termites and ants is to check the body shape. Ants have a "wasp" (or pinched) waist and termites don't.

Termite swarmers (or alates) are produced by mature termite colonies. Sometimes these swarmers may take flight from under the front steps, patio, or in your basement. These flights are an indication that a healthy colony of termites is nearby. It's time to call a professional pest control company, especially if the swarm is coming from close to, or inside your house.

Don't panic! It takes quite a while for termites to cause damage to a house or other structure. Take your time to find a professional company that you feel comfortable with. It is important for the inspector is to determine where the termites are gaining access to the house. This information can help in planning a treatment program and in making structural or landscape modifications that will prevent a reinfestation.

A great place to start is the [Maryland Pest Control Association's Wood Destroying Insect-Organism Inspector Credential List](#). Additional information can be found at [Thorne Lab Information on Termites, Structural IPM](#), University of Maryland.



*Images courtesy of Ronald F. Billings, Texas Forest Service, Bugwood.org*



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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](#) 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](#) and click the Join today button.

# A New Disease on Flowering Cherries

David Clement, University of Maryland Extension Specialist, Plant Pathology

Hopefully this spring will bring warm wet weather conducive for our gardening pleasure. However this spring weather often brings with it the chances of diseases in our landscapes and unfortunately the past few springs have brought a serious new disease to our flowering cherries, especially the cultivar 'Kwansan'. This new disease is an old orchard disease of stone fruit called brown rot. It is caused by the fungus *Monilinia laxa*.



The first symptoms often seen by homeowners are browning and collapse of the blossoms followed closely by death of the small twigs. The symptoms look like fire blight, but cherries are not susceptible to that disease. If infected blossoms do not drop off, the fungus may grow through the flower stem (pedicel) and into the twig below. Twigs develop elliptical cankers with profuse gumming at the margin between diseased and healthy tissue. Leaves on these infected shoots turn brown and wither, but remain attached. In some instances, twigs are girdled and killed. During wet weather in May and June, the fungus sporulates on the surface of infected twig cankers. Cankers enlarge from season to season, and sporulation may continue on large cankers for 4 years or more.



Visible presence of the pathogen is easy under wet conditions and appears as powdery tufts of brown gray spores that are visible on the outside of infected flowers, and on infected fruit or twig surfaces.

Management of this disease in orchards relies on good sanitation and proper timing of protectant fungicides. However in ornamentals this disease is a new problem and has not been studied extensively. Pruning of diseased twigs and blossoms would help and fungicides applied at bloom would also need to be applied. The fungicides would be the same as for brown rot management on stone fruit in orchards.

This spring we are asking for your help in reporting this new disease to us at HGIC by phone (800-342-2507) or by [email](#). It will help in our efforts track the timing and distribution of this new problem across Maryland.



# A Rose is a Rose..... Not always, A Look at 'Knock Out®' Landscape Roses

Ray Bosmans, Professor Emeritus, University of MD

Everyone enjoys a beautiful and fragrant rose but not everyone is successful in keeping them healthy nor can dedicate the time and effort needed to manage the many problems that attack most roses. The most serious problem is a fungal disease called "black spot". This disease causes dark spots on leaves about a ¼ of an inch in diameter. Infected leaves quickly yellow and drop off. Another fungal disease that affects most roses is powdery mildew. It does not penetrate the leaf tissue but grows on the surface making a bluish gray layer on the leaf. This too will cause leaves to yellow because the leaf receives less sunlight. Growing high quality roses involves frequent spraying with insecticides and fungicides and regular applications of fertilizer. Even with routine spraying, prolonged wet weather can set the fungicide treatment off schedule allowing diseases to get started.



**History of Knock Out™ Roses**  
The Knock Out® rose was developed by William Radler in the 1970's. The first true Knock Out® rose started as only one seed in 1989. After many years of dedicated breeding and careful selection, it was first available on the market as a red colored rose in 2000. His new rose received the "All America Rose Selection" award by the American Rose Society. After his first introduction, William

Radler created several more colors and forms of Knock Out® roses:

- Carefree Sunshine (a yellow rose) introduced in 2001,
- Ramblin' Red climber rose in 2002,
- Blushing Knock Out (pale pink) in 2004,
- Double-flowered Knock Out (red, with a lot more petals) in 2005,
- Climbing Carefree Sunshine in 2006,
- Rainbow Knock Out (pink with a yellow center) in 2007.

## An Alternative Rose

You can enjoy having roses with minimal effort by growing the Knock Out® landscape roses. These are a group of roses with dark green lustrous foliage that lasts into late fall, blossoms that are plentiful, colorful, fragrant and long lasting. Knock Out® roses are practically immune to the fungal diseases of other roses; therefore no preventative fungicide spraying is required. An occasional insecticide application for aphids, Japanese beetles, and rose slugs may still be needed.

Knock Out® roses grow into a shrub four feet tall and four feet wide. They can be used in the landscape just like any other shrub. They look great when planted in groups, as a hedge, a shrub border, or planted in beds along with annuals and perennials. Knock Out® roses are winter hardy to USDA Zone 5. Their blossoms are "self-cleaning" - the old blossoms drop off after they have faded.

Radler pursued his life-long interest in horticulture, specializing in roses and earning a degree in landscape architecture and became the Director of the Boerner Botanic Gardens. He currently maintains hundreds of roses in his private collection and continues to breed them - always looking for improvements in uniqueness, hardiness and beauty.

## Pruning

Since Knock Out® roses only reach a maximum height of 4 feet and a width of about the same they do not require much pruning. Simply cut the canes back every year in late winter or early spring to approximately 24 inches. Cutting them back very severely, like a hybrid tea rose, is not recommended. They won't die but will require a long time to recover. Periodically, older, declining, and broken canes will need to be removed. This can be done at any time of the year.

## Soils and Location

Knock Out® landscape roses need full sun to thrive. This is a minimum of 6 hours of direct sunlight every day. They will grow in a shadier place but will be sparse with reduced flowering. These roses are quite tolerant of most soils but not poor drainage. Always thoroughly prepare the planting site (not the planting hole) with liberal amounts of compost prior to planting. Have the soil tested to determine its nutritional needs. Mulch the roses with pine bark, hardwood bark, chopped leaves or pine needles to conserve soil moisture, moderate soil temperatures, and prevent weeds. These roses do not require heavy fertilization. However, periodic fertilizing, following soil test recommendations, will give the best flowering and growth.

## Pests

- **Aphids:** Aphids are a common early season pest of roses. They feed on the sap of mostly new growth, resulting in a yellowing and distortion/curling of the new growth. Aphids may also transmit viruses to roses from other infected plants. One serious disease that can be transmitted is rose mosaic virus to which Knock Out™ roses are susceptible. It causes the leaves and stems of new growth to become twisted and spindly. Infected parts should be pruned out promptly. Badly infected roses must be promptly dug out.

Usually, no control is required for aphids because native insect predators and parasites reduce the aphid population as the season progresses. However, if quicker control is needed, use an insecticide labeled for aphids such as insecticidal soap or horticultural oil.

- **Japanese Beetles:** The Japanese beetle is a very common pest of roses. Their peak feeding is early-mid July in central Maryland, afterwards adult beetle populations usually decline. Handpick this pest and drop them into a container of soapy water. If additional control is necessary, use a labeled insecticide. If you use traps, place them at least 30-50 feet away from your roses, these traps have a very powerful attractant that will lure more beetles into your garden than if you did not use traps.
- **Rose Slug:** The rose slug is a very common pest of landscape roses. It is neither a slug or snail but the larvae of a species of sawfly. Sawfly adults are very small flying insects related to wasps. The

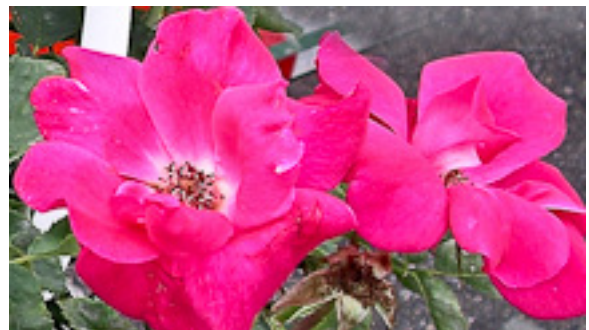
larva is small and “slug-like” in appearance. It feeds mostly from the underside of the leaf eating many holes and causing considerable damage. Severe rose slug feeding will stunt the rose’s growth and flowering. Apply insecticidal soap or horticultural oil, or another insecticide labeled for rose slugs.

- **Deer:** The white tail deer lives in almost every suburban neighborhood and enjoys the taste of roses. Deer will eat the blossoms and the canes, especially the tender new growth, where the thorns are not yet sharp, but soft and tasty. Deer usually browse on plants at night, occasionally you will even see them feeding during the day.

Regular applications of deer repellents are very effective. Deer repellents need to be re-applied especially after hard rain. Commercial deer repellents can get expensive but are worth the cost to protect your plants. Follow the instructions on the label for proper timing and application.

Another less expensive approach that has been used with good success until recently is hanging bar soap around the rose shrubs. Soap is so widely used that it appears that some deer are no longer repelled by it. If you never used bar soap for deer it might still work for you. Alternate different types of deer repellents if deer are growing accustomed to the repellent you are using.

If you want roses in your landscape but are not interested in an involved maintenance program, the “Knock Out®” landscape roses might be just the answer. They will surely provide beauty, hardiness, and practicality.





## Grow It Eat It Update

Ria Malloy, Home and Garden Information Center

### Growing season #3 has begun! And Maryland's Food Gardening Network is...**GROWING!**

Over 7,500 are in the GIEI Network. A recent user survey indicates they used the GIEI resources to:

- Start a vegetable garden 41%
- Expand a vegetable garden 27%
- Make their garden more productive 55%
- Make them a more confident gardener 56%



102 Food Gardening Classes have been scheduled so far and more are being posted all the time. Go to [Take a Vegetable Gardening Class](#) and bookmark the site to check for updates.

Join the Food Gardening Network, and add your garden to the map. Click on the map of Maryland to view how many food gardeners are in the network from each county and Baltimore City. Let's get those numbers up!



### What's hot in year 3?

- [Seed Starting](#)
- [Youth Gardening](#)
- [Community Gardening](#)
- More focus on the "Eat It" part of Grow It Eat It
- [More videos](#) – 76 total, 43 food related
- [More photos](#)

[Grow It Eat It Blog](#), nominated for a 2010 Baltimore Mobbie award, continues to wow readers with timely, detailed, and sometimes comical posts on current food gardening topics. Award quality photos complement all posts!



Stay current on the latest GIEI happenings by liking us on Facebook!

## Home & Garden 2010 Annual Report

- 10,257 clients assisted by horticulture consultants via the HGIC's toll-free phone number
- 418,136 unique visitors to the HGIC, Plant Diagnostic, Grow It Eat It and Master Gardener websites (combined) with a total of 542,236 user sessions
- 3,552 questions answered via online question submission service
- 2,695 subscribers to the GIEI Network News and 2,050 subscribers to the HGIC e-newsletter;
- 4,000 people stay connected through facebook, twitter and blog
- 71 educational videos with 210,000 downloads between 6/2009 and 1/2011

[Click here to read the entire 2010 report](#)

# Questions and Answers

by Debra Ricigliano, Certified Professional Horticulturist

**Question:** How do you get rid of gypsy moth nests in trees? The webbing is in the forks of the branches of our crabapple tree, I first noticed this about a week ago.

**Answer#1:** Gypsy moths do not make webbing. Your trees are infested with Eastern tent caterpillar. Tent caterpillars are not as serious a threat to the health of your tree as gypsy moths. Defoliation from tent caterpillars occurs early in the growing season and sometimes trees are able to produce a flush of new leaves to help recover from the damage. If possible, remove or prune out small tents by hand. Larger tents can be wound upon the end of a stick or broken open to expose the caterpillars to predators. If small, valuable trees are infested you can spray with *Bacillus thuringiensis* var *kurstaki* (B.t.) when the caterpillars are small. Prune out the egg masses on twigs in the fall and winter. You will find additional information on the ['Plant Diagnostic' website](#).



Eastern Tent Caterpillar

**Question:** My husband constructed 3 raised beds for me this year. They measure 8ft. x 4ft. and are made out of untreated wood. I do not have access to compost and was wondering what type of soil I should use to fill the boxes?

**Answer:** You can purchase a mixture of good quality top soil and compost. A 70% topsoil, 30 % compost mixture makes an excellent instant garden. Contact suppliers of bulk topsoil and mulch in your area. Topsoil is an unregulated industry in Maryland and you need to be careful what you purchase. Ask the dealer where the topsoil comes from. It is advisable to go and look at the soil. Do not purchase if it is full of rocks and debris, is gray or white in color, has a bad odor, or a sticky, gummy texture. Vegetable gardening and composting go hand in hand so take this opportunity to begin your own compost pile. For tips on composting look at publication [HG 35 Backyard Composting](#). For more information on raised beds look on the Grow It Eat It website, ['Starting a Vegetable Garden'](#).

**Question:** There is a considerable amount of garlic mustard in the wooded area behind our property. I pulled quite a lot of it out last spring and my neighbor sprayed a patch of it in his yard with an herbicide. Unfortunately, we are in the same situation again this spring. It has spread into the woods even farther. What can we do? Will it take over the entire wooded area if left unchecked?

**Answer:** Yes, garlic mustard (*Alliaria petiolata*) has the potential of colonizing large areas at the expense of our native plants. The control of garlic mustard needs to be carried out over a period of years and needs to be consistent each season. Seeds can survive in the soil for five years or more. Hand removal is recommended for light, scattered plantings. At a minimum, plants should be cut back to ground level before flowering to prevent seed production. As a last resort, use a non-selective herbicide that contains glyphosate which is effective in killing the weed down to the root. Be careful and protect desired plants from the herbicide spray.

## The Invaders: Garlic Mustard



[click on image to open video in a separate window](#)

# MONTHLY TIPS FROM HGIC

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](http://www.hgic.umd.edu)) or call us with your questions - 800-342-2507. Be sure to click on the [blue links](#) to view a related publication, photo or video.

## MARCH

### Lawns

- Now is considered the second best time (best is late August through October) to seed your lawn for repairs and to make it thicker or cover bare areas. Follow the label for seeding rates. ([HG 102](#))
- It is not a good idea to apply fertilizer to cool season turf in the spring unless your turf is weak and thin or if you did not fertilize this past fall. Fertilizing in the spring encourages rapid succulent growth that is more susceptible to attack by insects and disease.
- Crabgrass is best controlled by splitting the herbicide treatment into two applications. Apply the first application of pre-emergent crabgrass killer in mid-March in Southern Maryland and on the Eastern Shore, in late March for Central Maryland and in early April in Western Maryland. Apply the second half in early May for Southern Maryland, mid-May for central Maryland and late May for western Maryland.

### Woody Ornamentals

- Prune non-flowering trees and shrubs before new growth and when the worst of the winter weather is over. Remove branches broken by winter weather, prune out dead or diseased branches anytime and make any necessary cosmetic cuts. ([HG 84](#))
- Roses can be pruned starting in mid-March to maintain their shape and size. Roses always have some winter kill. To determine whether or not a branch is alive, simply scrape the bark with a sharp knife and look for green tissue.
- Remove and destroy bagworm bags from affected trees (primarily needled evergreens). The bags contain hundreds of eggs that will hatch out and feed in the spring. Discard or destroy the bags- don't just leave them on the ground. ([HG 32](#))

- The tiny reddish brown eggs of spruce spider mites can be seen with a hand lens on the twigs and needles of spruce at this time. If you notice signs of this pest, apply an ultra-fine horticultural oil spray which will smother and kill the eggs. ([HG 13](#))

### Ornamental Plants

- Cut down perennials and over-wintering ornamental grasses to within 2 inches of the ground and remove plant debris from flower beds.
- Do not set out tender annuals (impatiens, marigolds, petunias, salvia, etc) until after the last frost date. This date varies across the state from late April on the Lower Eastern Shore to Late May in Western Maryland. See our [Spring Frost/Freeze Date Chart](#) for more information.

### Fruit

- If you receive bare-rooted plants and cannot get them planted right away, keep them in a cool, dry, well-ventilated area where they will not freeze. Keep the roots moist by covering with moist sawdust or shredded newspaper.
- If you're considering strawberries, try some of these June-bearing cultivars - Earliglo, Allstar, Cavendish, and Annapolis. Apache, Arapaho and Navaho are erect, thornless blackberry cultivars with good flavor that require no support and work well in backyard gardens.
- Now is the time to start routine pruning of apple and pear trees. Remove dead, broken and crossing branches and keep younger trees trained with a central leader. Peach trees should be pruned after flowering. For peach trees, maintain an open vase shape to encourage good air circulation and fruiting throughout. Shorten all the branches and thin out weak growth.
- Fireblight disease damage on apples and pears should be pruned out now prior to blooming. This will lessen the chance of spreading this bacterial infection later in the spring. ([More info.](#))

### Vegetable and Herb gardening

- Potatoes, onion sets, onion seedlings and peas can be planted as soon as the soil can be lightly worked. Chinese cabbage, leeks, beets, kale,

mustard, and turnips can also be planted now. Start sowing spinach and lettuce seed outdoors in cold frames. It is still too early to start tomato transplants. Eggplant and pepper plants are very slow growing and can be started indoors now.

- Purchase floating row cover material to protect crops against insects and promote early growth. Floating row covers are made from a spun-bonded polyester material and are available from mail-order seed and garden supply companies. ([GE 004](#))
- Visit our [new seed starting section](#) on our Grow It Eat It website. Check out the [step by step instructions](#), [seed starting videos](#), and [photo galleries](#).

## Soil

- Many home gardeners over use fertilizers. This results in excessive nutrient runoff and water pollution. Over-fertilization especially with fertilizers high in nitrogen, can lead to overly-succulent, weak growth and encourage sucking insect pests like scales, aphids and adelgids. Most landscape plants get adequate nutrition from a healthy soil rich with organic matter.
- Mulches should be applied only 2-3 inches deep around ornamental plants and kept away from direct contact with shrub and tree trunks. Mature trees do not benefit much from being mulched except to provide a protective barrier around their trunks from riding lawn mower damage.

## Seasonal and Indoor

- Now is a good time to begin re-potting and dividing houseplants that are outgrowing their containers. Don't jump pot sizes from a small pot to a very large pot. Moving to a too large sized pot will make the plant much more prone to over watering damage. Do not use garden soil, use lightweight soilless potting mixes containing peat moss, vermiculite and perlite.
- Mealy bugs ([photo](#)) which appear as white fluffy masses are the most common houseplant insect pest. Control with a light horticultural oil labeled for houseplants.

## Indoor and Outdoor Pests

- In March, several species of insects are waking up from their winter dormancy. The earliest ones are the Asian lady bird beetle, marmorated stink

bug, elm leaf beetle, cluster flies, leaf-footed bugs, ants, stink bugs and boxelder bugs. No chemical controls are recommended. They are harmless and can be swept up or vacuumed. Prevent their entry by sealing up all small holes and cracks around the outside of your home.

- When ants come indoors, bait stations are very affective at controlling them. ([HG 7](#)) Carpenter ants are attracted to wood that has been damaged by water. ([HG 115](#))
- Termite swarms are becoming active. If you have a swarm, it may mean that there is a colony living under or very near to your home's foundation. ([learn more](#))

## Wildlife

- Those delightful peeping sounds you may be hearing in your neighborhood are spring peepers, a very tiny frog ([photo](#)) that lays its eggs in marshes, ponds and slow-moving drainage ditches. Many other frogs, including wood, tree, and pickerel frogs are also becoming active.
- One of the earliest reptiles to come out of hibernation is the Eastern Garter Snake ([photo](#)). Adult size ranges from 2-3 feet long. Their typical background color is a dark brown or black with a yellow stripe down the back and two narrower stripes down each side Garter snakes are completely harmless.
- Moles and voles are becoming more active this month. Moles create raised tunnels in lawns ([photo](#)). Control by tamping down tunnels with your foot whenever they appear. Voles create tunnels underground or runways on the surface that are not raised. Look for entrance holes about 1 ½ inches in diameter ([photo](#)). Sometimes tunnels are shallow and are open along the soil surface. Voles feed on plant material such as roots, bark, or the entire plant. Where voles are a problem try using mouse snap traps baited with apples. Cover with a shingle or piece of wood to increase effectiveness.
- Where deer are feeding on garden and landscape plants, apply a repellent, such as "Deer-Away", "Hinder" or "Ro-Pel" to vulnerable plants. If deer pressure is heavy, try rotating repellents. Small deodorant soap bars, and other types of repellents are used with some success.



## APRIL

### Lawns

- Later this month marks the beginning of the mowing season. The height and how frequently you mow your lawn is very important. Cool season grasses such as tall fescue, creeping fescue, and bluegrass should be maintained at 3.0 inches. Try not to remove more than one third of the leaf surface at any one time, repeated mowing that removes this much of the blade will ruin the lawn.
- It is not a good idea to apply fertilizer to cool season turf in the spring unless your turf is weak and thin or if you did not fertilize this past fall. Fertilizing in the spring encourages rapid succulent growth that is more susceptible to attack by insects and disease in the summer months.
- This month broadleaf weeds resume growth. If you have only a few weeds, simply dig them out. For more extensive problems apply a labeled broadleaf herbicide to spot treat broadleaf weeds. (TT 49)
- Pick up and discard dog droppings from turf areas. The droppings will burn grass plants if left for an extended period of time.

### Woody Ornamentals

- Now is an ideal time to plant new or transplant existing trees and shrubs. When carrying newly purchased trees, always hold them by the root ball or container, and not by the trunk.
- Prune out winter burn damage on hollies and other evergreen shrubs. Remove shrub branches broken by winter weather, prune out dead or damaged branches, and make any necessary cosmetic cuts.
- Roses are available now in nurseries and garden centers as bare-rooted or potted plants. Select plants with 4-5 large canes coming from the base. Choose a sunny site (at least 6 hours of direct sun), dig a large hole, mix a starter fertilizer into the planting soil and plant so that the crown is one inch above the soil grade. Keep newly planted roses well watered.
- Eastern tent caterpillar eggs are hatching now and the larvae are feeding on cherry and crabapple leaves. You may notice webs

developing in the branch crotches. Trees can generally withstand the damage; a non-toxic control is simply to remove the webs with a stick or a pole. Discard in a plastic bag.

- Carefully inspect trees for gypsy moth egg masses. They are tan colored, felt-like and 1-2 inches long, and may be found on tree bark, firewood or any outdoor, wooden structure. Remove and destroy them now as they will be hatching this month. (HG 44)

### Ornamental Plants

- Butterfly weed, California poppies, gaillardia, cleome, bachelor's buttons, strawflowers, chamomile, alyssum, nigella, and annual phlox can be directly sown into the garden at this time.
- Clean out flower beds and divide over grown perennials. Cut down over-wintering ornamental grasses to within 2 inches of the ground. For best growth and flowering top-dress the beds with 1 inch of compost.
- April is a good time to divide water lilies and other aquatic plants that have become overcrowded. Lift the plants from their containers and using a large knife or a sharp spade cut the rhizomes into two or more pieces. Replant and add fertilizer tablets.
- Fountains, statuary and filters can be placed back into ponds at this time.

### Fruit

- This is a good time to plant tree fruits and small fruits. Fruits that require little or no spraying include figs, Asian persimmon, Asian pear, blueberry, blackberry, raspberry, strawberry and currant. (HG 68, HG 69)
- Before planting blueberries, be sure that your soil pH is in the 4.3-5.3 range and the area has been heavily amended with organic matter. Fertilize with ammonium sulfate at bloom and again when fruits first appear. Carefully apply the fertilizer in a ring 12 inches from the base of each plant.
- Brown rot of peaches and plums can be controlled with fungicide sprays during the bloom period. The first spray should be made when 10% of the flowers are open and the second spray when 90% of flowers are open.

## Vegetables and Herbs

- Turn under oats, vetch, rye and other fall-planted cover crops in the vegetable garden. They will require a few weeks to break down in the soil prior to planting vegetable crops.
- The beginning of April is a good time to start tomatoes seeds indoors under lights. They need 6-7 weeks to grow to a good size for transplanting. Keep the soil moist, not soaking wet. Seedlings may keel over and die due to pathogenic water molds if the mix remains too wet.
- Beans and corn can be sown where soil temperatures are above 50°F. Consider pre-sprouting the seed indoors to get them off to a fast start in the garden and eliminate the need for thinning.
- Avoid the temptation to set out warm season crops until after all danger of late frosts. See our [Spring Frost/Freeze Date Chart](#) for more information.
- “Harden-off” transplants one week prior to transplanting by leaving them in a protected outdoor location for 4-8 hours each day and returning them indoors before dusk. Plants are further hardened by cutting back on fertilizing and watering.

## Soil

- Poor, compacted soils can be improved through the generous addition of organic matter. This spring, spade or till in a 6-8 inch layer of leaf compost or well-rotted manure. If you want to grow vegetables, flowers or herbs this year and your soil is especially poor, consider building a raised bed and filling it with a purchased mixture of topsoil and leaf compost.
- Avoid the temptation to turn over or dig into wet soil. This can cause long-term damage to the structure of your soil. Squeeze a handful of soil and bounce it up and down in your hand. If it breaks apart easily you can dig it; if it holds together it's too wet to dig.

## Compost

- This is a good time to turn compost piles, remove any large woody materials, and add a nitrogen source to accelerate the breakdown process. ([HG 35](#))

## Seasonal and Indoor Plants

- Fungus gnats are small, harmless black flies that hover around, breed in and feed on moist growing media (potting soil). They can be controlled by being careful not to over-water houseplants. Growing media should be allowed to dry out before watering again. ([More info.](#))

## Outdoor Pests

- Ticks are very active now. Wear light colored clothing and get in the habit of checking yourself, your children and pets closely for ticks after spending time outdoors. Repellents are also effective at keeping ticks at bay. Deer tick populations (also known as black legged ticks) are especially high around the Chesapeake Bay. ([More info.](#))

## Wildlife

- Many bird species are scouting for nesting sites. Put up birdhouses.
- This month eastern box turtles and various species snakes are coming out of hibernation and may visit your yard. Consider yourself fortunate to see a box turtle. They are becoming very scarce through much of Maryland because of road mortality and habitat destruction. Observe it but don't collect it as a pet.
- Change birdbath water at least weekly to discourage mosquitoes.
- Rabbits feed on young and tender plants in flower and vegetable gardens. They clip young stems leaving an angled edge. Erect two foot high chicken wire fencing secured to the ground or buried several inches to exclude rabbits. Cover small groups of plants with floating row cover. Use commercial repellents, blood meal, or sprinkle hot pepper flakes around plants.
- Woodpeckers may be heard this time of year tapping on wooden structures. This may be territorial behavior or actively searching for insects. They prefer soft woods like cedar. Dissuade persistent woodpeckers by tacking up some hardware cloth over the area. Small trees may be protected from woodpecker damage by draping nylon netting over the canopy and trunk. Protect branches and trunks of larger trees by loosely wrapping ¼ inch hardware cloth or burlap around them.

## MAY

### Lawns

- Always mow cool season grasses, like tall fescue and bluegrass, at a height of 3 - 4 inches. Mowing the lawn too short weakens the grass and permits many weeds to invade your lawn. Mow zoysia grass and Bermuda grass to a height of 2 -3 inches and fertilize them in July, not in the fall. During periods of rapid growth in the spring you may need to mow your lawn twice each week. Try not to remove more than 1/3 of the grass blade at each mowing.
- Dry white or tan colored grass blade tips are an indication that the mower blade is dull. Dull mower blades tear turf grass and can lead to disease problems. Keep your blade sharp and leave the grass clippings where they lay.
- Mushrooms may be an eyesore but do not damage the lawn. You may also see slime molds develop on lawns and mulches. These fungi are feeding on decaying organic matter in the soil, dead tree roots, etc. The fungi can be knocked or kicked apart to help dry them out. They will disappear when dry conditions return. ([More info.](#))

### Woody Ornamentals

- If your azaleas, rhododendrons and other spring flowering shrubs are growing too large you can prune them after they bloom.
- When selecting a shade tree look for one with a single, straight trunk. Avoid planting trees that are popular because they grow fast such as silver maple, Lombardy poplar, willow, and Bradford pear. These trees have weak, brittle wood that is subject to splitting. Fast to grow, first to go!!! ([HG 24](#))
- At this time the older leaves of holly and magnolia will begin to yellow and drop. This is a natural process of regeneration and does not indicate a problem with the trees. Many pine trees also drop their older needles now; others drop them in the fall.
- Lace bug feeding begins this month and may be seen now on rhododendrons, azaleas, andromeda, and mountain laurel. You'll notice small white or yellow spots on the upper sides of leaves and small black fecal spots will appear on the undersides. Lace bugs are more of a problem

on stressed plants on exposed hot sunny sites. If faced with a severe infestation, treat with a systemic insecticide.

- Cankerworms ([photo](#)) look like inch worms and are yellow to gray in color and are feeding now on the foliage of a wide range of shade and forest trees. The damage first appears as shot holes in leaves. They feed between leaf veins causing foliage to have a tattered appearance. No treatment is necessary for established trees. ([Learn more](#))
- Hemlock woolly adelgids are aphid-like sucking pests that appear as white, waxy masses on the underside of needles of hemlock trees ([photo](#)). Heavy infestations can debilitate trees, particularly when they are stressed. Spray trees with ultra-fine horticultural oil when the crawlers are out in late May or early June. Be sure to spray the underside of needles. Another option is to consider a systemic insecticide treatment.
- Scale insects like pine needle scale ([photo](#)) and hemlock scale ([photo](#)) can be controlled with a summer rate application of horticultural oil.
- Locust leafminer adults ([photo](#)) are beginning to feed on black locusts. They feed between the leaf veins, causing leaves to look skeletonized. Although unsightly, controls are not necessary. This pest does not pose a threat to black locust trees.
- Aphids are actively feeding in May. They may cause leaves to pucker, twist or curl downwards. No insecticide treatments are usually necessary because they are controlled effectively by resident populations of beneficial predators like lady bird beetles, hover fly larvae, and green lace wing larvae as well as by parasitic wasps. In severe infestations you can often get good control by knocking aphids off the plant with a strong stream of water from a hose.
- Powdery mildew can be observed on crabapple and dogwood leaves ([photo](#)). The symptom is a powdery white coating on the upper leaf surface. It can be severe under humid conditions. If you have a shrub with significant damage, consider applying a labeled fungicide, like horticultural oil.
- The blooms of many plants, including dogwood and peony, can be infected with botrytis blight, also known as gray mold. Flower petals will

appear spotted and water-soaked and then wither and turn brown. Azaleas suffer a similar petal blight disease. Simply remove damaged blooms. ([Learn more](#))

### Ornamental Plants

- The frost-free date for Central Maryland is May 10 – think Mother’s Day! Plant all warm season annual plants at this time. Purchase stocky, transplants with healthy, white root systems. Remove any flower buds or opened flowers when you get them home. This will help direct the plants’ energies to root development and will result in more productive plants. Gently breakup the roots of root-bound transplants.
- Summer annual bulbs like gladiolus, tuberous begonias, cannas, caladium, and dahlias can be planted now. Perennial plants can be safely divided and moved at this time.
- Soluble fertilizers can be applied to the foliage or root-zone of spring flowers to get them off to a fast start. Seaweed extracts, fish emulsion, manure and compost teas can be used as well. Sweep or wash granular fertilizers off of plant foliage.
- You may notice streaking in iris foliage caused by young iris borers. The larvae then tunnel down and feed on the rhizome. The leaves and flower stalks may wilt. The best control is prevention. Do not mulch your irises, plant rhizomes high in the planting bed, and select full sun sites. If you suspect borers, dig up the rhizomes after bloom, cut off rotted and infested portions and re-plant.
- The fungal disease *Phomopsis* can show up on vinca which can cause dieback. Control it by thinning out beds. ([Learn more](#))
- Tear-a-thumb, also known as mile-a-minute vine, germinates in early spring and can be seen growing now. The triangular shaped leaves have stems with recurved spines. This invasive, viney weed can quickly take over a garden bed. Control by hand-pulling or an application of a glyphosate herbicide. ([HG 88](#))

### Fruit

- Remember to keep all new fruit plants properly watered this summer. The first season is critical for their establishment.
- Pull the blooms off of newly planted strawberry

plants for the first growing season. Mulch under and around strawberry plants to keep the fruits off the ground.

- Peach tree borer larvae that over-wintered in the lower trunks of peach trees are actively feeding on the cambial tissue, right below the bark. You will see entrance holes with thick sap or gum at the opening. The feeding of only a few borers can girdle and kill a young tree. A vertical cut with a very sharp knife can be made around the entrance hole in an effort to locate and kill the borers. Inserting a sharp thin wire into the holes may also spear the borers. Borers are attracted to stressed trees so keep your trees healthy to prevent damage. ([Learn more](#))
- Be prepared to spray fungicides during bloom on grapes that were damaged by black rot last year. Always use a fungicide labeled for the specific purpose intended and follow label directions.
- The floricanes (canes with flowers) of June-bearing raspberries should be pruned back to a height of 3-4 feet to encourage lateral growth. Thin out new bramble shoots (primocanes) so that there is at least a 6 inch space between the shoots. Tip the laterals of the floricanes of bramble plants to 12-18 inches. The skinny growth at the ends of laterals will not bear good fruit and will create a dense, unproductive canopy.
- Buy the smallest quantity of any pesticides that you anticipate needing this summer. Buy and maintain a separate sprayer for herbicides. Do not apply fungicides or insecticides with a sprayer previously used for herbicides.

### Vegetables and Herbs

- Pinch the blooms off flower and vegetable transplants before you set them out. This will help direct the plants’ energies to root development and will result in more productive plants. Gently breakup the roots of root-bound transplants.
- Begin setting out transplants of warm season crops like squash, peppers, eggplant and tomato. Be prepared to cover plants with a tarp or light blanket if frost is expected. Mix in a handful of lime with the planting soil of each pepper and tomato transplant to prevent blossom-end rot. Set up your tomato support system immediately after transplanting. Very tall tomato transplants

can be laid horizontally in a shallow trench with the growing tip gently bent into vertical position. Roots will grow all along the buried stem.

- Salad greens should be grown in rich soil or [Salad Tables™](#) and regularly watered and fertilized for optimum succulence and eating quality.
- Cucumber beetles are either yellow with 11 black dots or yellow with 3 black stripes ([photo](#)). They have a wide host range and begin to feed on all plant parts of all members of the cucumber family as soon as they begin to grow in the garden. These pests spread bacterial wilt disease, primarily to cucumber and muskmelon, which causes plants to wilt and die in a short time. The beetles can be controlled with insecticides or excluded with floating row covers. “County Fair” is a hybrid cucumber cultivar that is resistant to bacterial wilt disease.
- Squash vine borer adult females are large, clearwing moths with orange/black bodies. They begin flying mid-late May in Central Maryland and lay eggs on squash stems, especially zucchini. Use floating row covers to exclude the adult females. Floating row covers are effective at excluding insect pests and promoting strong early growth. ([GE 004](#))
- Weeds in asparagus and rhubarb beds can be very difficult to control. It is always best to hand pull weeds or cut them off cleanly at the soil line with a small, sharp hoe. Be careful not to cut into crowns or emerging spears.
- Four-lined plant bugs are now feeding on a wide range of woody and herbaceous plants, especially mint. The adults are yellowish-green with 4 black stripes. The nymphs are bright red. The bugs leave rows of small, round dark spots on leaves. Unless severely injured early in the season, plants will outgrow moderate feeding damage.

### Seasonal and Indoor Plants

- This is a good time to take and root stem and leaf cuttings and to re-pot plants that are outgrowing their containers. Be careful not to over-water houseplants. Growing media should be allowed to dry out between watering. Begin fertilizing houseplants again once you notice them putting on new growth.
- Low light is a common cause of houseplant

failure indoors. Some recommended plants for low-light conditions include Chinese evergreen, peace lily, snake plant and various types of dracaena.

### Soils, Fertilizer, Mulch, and Compost

- Earthworms are a sign of healthy soil. They come to the surface during wet periods to mate more freely. They die because they dry out or are parasitized by insects and diseases. Soil insecticides will also drive them out.
- Avoid the temptation to fertilize ornamental garden plants that appear to be healthy and productive. Over-fertilization, especially with those high in nitrogen, can lead to overly succulent, weak growth and encourage sucking insect pests like scales, aphids and adelgids.
- Mulches should be applied only 2-3 inches deep around ornamental plants and kept away from shrub and tree trunks.
- Compost contains major and minor nutrients important for plant growth and can be used in flower, herb and vegetable beds to substitute for commercial fertilizers.
- Many kinds of 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.

### Indoor and Outdoor Pests

- Before applying an insecticide be sure that you have correctly identified the cause of your problem. Have you tried other solutions to the problem? Is an insecticide application warranted? If yes, select the least toxic pesticide; spray it only at the targeted pest on the affected plants. Spray early in the morning or at dusk to avoid harming pollinators and other beneficial insects.
- Avoid mosquito and midge problems later this summer by turning over any pots, lids or saucers that might collect water and create a breeding site.
- Mining bees are active now. ([photo](#)) 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.

- Carpenter bees ([photo](#)) cause concern at this time of year. They make clean, round holes about ½ inch in diameter. They usually will not bother wood that is freshly painted or stained. They can be a problem in weathered and untreated wood. Contact a pest control professional if you're having a serious problem with carpenter bees. ([HG 29](#))

### Wildlife

- Check with your county health department before live trapping wildlife pests like squirrels, groundhogs, skunks and raccoons. You cannot move most of these to a park or nearby field. Call the USDA wildlife service at 1-800-442-0708 for more information.
- Woodpeckers may be heard tapping on wooden structures. This may be territorial behavior

or active searching for insects. They prefer soft woods like cedar. Dissuade persistent woodpeckers by tacking up some hardware cloth over the area.

- Where deer are feeding on garden and landscape plants, apply a repellent, such as “Deer-Away”, “Hinder” or “Ro-Pel” to vulnerable plants. If deer pressure is heavy, try rotating repellents. Small deodorant soap bars have been used with some success.
- Those jelly-like masses you see in your pond are frog, toad or in some cases salamander egg masses. They should be hatching out by now producing hundreds of tiny tadpoles (frogs and toads) and (nymphs) if they are salamander eggs. Don't disturb them. You can begin feeding your fish now.

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