

Month-by-Month Gardening Guide

[January/February](#)

[March](#)

[April](#)

[May](#)

[June](#)

[July/August](#)

[September](#)

[October](#)

[November/December](#)

January/February

Fruits and Nuts:

Fruit production is a “year round” job and timing of cultural practices is very important to the health of your fruit trees. Apply fertilizers approximately one month prior to the initiation of growth in spring. Fertilizer may be broadcast on the soil surface where rainfall or watering will aid in getting it to the soil. Rates of application are dependent on the type of tree, vigor, last year’s growth and fruiting. For most fruit trees that are grown in sod, except pears, use a basic rate of 0.1-pound actual nitrogen per inch of trunk diameter measured one foot above ground. Fertilize pear trees at one-half the basic rate. The fertilizer rate may need to be adjusted up or down, depending on growth and fruiting in the previous years.

Late winter is also an excellent time to prune fruit trees and fruit-bearing shrubs. Improperly pruned plants can reduce your fruit yields and quality. Many of the same pruning techniques used for landscape trees also apply to fruit trees. For example you should remove root suckers, dead, broken or diseased limbs, remove low drooping limbs that interfere with mowing, remove crossing or rubbing limbs, and thin out smaller wood to encourage high quality fruit. Apple and pear trees also differ from stone fruits (peach, plum) in their overall pruned shape. Apple and pears should be pruned leaving an upright limb in the center of the tree to act as a central leader. In stone fruit trees the leader should be removed so that you have an open center. Many counties hold annual fruit tree pruning seminars where you can gain hands-on practice. Check with your local extension office for further information.

Late winter, before growth starts, is the perfect time to apply dormant oil sprays to your fruit trees. Dormant oil sprays are applied to areas where insects overwinter (i.e., trunk, limbs, and twigs) on apple, pear, peach, and other fruit trees. Dormant oil will provide good control for scale, aphids, and mites, and even helps control San Jose scale when applied to peach and apple trees. An application now may reduce insect pressure later in the season and the amount of chemicals needed to keep pests under control. This is especially important since predatory insects, which help in pest reduction, are very susceptible to insecticides.

Peach leaf curl is an early season disease on peach and related species which causes early leaf drop and weakens trees making them more susceptible to other diseases. This disease is more common during cool, wet springs following mild winters and may not occur on peach trees every year. Infected leaves become severely distorted and have a reddish or purplish cast. Later they become powdery-gray in color and then drop. It is not difficult to control leaf curl. Since the fungus overwinters on twigs and buds, a single dose of Ferbam or chlorothalonil, thoroughly covering the tree, will provide control. Sprays can be applied in late fall through winter until bud swell.

Fruit trees and fruit-bearing shrubs can also be pruned this month to improve the overall health of plants and fruit yields. Remove root suckers, dead, broken or diseased limbs, low drooping limbs that interfere with mowing, crossing or rubbing limbs, and thin out smaller wood to encourage high quality fruit. Apple and pear trees differ from stone fruits (peach, plum) in their overall pruned shape. Apple and pears should be pruned leaving an upright limb in the center of the tree to act as a central leader. With stone

fruits the leader should be removed so that you have an open center. Your local extension office has publications that can help you in deciding how to make your pruning cuts.

Groundcovers and Lawns:

Wild onions seen in our lawns this time of year are really wild garlic but, whatever the name, the best time for treating them is in February or March because the chemical must be allowed at least two weeks to work before the lawn is mowed. Typically, the warmer the temperature - the better the results. Wild Garlic is difficult to control and usually requires two treatments in two consecutive springs. Spot spraying individual clumps with 2,4-D amine herbicide or 2, 4-D plus dicamba works best. Always read the label for proper mixing directions. You can add 1 teaspoon of liquid dishwashing detergent to each gallon of spray to help the herbicide stick to the leaves. Only mix the amount of spray you will need to prevent disposal problems. Remember to avoid mowing the tops for at least two weeks, until they begin to yellow and curl, to get the best kill of the underground bulbs.

Begin now for the best control of winter annuals, like henbit and chickweed, also. These weeds should be controlled when the plants are young. Herbicides, such as 2,4-D, MCPP and dicamba work best on winter annuals, as well as many summer annuals. Many products that are sold containing all three chemicals will give the best control and save you the most money. When purchasing herbicides, check the label for these three active ingredients. Phenoxy herbicides should not be applied when rain is forecast, when wind is high or used when temperatures rise above 85F. High temperatures will cause 2,4-D to vaporize and that could spell trouble for nearby trees and perennials. High temperatures are not such a big concern now but will be very important when treating your summer weeds.

For best success, treat wild garlic this month with a herbicide containing 2, 4-D plus dicamba. Since wild garlic develops a large bulb underground, it will often take two applications during two consecutive springs to exhaust the bulb's energy supply. Add a teaspoon of liquid dishwashing detergent to help the chemical stick to the plant's leaves.

Winter annual weeds, like henbit and chickweed, can also be controlled this month. Choose a herbicide that contains 2, 4-D, MCPP, and dicamba which eliminates broadleaf weeds without causing damage to your lawn. Be sure to read the label on any herbicide you purchase.

If you haven't raked-up last fall's leaves you could be destroying your lawn. As leaves pile-up on the lawn, they restrict sunlight causing a weakened and thinning turf. These spots make it easy for broadleaf weeds to get establish and create more weed maintenance work for you.

Perennial Flowers and Vines:

The best time for pruning groundcovers and vines is late winter or early spring. For beds of groundcovers such as ivy, vinca or lirope use your mower set to the highest level to cut old foliage. Leaving the old foliage will promote anthracnose, which gives plants an unhealthy appearance. Remove the old stems on honeysuckle and shape other branches as necessary to control size. Trumpet creeper flowers on new growth, so pruning now will promote better flowering. Also, heading back the new growth will promote more lateral shoots and give a denser vine. Wisteria should be pruned after flowering. Because of its vigorous growth habit, it will need to be pruned often. Clematis is a little tricky since some of these plants bloom on old wood and some bloom on new wood. Unless you know for sure, it would be best to prune these vines after flowering. Most varieties only require a thinning of old wood but some more vigorous growers can be pruned back to within 12" of the ground. It may not be necessary to prune every vine in your landscape. Instead, look for overgrown, unattractive vines that may have seen a reduction in flower production. Other vines like honeysuckle and winter creeper grow so fast, it often is necessary to prune them every year. Most vines, including summer-flower clematis, should be pruned in the dormant season. Begin by pruning out dead, diseased, and damage vines. Prune out the top one-third of overgrown or elongated stems and one-third of the older, less vigorous stems. Wait until July before pruning wisteria,

since pruning this hardy vine during the dormant season will lead to excessive vegetative growth in the spring.

Pruning groundcovers, such as vinca or English ivy, usually is only necessary to remove unhealthy tissue or to promote spreading. However, lirope should be cut back every spring to avoid anthracnose, a disease that gives the old foliage an unhealthy appearance. Use a rotary lawn mower on the highest setting to cut these beds back to 4 to 6 inches in early spring.

Plants in Pots:

Be observant when watering your houseplants. Root rots are a common cause of houseplant loss but the irony is that it comes from too much care. It's a gardener's nature to make sure plants have plenty of water and often it's easier to water on a set day than checking with the plant first. This is where we err. Not all houseplants need the same amount of water on the same schedule. The size of the plant, its pot and other conditions, like light, make each plant unique. So how do we check with the plant? Simple, learn to gauge the moisture content of the soil by its color and feel. Dry soil will be a light brown color. The container will also be lighter; this is especially noticeable with hanging baskets. You can also stick your finger or a pencil into the pot several inches deep. If it's damp or soil sticks to the pencil, you should wait to water. When you water, wet the entire soil mass, not just the top inch. Water should be added until it comes through the drainage holes on the bottom of the pot. Be sure to empty the water from the saucer after the plant finishes draining. Leaving the water in the saucer will prolong the roots exposure to excessive moisture and increase the likelihood of root rots.

You probably would not think of letting your house go undusted for 5 months, but what about your house plants? Dust can build-up on the surface of plant's leaves just like furniture. During the winter this can be especially harmful since the dust can reduce the amount of light that reaches the plant for photosynthesis, something already limited with the short days of winter. Clean large leaves individually with a soft rag moistened in lukewarm water and a few drops of mild dishwashing soap. Plants with lots of smaller leaves can be turned upside down and dipped in a similar water solution for cleaning. Avoid using plant shine products which create a sticky surface on which dust and dirt may cling.

If you received new plants for the holidays, check them closely for insect infestations. Quarantine gift plants until you determine they are not harboring any pests. What pests should you look for?

Mealybugs- a small sized (1/5 to 1/3 inch), soft-bodied insect covered with a white, powdery material. They damage plants by sucking plant juices.

Spider mites- found most often on the underside of leaves, are very tiny (1/50 inch) and may be green, yellow, red or virtually colorless. Often webbing will be your first indication of infestation.

Aphids- a pear-shaped insect with long antennae and two short cornicles extending from the rear of the body. Aphids suck plant juice and leave behind a sticky residue and distorted plant growth.

Scales- flattened insect that is surrounded in a waxy covering. Often found on both sides of the leaves, twigs, and branches.

Whitefly- the adults resemble tiny (1/16 inch) moths which swarm around the plant when disturbed.

Washing with soapy water and a soft cloth may be all that is needed to remove aphids, mealybugs and scale insects from broadleaved plants. Use two teaspoons of a mild detergent to one gallon of water. A light infestation can be controlled using a cotton swab dipped in alcohol and dabbed on individual pests. Horticulture oils and insecticidal soaps will often work for heavy infestations, although it may be best to destroy the plant instead.

The tropical look of the amaryllis flower makes it a wonderful holiday gift. If you received one this year, make sure to place it in a well-lighted area, a southern window exposure is best. Water when the soil surface feels dry to the touch, typically once per week. To keep an amaryllis and have it flower again next year, follow these tips. Once the blooms fade, remove them to prevent seed formation. Leave the plant's leaves so it may replenish the food storage in the bulb and give the bulb regular water and houseplant fertilizer. The amaryllis can be moved outdoors to a shaded area after the last frost date. Continue to grow the bulb until mid-summer before allowing it to go dormant. In August, stop fertilizing and gradually reduce watering. After three weeks, stop watering completely. The leaves will naturally turn yellow and die down and can then be cut off a couple of inches above the bulb. When all the leaves have turned yellow, usually September or October, set the bulb and its container in a cool (50-60F), dark, dry place for at least six to eight weeks. After this dormant period, move the potted plant back into a slightly warmer (65F), bright area and start the growth cycle again by watering. Keep the soil moist, especially when it starts to flower. Flowering should occur within 4 to 8 weeks from when you start watering again.

Trees and Shrubs:

Do your trees need fertilizer? This common question often has many different answers. Fertilizers can help keep trees healthy but many times they are over-used causing excessive growth. To determine the nutrient needs of your tree, be observant and note the general vigor of the plant and the color of the foliage. Yellow leaves, short new twig growth and abnormally small leaves often indicate a need for fertilizer. Late fall to early spring is the best time to apply fertilizer. For rapidly growing trees, a yearly application may be necessary. Mature trees should be fertilized once every three or four years. What about the trees you set out last fall? Newly planted trees should not be fertilized during the first year since most nursery-grown trees already have high levels of nutrients. Adding additional nutrients can actually reduce the tree's rate of growth. Only a soil test can accurately tell how much fertilizer should be added. In most soils, nitrogen will be the limiting factor and will yield the greatest response. Standard ratios of 4:1:2 or 3:1:2 of N, P, and K are recommended for most trees. A modest rate would be 1 to 2 lbs. of nitrogen per 1,000 sq. ft. There are many methods of applying fertilizers but broadcasting a granular fertilizer on the surface of the soil remains the most practical and efficient method. Apply your fertilizer beginning at the outer two-thirds of the branch spread and extending out beyond the drip line of the tree (the outer branches). No fertilizer should be applied within 12 to 18 of the trunk.

Winter sun and wind can cause excessive transpiration (foliage water loss) of evergreen trees and shrubs. Since the roots in the soil are frozen and unable to replace lost water, the limbs will often turn brown. This can also occur when temperatures warm-up on bright sunny days and then drop to injurious levels at night. Winter injury occurs more frequently on the south, southwest, and windward sides of the plant, but may affect the entire plant. Yew, arborvitae, and hemlock are most susceptible. New transplants are also more sensitive. Reducing winter injury to evergreens begins with proper placement. Susceptible plants should not be planted in highly exposed (windy, sunny) places or on the south or southwest sides of building. You can reduce damage by propping pine boughs against or over evergreens as insulation. Keeping evergreens properly watered throughout the growing season will also keep plants healthy and less prone to winter stress. If one of your evergreens suffers winter injury, wait until mid-spring before pruning out injured foliage. Often the buds, which are more cold hardy than foliage, will grow and fill in areas. If the buds have not survived, prune the limbs back to living tissue. Fertilize injured plants in early spring, give them plenty of water during the growing season, and plan for adequate protection next winter.

Want to start spring a little early? Gather branches of some of your favorite deciduous shrubs and trees and bring them indoors for some early color. Select and cut branches two to three feet long with many fat buds. Cut more than you will need since not all branches will absorb water satisfactorily. With a sharp knife, split the cut end up to 4 inches. Place the branches in a deep container of warm water and re-cut (underwater) one inch from the base of the stem to prevent air from entering the stem. Remove any

buds or twigs that will be under water. Leave the branches in a cool room until the buds swell and begin to show color. For tight buds this may take up to 8 weeks, but if the buds were plump when you cut the branches, it may take as little as 4 days. After the buds begin to show color, you can move the branches to room temperature. Be sure to change the water every few days. Your flowering branches should last for about a week. Good candidates for forcing include redbud, flowering quince, dogwood, witchhazel, forsythia, saucer magnolia, flowering almond, spirea, lilac, and viburnum.

Vegetables and Herbs:

If this is to be your first year growing a vegetable garden, keep these guidelines in mind as you select your garden site. Choose a garden site with deep, well-drained soils on a nearly level site. A heavy soil that holds water will often delay your ability to work the soil causing you to miss the opportunity to plant cool season crops. A slight slope is preferred to avoid frost pockets in the garden, but excessive slopes can lead to erosion. Sunlight is perhaps the most important factor since the more shaded the garden is, the lower your yields will be. Garden vegetables require six or more hours of sunlight per day to produce well. Locating the site near your house will make it more convenient when watering is needed during the summer.

What can you plant in the garden in February? Plenty. Spinach, Radish, Mustard, and Kale can all be planted in late February in our area. Collards, Head and Leaf Lettuce, Onions, Peas, Beets, Broccoli, Cabbage, Carrots, Swiss Chard and Turnip Greens will do best if planted in mid to late March. Aphids and caterpillars can be especially bad on early crops. Watch for them and treat as they appear. Most vegetable seeds will be planted to a depth equal to three times the seed diameter. Lettuce seed should be planted shallow, as it needs light to germinate. Staggering planting dates a week to two-weeks apart will help extend the harvest season.

If you've been burning wood for heat this winter, what are you doing with your wood ashes? When properly applied to garden soils, wood ash can be a valuable soil amendment. Since wood ash is derived from plant materials, it contains many of the essential nutrients plants need to survive. Burning wood releases gases like nitrogen and sulfur and leaves behind other nutrients as trace elements. The actual fertilizer value of your ash depends on the type of wood you burn. Ashes from hardwoods, like oak, typically contain a higher percentage of nutrients than ash from softwoods like pine. Generally speaking, hardwoods produce approximately three times as much ash per cord and five times as many nutrients per cord as softwoods. To put it another way, the ash from a cord of oak could meet the potassium needs of a garden 60 by 70 feet and contains enough calcium and magnesium to reduce soil acidity by slightly increasing the soil pH. Compared to neutralizing power of traditional limestone, wood ash is less effective per pound of product; however since it also contains many water soluble nutrients, research has shown it can actually increase plant growth up to 45% over traditional limestone. Each pound of wood ash is the equivalent of one-third to one-half pound of good agricultural limestone. Under normal conditions, five to ten pounds of wood ash per 100 square feet of garden area will neutralize excess soil acids and increase the soil pH to a favorable level. This liming action of ash is important because it promotes better soil structure development over time, making garden sites more aerated and easier to till. Soils low in organic matter, soils needing lime, and soils that become unusually hard during drought conditions are ideal sites to make use of wood ashes. In addition to promoting good structural development in the soil, the supply of calcium from the ashes can also be helpful in correcting nutritional problems in plants, such as blossom-end rot of tomatoes and peppers. Even with all the benefits you receive from applying wood ash to your garden you should still plan to soil test to ensure that a liming material is needed. A soil test will also give you an indication of how much of the wood ashes may be appropriate for your garden site. When applying wood ash, avoid applications just after or prior to heavy rains. Wear long sleeves, gloves, and a dust mask when making applications. Do not apply ash immediately before planting or during early emergence since it could cause short term concentrated alkaline conditions that could interfere with plant growth.

[Top](#)

March

Fruits and Nuts:

Sprays to reduce many of the Botrytis (gray mold) infections are must this time of year. You should begin sprays of Captan at early bloom and again at full bloom, when close to 90% of the blooms have opened. Keep in mind the bloom period for strawberries can be very long. Also, avoid the use of insecticides during the bloom stage to protect your pollinating bees.

Most home grape plantings will require a preventative application to avoid problems with black rot, which can completely destroy a crop. Begin using Captan, ferbam or mancozeb with malathion when the first shoots are 2 to 4 inches long and continue weekly until bloom. These sprays are critical for black rot control and are helpful in controlling grape phylloxera, flea beetles and plant bugs. When most of the blooms have fallen, treat again using your same combination. If you've had a problem with powdery mildew in the past, add Immunox or sulfur to this spray and continuing cover sprays. Cover sprays begin a week to 10 days later and every two weeks till harvest. Multipurpose fruit sprays are available to homeowners that combine a fungicide with an insecticide. These can replace the mixtures listed above, but be sure to read the label.

There is still time to finish fruit tree pruning this month. Look for broken limbs caused by winter storms. Dead limbs, root suckers, crossing or rubbing limbs, and downward hanging limbs should also be removed.

If you want to plant an easy to maintain, delicious, fruit-bearing shrub this month, then consider blueberries. For our area, Rabbiteye varieties are most adaptable. One important growing requirement to remember when selecting a variety is their need for cross-pollination in order to set fruit. Because of this requirement, you will need to plant more than one of a recommended variety. Recommended varieties include: Briteblue, Bluebelle, Climax, Garden Blue, Southland, and Tifblue. A common blueberry combination is Climax and Tifblue varieties. Blueberries are related to azaleas and as such can tolerate shade, however to produce a lot of fruit you should select a site in full sun. Soil pH is important since blueberries prefer an acidic soil of 4.8 to 5.2, so take a soil test before planting. Like azaleas, blueberries cannot tolerate wet feet and must be planted in a well-drained site. Select a site that is away from 'frost pockets' where frost and freeze damage can hurt fruit production. Space plants 5 feet apart in the row and rows 10 to 12 feet apart. Plant blueberries at the same depth they were grown in their containers and remember to water at planting and twice weekly during the first year. Blueberries do not require a lot of fertilizer and there is no need to fertilize at planting. A slow-release fertilizer can be applied during the following spring and after harvest. After planting, remove about a third of the plant's height and any branches crossing back into the center of the plant. Removing the fruit buds the first season will help the plant develop strong shoots and roots even though it means your first harvest will be delayed.

Other fruit crops that can be planted this month include: strawberries, currants, boysenberries, and grapes.

Groundcovers and Lawns:

Your cool season fescue lawn will benefit from ½ lb. of nitrogen per 1000 sq. ft. on March 15. A second application can be made at the same rate on April 15. Your goal should be to put no more than 1lb of nitrogen down over a 1,000 sq. ft. this spring. No fertilizer should be applied after April 15. Late spring or summer applications will almost guarantee a brown patch disease problem in late May to July. Brown patch looks like circular patches of brown grass becoming more numerous and increasing in size killing large areas of turf in the process. Development of brown patch is further encouraged by hot, humid summer weather and irrigation at night. We can't do much for the weather in Tennessee, but we can at least adjust irrigation and fertilizer before the disease has a chance to begin.

Crabgrass is major pest in many Tennessee lawns. Crabgrass begins germination when soil temperatures reach 55 degrees. The majority of growth however occurs during the hot temperatures of summer, when cool-season lawns are less competitive. Open, weakened turf areas also promote crabgrass infestations due to more available sunlight contacting the soil and weed seeds. Two important steps in a complete crabgrass control program include 1) maintaining a healthy turf and 2) preventing new seed production. Proper grass species selection, proper fertilization, maintaining correct pH levels, and correct mowing practices are all ways to promote a thick, healthy turf that will help shade and crowd out crabgrass seedlings. Herbicide treatments are an important step in preventing new seed production. However, since crabgrass and lawn grasses are closely related, pre-emergence treatments are the only way to effectively control this pest. In our area, the first application of a pre-emergent herbicide should be timed with the forsythia. When this shrub is covered with yellow blooms, soil temperatures are warm enough to encourage crabgrass emergence. Follow-up applications will vary by product, so be sure to refer to the label.

Although you may save time applying fertilizer and herbicides in a combination product, the problems associated with this method outweigh the benefits. For example, pre-emergence herbicides may need to be applied into late April or even May. If you're growing tall fescue lawns, you'll recall from earlier that fertilizer should not be applied later than April 15 to reduce the risk of Brown Patch. When fertilizing dates and optimum timing for weed control do not coincide, use separate products.

The downside to spring applications of pre-emergent herbicides is that it also prevents the germination of cool-season lawn grasses. However, since grasses germinate and establish better when applied in the fall, spring seeding is generally not recommended.

Perennial Flowers and Vines:

Sometimes it's hard to recognize when perennials should be divided. Although there is not a set date, plants will often let you know if a division is needed. Common signals to watch for include: reduced flowering; smaller flowers; the interior of plant looks dead or has sparse vegetation; or the plant falls open. For most perennials, this will not occur until after 3 growing seasons, but for some it may take 8-10 years. If you noticed this problem during the summer, now is the time to divide your perennials. Some exceptions to the rule include peony and iris that are best divided in late summer or early fall. To divide perennials, begin by digging out the entire plant. Then, using a knife or spade, cut the clump into quart or gallon sized plants selecting healthy plants along the edge of the clump rather than the dead center. Use pruners to trim off any damaged roots. Keep your cuttings moist until planting, and then be sure to water after planting.

Ornamental grasses give many of the same signals when they are ready to be divided, but be prepared that large masses with a matted root system will require a lot of effort. Begin by cutting back grasses to just above their crown using grass cutters or hedge shears. Again, dig up the plant to make your divisions. Ornamental grasses may require an axe or wood saw, rather than a shovel, when dividing because of their thick root mass. Replant these cuttings quickly, since they will have a tendency to dry out fast.

Speaking of grasses, don't forget your lirope (monkey grass). Most people don't think to trim it back, which is unfortunate, since the old growth is prone to anthracnose disease. A quick trim will give your plants greater resistance. If you've got more plants than you can trim by hand, like in a mass planting, set your lawn mower to the highest setting and trim them all at once. You can add your clippings to your mulch pile.

One group of plants often under-used and under-appreciated in home landscapes are vines. This is unfortunate since vines can often fill spaces not practical for other landscape plants. Vines can provide a fast screen for privacy on your patio, hide unsightly views, and they can be grown on a pergola for quick

shade or as groundcovers where lawns will not. In small gardens, they excel at adding the element of height and when covering and blending a structure with other plantings. Not only are vines useful but they also provide beautiful flowers, rich foliage, and sweet fragrance. In fact, vines may be one of the most versatile plants in the landscape.

Proper vine selection begins with careful consideration of the planting site. Vines used for screening should rapidly grow dense, evergreen foliage; fragrant vines should be placed close to windows or patios to enjoy; deciduous vines could be used for summer shade but allow light through in the winter; and a vine suitable for creative pruning may look great on a stone wall. Plant hardiness, soil adaptability, sunlight and type of support needed should also be considered. Vines climb by tendrils, by twining or by clinging. Tendrils are slim, leafless stems that wrap around most anything less than ½ inch wide. Grapes and some clematis are vines that climb using tendrils. These vines will need support to climb but this could be as simple as stringing wires on posts or walls. Twining vines use their main stem to wind around posts, trees, wires, or fences. Wisteria, morning glories, and honeysuckles are examples of twining vines. Clinging vines climb by attaching small rootlets (i.e. English ivy) or adhesive disks (i.e. Virginia creeper). Both types of clinging vines will grow on brick and masonry walls, but vines that cling with rootlets may actually damage the mortar on homes over time. Neither type of clinging vines should be grown directly on wooden homes since excessive dampness can occur that may lead to rot. If you truly want a vine to climb your home, try hanging a trellis on the wall and place spacers 2 to 3 inches thick on the back of the open latticework to keep vines away from the structure and allow for air circulation. Use twining or tendril vines to cover the trellis. Vines benefit from a rich, deep, well-drained soil. If you are adding organic matter, like compost, to improve your soil, be sure to incorporate it into the top 6 to 12 inches of the planting bed rather than just backfilling the planting hole. Water after planting and use a mulch to keep moisture in the soil. If growing vines next to a building, space the plant at least 18 inches out from the house to avoid the roof overhangs. Container-grown vines can be planted any time of the year, but bare-root vines are best planted during the fall and winter months. Fall and winter planted vines can be fertilized with a balanced fertilizer (about a tablespoon of 10-10-10) in the spring. Wait five weeks before fertilizing if you plant your vines in the spring. Established vines need 1 ½ lbs per 100 sq. ft. of 6-12-12 or 5-10-10 in early spring and mid-summer. As a general rule, flowering vines should be pruned after they bloom. Generally, pruning is only necessary to remove dead, diseased, and damaged wood, to reduce size, or to promote branching. However fast-growing vines like wisteria may require a great deal of pruning to keep them in bounds.

Plants in Pots:

Did your houseplants fair as poorly as mine this winter? In my case, not having a bright enough light source led to the spindly growth I now have. In fact, next to excessive moisture, light is one of the most common reasons our plants suffer. Reduced light can also cause foliage to fade to a pale green color or cause new foliage to be small and reduced in size. Conversely, too much light may sunburn leaves, cause them to wilt or become spotted. The following can be used as an abbreviated guide to summarize possible causes of typical symptoms often seen in houseplants.

New growth appears wilted or burned – sunburn, freeze damage, excessive fertilizer, extremes of temperatures, dry soil

Entire plant wilts – Too much or too little water, excessive fertilizer, cold damage

Spotted foliage – Excessive watering, excessive light, cold water on foliage (seen often in African violets)

Leaf tips turn brown – Excessive fertilizer, reaction to soil pH, low humidity

Lower leaves turn yellow and fall – Not enough light, too much or too little water

Foliage is light green in color – Not enough light, excessive light, dryness

Many houseplants can be easily propagated by cuttings. Cuttings are taken from a part of a parent plant and with proper care can produce roots and stems to form a new independent plant. There are many types of cutting methods and each method is specific to individual plants. Tip and stem cuttings are

typically 3 to 5 inches long and are taken from the tip of plants just below a leaf. This method works well for Swedish ivy, Philodendron, Dracaena, Jade Plant and Christmas Cactus. Cane cuttings are used to propagate Dracaena and Dumbcane. Cut the cane into 2 to 3 inch long pieces and place these on their side barely below the surface of the rooting medium. A new bud will eventually sprout and form a new stem. Whole leaves can be used as cuttings for African Violet, Kalanchoe, and Peperomia. Leaves are placed in the rooting medium and new roots and leaves will form at its base. The Snake Plant can be propagated by leaf section cuttings. With this plant, leaves are cut into pieces, with the edge of the cutting closest to the base of the parent plant inserted into the rooting medium. Leaf bud cuttings consist of a leaf attached to a 1 inch piece of stem. On the stem lays a dormant bud that, once planted in your soil medium, will give rise to a new shoot and branches. Good choices for leaf bud cuttings include English Ivy and Peperomia. A mixture of half sand and half peat moss will hold moisture and prevent rapid drying and is an ideal rooting medium for use in homes. Horticultural vermiculite can also be used for rooting cuttings because it is sterile and holds moisture. Cuttings root more quickly in a moist, protected enclosure. One enclosed method would be to place a small amount of rooting medium in a covered glass jar or terrarium. You could also try placing three to four inches of moistened rooting medium in a plastic bag, inserting the cutting, and tying the bag closed with a twist-tie. With an enclosed method it will be unnecessary to add additional water.

If your houseplants became 'leggy' over the winter, it's a good bet they did not receive enough light. Although we can improve light intensity by proper plant placement or additional lighting, sometimes it may be easier to change plants. One of the most durable house plants, tolerant of dimly lit homes, is the Chinese Evergreen (*Aglaonema modestum*). The Chinese Evergreen will grow to 3 feet tall and 3 feet wide at maturity. It is grown for its foliage which may be either solid green or variegated silver. The solid green cultivar tolerates the lowest light, while the variegated cultivar will need moderate light. This plant prefers temperatures between 68 to 77 degrees, but can survive at 55 degrees. Chinese Evergreen would prefer moist air but can tolerate the low to moderate humidity of most homes. Plant diseases are rarely a problem but can occur if plants receive too much or too little water. A poorly draining soil medium can lead to root rot and excessive fertilizer will cause leaf burn. There are several cultivars of the Chinese Evergreen however, 'Silver King' and 'Emerald Beauty' are very commonly found. Other species of *Aglaonema* include the Ribbon *Aglaonema* which has dark green leaves with gray marks and the Pewter Plant, a very robust plant with silvery markings. *Aglaonema* can be propagated by division or stem cuttings.

Trees and Shrubs:

Watch your evergreens (spruce, pine, junipers, hemlock and arborvitae) for spruce spider mite activity in March and April. This cool season cousin to the better-known two-spotted spider mite, over-winters on host plants and will begin hatching soon. Early detection is key to control. Often the yellowing and bronzing of needles are the first signs of a problem to the unwary gardener, but for the more experienced that monitor for pests, the mites are an easy to find. To check for spruce spider mites, place a white sheet of paper under a branch and shake the branch over the paper. If mites are present, they will be the size of walking periods. If 10 or more are present per sample, treatment is recommended. Some non-chemical treatments that can keep spider mites under control in the landscape include a forceful jet of water from a hose. This dislodges the mite while maintaining natural predators. Some beneficial predators can be purchased and released (lady beetles, lacewings, and predatory mites) to feed on spruce spider mites. In heavy infestations, miticides such as Kelthane and Floramite can give a quick knock down but excessive use can lead to resistance. Heavy attacks that go unnoticed may result in branch dieback or death of the plant, so monitoring is important.

A common pest to American and English varieties of boxwood, the boxwood psyllid, becomes active in spring as the buds begin to grow and leaves unfold. The young nymph of the psyllid will suck sap from the new leaves causing them to curl. Nymphs will remain under the curled leaf feeding until they molt to the adult stage in May or June. Host plants are rarely injured beyond the leaf cupping. Treating now with Orthene or Talstar will give favorable control.

Winter can be tough on fall-planted trees and shrubs. Do a thorough inspection this spring for some of the following problems:

Bark cracks – These are found most often on maple, apple, beeches, and other thin barked trees. Winter temperature extremes will cause longitudinal bark cracks to occur, most often on the south facing side of solitary trees in full sun. Using tree wrap during winter or planting dense shrubs on the tree's southern exposure can help prevent this problem. Healthy trees will eventually form callus tissue and heal from the damage. Watch for insects and be sure to water during drought periods the following year.

Sun Scald – Similar to bark cracks, sun scald also is found on the south or southwest side of a tree. It is characterized by elongated, sunken, dried areas of dead bark. Sun scald occurs on winter days when the sun heats the bark to the point of cambial cell activity. As the temperatures drop at night, the active cells die and leave behind a sunken area. Wrapping trees in a light-colored tree wrap can help prevent sun scald. This should be applied from two winters (for thick barked trees) up to five winters (for thin barked trees). Do not leave the tree wrap in place during the summers. To repair sun scald damage, use a knife to trace the wound, rounding off any sharp corners to speed healing. Do not use a wound dressing but do consider treating the surface with an insecticide and fungicide to prevent other problems.

Dieback – To prevent winter dieback of trees and shrubs, avoid late summer pruning and fertilizing since vigorously growing plants in late fall are most susceptible.

Frost Heaving – Freezing and thawing of the soil in fall or spring can cause newly planted trees and shrubs to rise out of their planting hole, damaging roots in the process. Gently resettle plants with your foot or spade making sure to eliminate air pockets. A 3 to 4 inch layer of mulch will help prevent this problem.

Animal Damage – Deer and rodents can cause damage to plants, especially during tough winters. These animals feed on the tender twigs, bark, and foliage of trees and shrubs. Deer can also cause damage by rubbing their antlers on trees. To prevent rodent damage, place a cylinder of ¼ inch mesh hardware cloth around the trunk, beginning two inches below the ground up 24 inches on the trunk. Be sure to remove the mesh during the summer. Repellents such as Hinder, Deer-Away, Ropel, and Thiram may provide some control of deer when sprayed or painted on trees. Rags dips in repellents and tied to the tree may also prove effective. In extreme problem cases, fencing may be your only solution to managing deer.

Vegetables and Herbs:

Unless soils are too wet, all of the following cool-season vegetable can be planted this month in Tennessee: Beets (best planted early in the month), Broccoli, Cabbage, Cauliflower, Carrots, Collards, Kohlrabi, Lettuce, Onions, Peas, Irish Potatoes, Radish, Swiss Chard, Turnips.

Vegetables cannot properly grow, unless the soil is adjusted for lime requirements and fertilized. A soil test is your most reliable way of determining application rates. pH units are a measurement of soil acidity. Most vegetables grow best in soils with a pH of 6 to 6.8 (slightly acidic). For proper vegetable development, you will need to apply a complete fertilizer such as 10-10-10 or 15-15-15. The three numbers of a complete fertilizer are referred to as the fertilizer analysis. The first number denotes the percentage of nitrogen (N), the second refers to phosphate (P₂O₅), and the third number refers to potash (K₂O). Manure is another form of complete fertilizer, however the nutrient value varies according to source, storage, and moisture. Since manure is typically lower in nutritive value it may require a higher application rate for the same effect. Apply your fertilizers before planting, broadcasting across the plot or applying to rows. Work it into the soil first and then plant. Use caution not to over-fertilize since

vegetable plants can be damaged. Vegetables with a long growing season will also benefit from side dressing. You can side dress with ammonium nitrate (34-0-0) or a complete fertilizer but rates will vary by vegetable. Tomatoes, Peppers and Eggplant need 1 tablespoon of ammonium nitrate per plant when the first fruits are 1 inch in diameter. Broccoli, Cabbage and Cauliflower will need ½ tablespoon 3 to 4 weeks after transplanting. The rates and application time vary with other vegetables. Check with your extension agent for more details.

If soils are not too wet, begin preparing your vegetable garden for planting. The best garden soils are rich in organic matter. Compost, well-rotted manure, or processed manure are good additives for building-up organic levels in the soil.

Early spring is great time to start planting cool-season vegetables like lettuce, spinach, or mustard. But if you're looking for a vegetable with a unique taste, try rhubarb. This herbaceous perennial is a member of the buckwheat family and is great in pies, sauces, and other tart food items. It also is a good source of vitamins A and C, and has moderate levels of calcium and potassium. The petioles (leafstalks) are the edible portion and are available in red (Canada Red, Cherry Red, Crimson Red, Ruby) and green (Victoria). Plants are purchased as roots and should be planted while dormant with the crown bud 2 inches below the soil surface. Space roots 3 to 4 feet apart. A well-drained soil is a must for rhubarb to prevent rotting of the crown. Apply a complete garden fertilizer before growth begins in the spring and side-dress with nitrogen in late summer. You will not be able to harvest rhubarb during the first year of planting since newly set plants need their foliage to develop roots. A full harvest is not possible until the third season, but will last for 8 to 10 weeks. Follow the same fertilizer schedule each year and mulch the crowns with 6 inches of straw each winter after the soil is frozen. When harvesting rhubarb, carefully twist the petioles free from the crowns and remove the leaves. Do not eat rhubarb leaves as they contain toxic levels of oxalic acid. Remove only about one-third of the stalks from a single plant at a time. Extra rhubarb can be cut into small pieces, placed in plastic bags and frozen for later use.

[Top](#)

April

Fruits and Nuts

Black and purple raspberries should be pruned just as buds break in the spring. Shorten branches on the canes to 8 to 12 inches to promote branching. As new canes develop, maintain them at a height of 18 to 20 inches by tipping. This will promote branching and increase the stem diameter. After the crop is harvested, remove older canes at the soil line to decrease disease pressure. Red raspberries do not branch well and should not be pruned during their first season's growth. Two year old canes can be topped at a height where they can support themselves and their fruit. After the fruit is harvested, as with other raspberries, these canes should be removed at ground level.

Upright or erect-type blackberries should be pruned this spring, also. As growth starts, remove any weak or dead canes and head side branches back to 12 to 18 inches. Thin out sucker plants during the summer and tip new canes back to 24 to 30 inches to encourage branching.

If your apple trees were stricken with fire blight last year, expect it again this spring. The brown to black scorched appearance of twigs, flowers, and foliage are the most recognized symptom of fire blight. Later shoot tips often bend to resemble a shepherd's crook. Use streptomycin to control this disease, beginning applications at early bloom and repeating every 3 to 5 days until petal fall. Avoid times when bees are most active. Pruning out cankers and blighted shoots is a useful cultural control method. Cuts should be made 10-12 inches below the evidence of disease. To avoid spreading the bacteria with your pruners, clean them with household bleach diluted 1:4 with water, after each cut. Avoid excessive fertilizer and excessive pruning which promotes vigorous growth, which is susceptible to infection.

To avoid black rot in grapes, begin a rigorous spray schedule when new shoots are 2 to 4 inches long. Repeat applications every 7 to 10 days until bloom. This is a critical spray period to reduce rotting of some or all of the grapes in a cluster. This disease is favored by warm, humid weather which is typically found in Tennessee. Use Captan, ferbam or mancozeb with malathion.

Fire blight on apple and pear is a serious pest in central Tennessee. The most noticeable symptom of this disease is the brown to black scorched appearance of twigs, flowers and foliage. Shoot tips are often the first area attacked and frequently respond by bending into the shape of a shepherd's crook. The bacteria causing fire blight are carried by wind, rain and insects to blossoms or young shoots. Control is somewhat difficult and requires an integrated approach. Begin by planting varieties with resistance to fire blight. These varieties may still be prone to the disease in warm, wet weather but the effects are often lessened. Pruning out cankers and blighted shoots is a useful cultural control of the disease. These infected areas will serve as a source for infection for healthy shoots. Cuts should be made 10-12 inches below the evidence of disease. To avoid spreading the bacteria with your pruners, clean them with household bleach diluted 1:4 with water, after each cut. Also, fertilize your trees for moderate growth only. Excessive fertilizer and excessive pruning will promote vigorous growth, which is susceptible to infection. For chemical control, streptomycin is your best choice. Apply at 1 teaspoon/gallon beginning when 20% of the blooms are open and continuing until petal fall every 5 days. After petal fall, you can lower the rate and mixture according to label directions. Remember that apple and pear are not the only fire blight susceptible plants you may own. Landscape plants such as cotoneaster, crabapple, hawthorne, mountain ash, ornamental pear, firethorn, plum, quince and spirea may also serve as a source of infection.

Groundcovers and Lawns:

Make your first application of fertilizer to warm season grasses (i.e., bermudagrass, Zoysia) after April 15. Use 1 pound of nitrogen per 1000 sq. ft. of lawn. Phosphorous and potassium recommendations are best decided after taking a soil test. You will want to follow-up with a second application of 1 pound of fertilizer on June 1.

Your last application of nitrogen fertilizer for cool-season lawns should be no later than April 15. Use only ½ pound of nitrogen per 1000 sq. feet of lawn at this time to reduce susceptibility to Brown Patch.

Your first application of pre-emergence herbicide control of crabgrass should also be applied by this date, but don't forget to make a second application four to six weeks later to knockout goosegrass. This can cause a problem if you are using an herbicide/fertilizer combination on cool-season lawns. Since your second application will occur after April, switch to a pre-emergent herbicide without the added fertilizer such as Surflan, Pendimethalin or Barricade. Read the label for restrictions on lawns seeded last fall.

For warm season grasses, April 15 marks your first application of fertilizer. Use 1 pound of nitrogen per 1000 sq. ft. of lawn. Phosphorous and potassium recommendations are best decided after taking a soil test. You will want to follow-up with a second application of 1 pound of fertilizer on June 1.

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Perennial Flowers and Vines

One common question people ask about perennials concerns dividing. When is the best time to divide and what's the best way? Although there is no rule as to when to divide perennials, some may be ready for division as early as 3 years and others as late as 10 years. Some perennials should never be divided.

Lucky for us, perennials have a way of letting you know when it's time. Signals you should notice include: worn out or dead centers; smaller than normal flowers; stems falling over easily; bottom foliage is sparse; loss of vigor; or overgrowing its bounds.

Spring is a great time for dividing most perennials since temperatures are cooler and there is typically more soil moisture, which reduces plant stress. Begin dividing a plant by digging around the plant and lifting out the entire clump. Use a spade or sharp knife to cut the clump into quart or gallon sized divisions. Each division needs to have three to five vigorous shoots. Discard divisions from the dead center and any less vigorous portions. Divisions should be kept moist and shaded as you prepare your planting site. Divisions can be replanted immediately and should be watered in well. This process works well for most clump-growing perennials (i.e., daylilies, Siberian iris, spiderwort). Fleshy-rooted perennials (i.e., poppy, peony, iris) are best divided in late summer to early fall. Other perennials such as hellebores, baptisia, and other woody-root plants are difficult to divide and better left alone.

A layer of mulch around your perennials this spring can help better prepare your plants for summer. Mulch helps to regulate soil moisture and soil temperatures. It also suppresses weed growth and improves the soil structure. Avoid applying mulch deeper than 3 inches. Also be careful not to mulch around and over the plants' crown as this can lead to disease problems. Good options for mulch include compost, pine needles, shredded bark and pine bark.

More than any other ornamental plant, vines have a way of fitting the many special niches in your landscape. If you are looking for color on arbors or walls, vines can do it. If you are looking to screen unsightly views, vines can do it. If you can't get grass to grow in the shade, vines can do it. If you need to provide privacy on patios (you guessed it) vines can do it. Vines are, I believe, one of the most versatile plants in the landscape and they can be easy to grow as well. It all begins with selection. Plan ahead and select vines according to their intended use, color of bloom, sun or shade tolerance and maintenance requirements. This last one is especially important since some vines like wisteria and honeysuckle will need a lot of pruning. Climbing vines also need different types of supports based on their growing habits (i.e. clinging, twining, winding). Clinging vines hold to surfaces by means of rootlets or adhesive disks. Because they may damage mortar or wood on homes these are best suited for arbors (ex. English Ivy, Virginia Creeper, Trumpet Creeper). Twining vines encircle upright supports such as wires and lattice (ex. Morning Glory, Carolina Jessamine, Wisteria). Winding vines climb by means of tendrils that wrap around their supports (ex. Maypop, Clematis, Trumpet Honeysuckle). Most vines need well-drained, fertile soils. If you need to amend your soil incorporate organic matter into the top 12 inches of soil before planting. Dig the planting hole twice the width of the root ball and level the top of the root ball with the top of the soil surface. If you plant this spring, wait several weeks (4-6 weeks) before fertilizing so the plants can get established. Use a tablespoon of complete fertilizer such as 10-10-10 and sprinkle around the planting hole.

Bulbs, Corms, Rhizomes

Check for slugs around spring bulbs and emerging lilies. These pests will climb stems and hollow out the daffodil blooms, or chew through a tulip stem. Handpick slugs or use baits carefully. You can also place boards on the ground overnight. Slugs and snails will move under these boards during the day for shelter. Then you can turn over the boards and remove the pests.

Hand weeding around emerging spring bulbs will help eliminate competition for moisture and nutrients. After pulling weeds, refresh the mulch around the bulbs to prevent new weed seedlings from emerging. Water is especially needed during bud and foliage development. If rainfall is insufficient, you may need to irrigate with a soaker hose. Fertilize your bulbs to help increase bulb size just after flowering. Use a complete fertilizer, such as 5-10-10 at a rate of 2 lbs. per 100 sq.ft. As bulbs finish blooming, remove the faded blooms but maintain the foliage for up to six weeks for good bulb development and re-growth next season. You can remove the foliage when it has yellowed and comes loose when slightly tugged.

If you noticed smaller blooms on your bulbs this year, it may be a signal to divide them. After the foliage dies back completely, dig up the bulbs, separate, and re-plant them spaced further apart. You can re-plant immediately or store the bulbs and plant in the fall.

The most serious pest to iris is the iris borer. It overwinters in the egg stage attached to leaves and begins hatching in late April. The tiny caterpillars crawl up iris leaves and begin chewing and mining their way down within the leaf fold, eventually reaching the rhizome. Once in the rhizome, they continue to feed, sometimes turning the rhizome to a hollow shell. To reduce iris borer problems eliminate the eggs by removing and destroying debris and old leaves in and around the iris planting both spring and late fall. Leaves can be treated in the spring with Dimethoate (Cygon 2E) for additional control. Make the first application when the new growth is 6 to 9 inches in height, then as needed to kill borers within them.

April is the beginning of the summer-flowering bulb planting season. These are bulbs that will tolerate our summers but must be dug up in the fall before winter. Most of the summer-flowering bulbs do best if planted in full sun. During April and May you can plant Anemones (windflowers) and expect flowers in May or June. Lily-of-the-valley can be planted in the shade and makes a great groundcover since it spreads by rhizomes. It is also an exception to the rule, in that it can be left out year round. Dahlias are often planted as annuals but they can be dug up and stored as well. These will bloom from June through October.

Spring blooming bulbs should be fertilized lightly this month. Use 1 pound of 5-10-10 or 3 pounds of bone meal for each 50 sq. ft. bed. Avoid high nitrogen fertilizers and don't allow the fertilizer to stay on the foliage since this may cause burn. Water is very important for bulbs to perform their best. Springs are typically wet in central Tennessee, however if we experience dry periods you should water your bulbs to ensure survival. Because some bulbs are planted as deep as 6 to 8 inches, a thorough watering which reaches this depth is required. As with most garden plants, bulbs need about an inch of water per week.

You can remove faded flowers as they begin to die, but it's very important to leave the foliage intact. The leaves manufacture food that is stored in the bulb and without which your bulbs may not return the following year. Allow the foliage to die naturally and remove leaves by hand-pulling rather than cutting to reduce disease problems. Avoid tying leaves together since this practice reduces the amount of sunlight plants receive and the amount of food the bulb can produce and store. If you find the yellowing leaves unattractive, try interplanting your bulbs with perennials like daylilies or spiderwort that partially hide the foliage.

Trees and Shrubs:

Flowering trees are a valuable asset to home landscapes. One spring bloomer that performs great in our area is our native Redbud (*Cercis Canadensis*). This small tree explodes with rosy pink blossoms in early spring which persist up to three weeks. The blooms are most often the first reason people select this tree. When in full bloom, flowers nearly cover the leafless branches and may occasionally appear on the trunk. The tree's full heart-shaped leaves emerge near the end of the blooming period. Another good trait of redbuds is their small height. Maturing at less than 30 feet tall makes this tree a good choice near utility lines.

Redbuds develop with a wide crown and often look best when bordered by evergreens or woodlands. Although redbuds can tolerate full sun, they perform best when they receive some shade during the hottest part of our summer days. Their seedpods, which resemble peas, are produced in late summer. Just as redbuds come into spring with a bang; many would agree they are just as impressive with their bright yellow display of fall color.

When selecting a planting site, look for moist, well-drained soil. Redbuds should be purchased from a nursery rather than dug from the woods since they don't transplant easily and may exhibit shock when moved from a wooded environment to an open landscape. Redbuds grow at a moderate rate but are

considered a short-lived tree, often declining from canker after 20 years. Other than this disease, they are considered a relatively pest free tree. To discourage canker, keep string trimmers and mowers away from the trunk by applying a 2 to 3 inch layer of mulch around the base. There are many cultivars and varieties of redbud available. The following are the most common:

var. *alba* – a white-flowered form

'Royal White' – larger flowers and more compact than var. *alba*

'Forest Pansy' – deep burgundy foliage; rose purple blooms

'Flame' – double-pink blooms

'Silver Cloud' – variegated pink and white leaves

Although the majority of shrubs do best when pruned in late fall or winter, spring-blooming shrubs such as forsythia, spirea, and rhododendron are pruned when they bloom or immediately after blooming. These shrubs form next year's buds in early to mid-summer so timing is critical to avoid loss of blooms next year. Roses have different pruning needs according to their variety. Repeat blooming roses such as floribunda and hybrid tea roses benefit best from a heavy pruning every spring, just as the buds break dormancy. The best way to judge when to prune is to look at the buds; when they begin to swell, go ahead and prune. Old-fashioned roses and climbers bloom once a year and should be pruned immediately after flowering. They bloom on wood from the previous year's growth and should not be pruned in the spring. Dead, diseased or damaged wood on any rose, tree or shrub can be pruned out at any time.

Tents of the Eastern Tent Caterpillar are a part of the landscape in many trees, especially in subdivision developments in rural areas. The favorite host plants of the caterpillar are wild cherry and apple trees, but they will also feed on peach, plum, hawthorn and many different shade and forest trees. These pests are voracious feeders and can completely defoliate small trees. We usually identify these caterpillars, by the web it constructs in the crotches of limbs. These webs will enlarge as the caterpillars grow and can become several layers thick. We can exhibit some control of this pest on small trees and where webs are few by hand destruction of the webs or pruning of host limbs. However, better control can be achieved before the webs occur. The caterpillar will hatch from egg masses encircling small branches that were laid by the moths late last spring. The eggs hatch about the time when the leaves first begin to come out. Application of an insecticide at this time will provide good control. Many insecticides labeled for ornamental use will control this pest. If you use Bt (*Bacillus thuringiensis*) remember to spray the foliage because the caterpillars need to ingest the Bt for it to work.

Vegetables and Herbs:

One of the biggest pests to vegetable gardens are weeds. Not only do weeds attract other pests, like insects, and provide hiding areas for mice and other rodents that may feed on tender plants, they also compete for water, nutrients, sunlight, and growing space. If left unchecked, weeds can significantly reduce vegetable yields. Weed control is especially important in the early stages of vegetable development. Methods of control include: cultivation, mulches, and herbicides.

Cultivation (hoeing, tilling, hand pulling) effectively removes many annual weeds but may not completely remove perennial weeds. When cultivating the soil, remember shallow tillage is best. Deep cultivation pulls new weed seeds to the surface where they are exposed to light and can germinate into new plants. Use a hoe in rows and hand pull weeds next to crops to avoid root damage to vegetables. This process is most effective if plants are removed before they have a chance to set seed.

Mulch can also be used around vegetables to suppress weeds. Additionally, mulch helps to regulate soil moisture, reduce erosion, and keep fruits and vegetables clean which may reduce disease problems. Shredded leaves and pine straw are good choices and should be applied after the soil has begun to warm in the spring but after existing weeds have been removed.

Finally, herbicides, if used according to the label, can be effectively used to control weeds. Pre-emergence herbicides such as Preen, Treflan, and Miracle Gro Garden Weed Preventer are used before weed seeds germinate. These products may not be safe around all vegetables and you should refer to the label for specific information. Remember that these products kill newly emerging seeds, which includes vegetable seeds. Be sure to follow any waiting periods listed on the label. Round-up is a post-emergence, non-selective herbicide. It is absorbed by any actively growing plant. Still, it can be used to control difficult weeds if you take caution not to allow spray to drift onto your vegetables. The label lists specific vegetables around which this product can be safely used.

Did you get your cool-season vegetables set out last month? If you didn't, fear not. All the ones listed for March will have plenty of time to develop and mature before the summer heat if you plant them by the end of April. You can also begin a few of the warm-season vegetables this month such as bush and pole beans, sweet corn and tomatoes. Be mindful of any late frosts that can damage new seedling or slips. In Murfreesboro frost can come as late as April 26. However in the Crossville area the last frost date is May 10, so waiting until the end of the month or the first of May would be suggested. We can at least be thankful we aren't in Gatlinburg where frost can happen as late a June.

If you do set out tender slips or have new seedlings up when a late frost is expected, cut the bottoms out of gallon milk jugs and place them over your vegetables to give protection. It is very important though to remove the container during the day to protect the plant from overheating.

[Top](#)

May

Fruits and Nuts:

Fruit trees, specifically apples, have a natural tendency to want to produce fruit only once every two years. This can be especially noted in the year following a heavy crop. Thinning a fruit crop is the answer to this natural condition. Thinning fruit is also beneficial because it helps avoid limb breakage and improves the quality (appearance, taste) of the remaining fruit. Excessive fruit can also reduce development of young trees. The best way to thin a crop is by hand. Clusters of fruit should be broken up and fruit should be left well spaced on the limb. Poles can be used for removing hard to reach fruit but it is a less accurate method than hand removal. Proper spacing of apples should be 6-7 inches apart and peach should be 6-8 inches apart. Chemical thinners are available to aide in fruit removal, but these are most commonly used by commercial orchardist. Manual fruit removal should be delayed after bloom for four to six weeks since a natural drop will remove some of the fruit. Apples should be about the size of a nickel when removed.

Stone fruit trees such as peach, cherry and plum should be sprayed this month to protect against peach tree borer. The peach tree borer is a clearwing moth larva that bores into the trunk at the soil line. Once inside, it can girdle the trunk, cutting off nutrient and water flow and making the tree more susceptible to diseases. A common sign of borer presence is the gummy extract that exudes near entry holes most often near wounds or galls on the trunk. One preventative control against the borer includes a trunk spray of Thiodan 50WP this month. Sprays should be directed to the trunk and basal part of scaffold limbs for best results. New research in Michigan has also found that using pheromone ties can be an effective control. Adult moths find each other in the orchard by releasing pheromones; by saturating the air with female pheromones in the ties, the male becomes disoriented and the two do not mate. Thus fertile eggs are not laid and larvae are not produced to cause damage. Ties need to be applied at the rate of 100 per acre in the prebloom to petal fall stage of peach to be effective.

Groundcovers and Lawns:

One question I receive often concerns mushrooms in lawns. In most cases, the mushrooms are appearing where a tree used to stand a few years before and has since been removed. In this situation,

underground roots are continuing to decay and fungi are helping the process. As part of their life cycle they produce mushrooms. Short of digging up the roots, little can be done to remedy this problem. However, if mushrooms are appearing in your lawn in a circular or crescent shape, you may have a turf disease called Fairy Rings. This disease is caused by a fungi growing in lawns with a high organic matter level. Old stumps buried in the lawn or a high thatch layer may cause Fairy Rings. Typically the puffball mushrooms are seen in late summer or fall but a ring of very green grass or, in some cases, dead grass may be seen year round. The soil in this crescent may become very dry and difficult to wet. The removal of thatch and proper management practices may help keep this problem from occurring. Proper irrigation and aerification is also helpful. If you already have a problem with Fairy Rings, extra watering of the rings or a fungicide drench may help the turf recover.

Of all the perennial grassy weeds that invade our lawns each year one of the more difficult to control after emergence is Dallisgrass. Dallisgrass grows in clumps and also sends out rhizomes. It is unsightly in lawns, because it shoots up a seed head several feet tall soon after the lawn has been mowed. Because Dallisgrass is closely related to turfgrass, it is difficult to control without damaging the lawn. Ideally, we want to control this and other perennial grasses (crabgrass, goosegrass) with a pre-emergence herbicide. For control of Dallisgrass in tall fescue we are limited to a spot treatment with either MSMA or Roundup. Because tall fescue can receive injury or may be killed by these two chemicals, direct your spray at the crown of the weed instead of all the runners to lessen the amount of turf damage. In bermudagrass, MSMA can be broadcast over the lawn. Some discoloration may occur for a couple of weeks but bermudagrass will recover.

Perennial Flowers and Vines:

May is the month when peonies bloom, unfortunately flowering only last for about a week. A common question about peonies is why they didn't bloom. Many factors can be responsible for this including insect or disease problems, inadequate sunlight, excessive nitrogen or late freezes. More often, bloom failure is found in young, immature plants that have been planted too deep. Peonies should be set in a well-drained soil where the red buds of the plant are just two inches below the soil. If your plants are mature and have bloomed before but don't this year, they may be overcrowded and it is time to divide them this fall. Peonies can grow two to four feet in height and taller varieties may require staking. By the way, the ants seen on peonies are neither harmful nor helpful; they are just attracted to the nectar.

Thinning dead and damaged shoots of perennials during early growth stages will encourage stronger and healthier plants. Pinching back new growth will also help produce bushier plants and increase flower development. Deadheading spent flowers may also promote additional flowering.

Delphinium, foxglove or lilies growing in windy sites may require staking to prevent lodging (falling over). It is best to stake smaller plants when they first send up growth to avoid breakage. Use a stake two-thirds the height of the plants mature size and secure the shoot to the stake with twine. When done correctly the plants grow to cover the stakes.

Pansies will be reaching the end of temperature tolerance. When they start to show stress, it's time to replace them with summer annuals.

Trees and Shrubs:

Dogwood is one of Tennessee's favorite picks for a colorful, low growing backyard tree. However, it is also susceptible to many damaging diseases. Of these, powdery mildew is one of the more common. This disease appears like powder on the upper leaf surface and younger leaves can be twisted, elongated or leathery because of the infection. Fungicidal sprays of Banner or Cleary's 3336 applied at the first sign of problem can help. Resistant cultivars are also available if you are thinking of planting a dogwood. 'Cherokee Brave' and most *Cornus kousa* cultivars are moderately resistant to the disease. Three new varieties to be released to the public soon include 'Jean's Appalachian Snow' a white bloomer with greenish-red berries, 'Karen's Appalachian Blush' a white bloomer with pink edges and vivid red fall color and 'Kay's Appalachian Mist' a white bloomer with red berries. All three are very resistant to powdery

mildew. Some general guidelines to follow when planting dogwoods are to select a location in the sun. Although dogwoods naturally grow in the shade, disease pressure can be much higher in shade conditions. Irrigation during periods of drought is a must for newly planted trees; however avoid getting water on the leaves since this creates a favorable situation for diseases. Using mulch around the base of the tree will help hold moisture and prevent damage from occurring to the trunk. Although trees can be planted in the spring the absolute best time for planting dogwoods is in the fall.

Junipers, cedars, arborvitae and white pine are often victims of insects; one insect you may have noticed 'hanging out' on small limbs in your landscape are the bagworms. These pests actually become moths when mature, but the most commonly seen stage are the larvae in their 'bag' constructed of materials from the plant on which they feed. They are a foliage feeder and heavy infestations can cause considerable defoliation. Because bagworms spend most of their life enclosed in a protective casing, there is a very small window to gain control of these pests. Bags remain on the tree over winter, many containing hundreds of bagworm eggs. In late April to mid May these eggs begin to hatch and the young larvae begin feeding on the plants. Within a few months they can construct their own bag and will no longer be susceptible to pesticides. Therefore, timing of sprays is crucial, applying when larvae are small and before a new casing is constructed. Recommended sprays for bagworms include Sevin, Dipel, and Orthene. One of the best non-chemical controls is to handpick the bags off the tree. This can be very successful if you remove all the bags, but remember that one bag can hold over 100 eggs, so don't miss any.

Vegetables and Herbs:

May is a great month to be in the vegetable garden because you have so many more vegetable options. Beans (Bush Snap, Pole Snap, Bush Lima) can be planted this month and you can expect your first harvest in 60 to 65 days. Pole Limas will take an additional 30 days before harvest. Cantaloupe can be planted and will be ready for harvest in 90 days. Expect to harvest sweet corn in 90-95 days. Other vegetable crops for summer planting include: Cucumbers, Eggplant, Okra, Peas, Peppers, Sweet Potato, Pumpkin, Squash, Tomatoes and Watermelon. In general, expect to harvest vegetables between 60-80 days. Primary exceptions include Sweet Potato, Pumpkin and Winter Squash, which take over 100 days to mature.

People often have questions about growing okra and many times those questions are focused on the lack or loss of blooms. It is important to soil test before growing this vegetable since pH often plays a factor in fruit set. The soil should have a pH between 5.8 and 6.5. Low pH, low calcium and low phosphorous can cause an okra plant to drop blooms; soil testing helps avoid this problem. Sometimes, however, inadequate moisture or low bee pollination can also lead to bloom drop. To avoid this problem water in periods of drought and avoid spraying chemicals when bees are present in the garden.

Another vegetable that causes fears because of bloom drop is the cucumber. This should not be of concern however because cucumber vines have both female and male flowers. The first flowers to appear are male which drop from the vine and do not bear fruit. Later flowers will be a mix of male and female flowers and pollination will occur. For higher yields from your plants, side-dress with a high nitrogen fertilizer after flowers appear and again three weeks later. Do not over fertilize since that will encourage more vines and less fruit.

Beans are also a vegetable that should not be over-fertilized since too much nitrogen leads to more plant and less fruit. Fertilizer should be added at the time of planting by working it into the soil, later a side dressing can be applied after pods begin to develop or if the foliage is turning yellow.

[Top](#)

June

Annuals:

In the past, Powdery Mildew and Zinnia were heard often in the same sentence. Today they are still used together but no longer to describe gardening troubles thanks to the new powdery mildew resistant selections of zinnia. The 'Profusion' series of zinnia are great compact plants that bloom all season. Available in white and bright colors like orange and cherry, these resistant annuals will add a lot of color and help attract butterflies to your garden.

Watch for Impatiens Necrotic Spot Virus (INSV) of your annuals. INSV can cause a wide range of symptoms on different host plants including stunting, brown or yellow circular spots on leaves, ring spots, black or brown stem discoloration, browning of leaf veins and yellow line patterns in leaf tissue. In celosia leaves become strapped shaped and flowers are stunted; gomphrena will show multiple ringspot lesions on leaves and stunted growth. Other known host plants include impatiens, gloxinia, cyclamen, begonia and certain vegetables. This disease is spread by the western flower thrip. Plants cannot be treated for control and must be destroyed. INSV is more common in greenhouses where annuals are grown and is therefore monitored closely by owners and inspectors. Occasionally, however a plant may make it to your landscape. If your annuals are exhibiting any of these symptoms, take a sample to your extension agent who can have it confirmed.

Fruits and Nuts:

Watch this month for Oriental fruit moth larvae, which tunnel near the end of succulent twigs of cherry and pear. The larva may tunnel in for 2 to 6 inches, and cause leaves to wilt. A single larva may attack five or more twigs before moving to the fruit. In fruit, larvae will tunnel through the side or at the stem union. In peaches they will exude a gummy sap. This gum turns to a dark blotch will be found on the fruit at harvest. Often, the later maturing the peach variety, the greater the percent of damage at the stem end. The larva often feeds around the pit of the peach. Brown rot infections can start at the entrance or exit holes of Oriental fruit moth.

A multipurpose fruit spray, consisting of an insecticide and fungicide, is your best defense against Oriental fruit moth. This combination of chemicals will give you the best control from plant bugs and plum curculio on peach, plum and cherry and leafroller, leafminers and codling moth on apple and pear. Multipurpose fruit sprays are applied as cover sprays after bloom until a few weeks before harvest. See the label for specific application timing.

Groundcovers and Lawns:

On warm season grasses like Zoysia and Bermuda, June 1 marks your second application of nitrogen. Your goal should be to apply 4 pounds of nitrogen over the summer. Your third and fourth applications should be applied on July 15 and September 1. Phosphorus and potassium application rates are best decided after a soil test. If your test shows high or very high levels of these two nutrients you should use a nitrogen fertilizer only, such as 34-0-0. Moderate to low levels of phosphorous and potassium will require a balanced fertilizer, such as 10-10-10.

Many lawn problems can be avoided just by mowing at the correct height. Scalping lawns exposes soil to sunlight and invites weed seeds to germinate. Consistently mowing too close may also adversely affect grass roots both in development and rooting depth. This can be especially important in lawns that are not irrigated and in cool-season lawns that are less tolerant of summer heat. Reduction of roots means the plant will have less access to water and may result in a brown lawn or death. For cool-season grasses like tall fescue, set your mower to 2-3 inches, warm-season lawns like Zoysia and Bermuda can be mowed at ½ to 1 inch. How often you should mow is based on how fast your lawn is growing. Your goal should be not to cut more than 1/3 of the shoot growth in a single mowing. For example a bermudagrass

lawn being maintained at 1 inch should be mowed when plants reach 1½ inches. For some lawns this may mean mowing more than once a week, but the results are often worth the effort.

If you are noticing bare spots in your once full and lush *Vinca minor* beds you may want to check for disease symptoms. Fungal stem rot is the most common reason *Vinca* beds develop holes. Symptoms include wilted and brown shoots, while stems appear black. This will cause plants to die to the soil surface. This disease is more common in rainy seasons or in irrigated beds. Control can be achieved by pruning out diseased shoots and spraying with a fungicide such as Daconil 2787 or Cleary 3336.

Perennial Flowers and Vines:

Many perennials such as garden phlox, heliopsis, veronica, and echinacea will keep flowering if they are cut back after their first bloom.

Bearded irises are among the easiest and most popular perennials to grow. The "bearded" description refers to the furry strip on each of three drooping, petal-like sepals, called falls. Flowers appear on stalks in late spring to early summer above the foliage. Hundreds of color combinations exist and they are available in a wide range of heights: miniature dwarf (up to 10"), standard dwarf (10"-15"), miniature tall (15"-25"), intermediate (15"-27"), and border (28"). All bearded irises need full sun and well-drained soil. Irises grow from rhizomes and can be propagated one to two months after bloom (June-July) by breaking off rhizome shoots (with roots intact) and replanting. It is also a good ideal to cut back the foliage to one-third their length to keep your newly planted rhizomes from being pull up by the wind. Bearded iris should be planting in a well drained, compost amended bed, just under the soil's surface and 12-18 inches apart.

Trees and Shrubs:

This year was a great year for spring blooming trees such as dogwood, redbuds and serviceberry. By selecting the right blooming trees, you can continue the colorful display straight through the summer. Consider size, fruit characteristic, cultural requirements and flower color before making your selection. Select a tree that will not be too big for its location. Crowding a tree into a tight spot will often compromise the natural shape of the canopy and may put undue stress on the plant. Fruit is often forgotten during selection but should be seriously considered. Some trees will produce fruit that is attractive and makes a nice addition to the landscapes. Others may produce foul smelling fruit or attract unwanted birds or other pests. Most flowering trees will need at least a half a day of sunlight for good flowering. The number of blooms will often decrease with reduced light. Some examples of summer blooming trees include:

Smoke Tree (*Cotinus coggygria*) – forms a multi-trunk tree and blooms in June-July with a light yellow hairy bloom that causes a smoke-like appearance.

American Smoke Tree (*Cotinus obovatus*) – similar to above, except *C. obovatus* is a native and tolerant of drought conditions. Blooms white.

Franklin Tree (*Franklinia altahama*) – a white blooming, native tree that must have full sun. Does best with irrigation and has a great red fall color.

Seven-son Flower (*Heptacodium miconiodes*) – white flowers are followed by attractive fruit and reddish purple bracts that remain showy until frost. Multi-stemmed tree with papery bark.

Crapemyrtle (*Lagerstroemia indica*) – hybrid cultivars of this multi-trunk tree allow for a great variation in bloom color and bark characteristics. Prolific summer bloomer.

Sweet Bay Magnolia (*Magnolia virginiana*) – a native, white blooming magnolia that can be grown in poorly drained sites

Mountain Stewartia (*Stewartia ovata*) – white blooming native tree with exfoliating bark. Prefers moist soil and part shade.

Rhododendrons and azaleas will benefit from an application of fertilizer this time of the year. With these plants it is best to use fertilizers specially formulated for acid-loving plants. Fertilizers that supply nitrogen in ammonium form are preferred. A fertilizer analysis similar to 6-10-4 applied at 2 pounds per 100 square feet to the soil surface is usually adequate. Excessive applications can damage shallow roots. Fertilizer should not be applied after August 15 since emerging new growth will be killed by frost. Rhododendrons and azaleas need a pH of 5.5. Soil test to find your pH and use iron sulfate or agricultural sulfur applied to the surface to lower pH if needed.

Webbing at the ends of branches is evidence of the fall webworm. Several generations of this pest will occur in a summer. Prune out the webs that can be reached. If chemical control is to be used, it may be advantageous to spray nearby foliage with Bt (Dipel 2X, Biobit, Caterpillar Attack, Larvo-Bt and others) and thus conserve the natural enemy complex that helps regulate fall webworm populations.

Vegetables and Herbs:

Is Colorado potato beetle giving you fits this year? Control failures in home gardens with Sevin or Thiodan are commonplace. The recent release of M-Trak and other sprays with the naturally occurring bacteria *Bacillus thuringiensis* subsp. *tenebrionis* is effective and provides vegetable gardeners with a new weapon against these destructive insects. *B.t.* should be applied just after egg hatch and every 5-7 days until harvest. After Colorado potato beetles ingest the bacteria, the larvae will stop feeding but may remain on the plant for several days before dying. Treat again if rain occurs within 24 hours after application. Another *Bt* product called Raven, which contains a specific strain EG7673 of *B.t.* subsp. *kurstaki*, also works against Colorado potato beetle.

Squash vine borer moths are active now on squash, pumpkins and gourds. Late afternoon sprays of endosulfan (Thiodan) or carbaryl (Sevin) will control the larvae. Treat once a week for four weeks. A second generation of moths will emerge in August. Treatment may also be needed at that time if harvest is to continue into the late summer.

How do you know when it's the right time to harvest herbs? Of course that answer will vary depending on which herb you are growing. Here are few of the more commonly grown herbs and their harvest information.

Basil (*Ocimum basilicum*) is a popular, tender, annual herb. It is grown for its aromatic leaves, which are used fresh or dried as a flavoring. Basil leaves are cut just prior to the appearance of flowers. Cut the foliage at least four to six leaves above the ground to allow for regrowth and a second crop.

Chives (*Allium schoenoprasum*) are a perennial herb used for making vinegars and is added to soups, salads, vegetable or fish dishes. To harvest chives, cut leaves 2 inches above the ground.

Dill (*Anethum graveolens*) is a hardy annual and commonly grown as a seasoning for soups, fish and pickles. Fresh leaves should be harvested before flowering begins. Harvest seeds as soon as seed heads are brown and dry. Dill is also great in butterfly gardens since it is a host plant for some larvae.

Mints (*Mentha* spp.) are aggressive growers and should be grown in containers to avoid hostile take-overs of gardens. The young, tender leaves and stems of Mint can be harvested as it comes up in the spring.

Thyme (*Thymus vulgaris*) is a small, perennial shrub. It is use often in French cuisine. Harvest the entire plant by cutting it back to 2 inches above ground in midsummer. A second harvest can be expected before the season ends.

[Top](#)

July/August

Fruits and Nuts:

Strawberries will benefit from an application of fertilizer in late August and again in September. Take a soil test to determine how much nitrogen, phosphorous and potassium is needed. Each is needed for strawberry production in varying amounts. Nitrogen is necessary to stimulate foliage and root growth while phosphorous is used to develop a good root system. Potassium has been shown to improve the color and soluble solids in the fruit.

Brown rot is a serious disease of stone fruits like peach, plums, and cherries. The disease is highly destructive and can ruin half or more of the fruit before harvest. Summers with much rainfall and high humidity lead to the greatest disease incidence. A fungicide treatment of Captan or Immunox is critical for control within one week of harvest. It is also important to remove all fruit from the ground where the fungus may overwinter. Remove any nearby *Prunus* spp., such as wild cherry, that may harbor this disease and serve as a source of infection.

Harvesting blueberries and other fruit can sometimes be challenging if the birds in your area are observant. Birds seem to know exactly when a blueberry is ready to pick and help themselves when the time is right. There are several methods you can use to protect fruits and vegetables from possible bird damage. Inexpensive netting can be used to cover plants and exclude birds. Try erecting fence posts with smooth wire on both sides of your blueberry shrubs and laying the netting over the top so that it covers the plants and can be staked to the ground. Frightening devices like plastic snakes, owls or the big eye balloons are a temporary solution. If left in one spot, birds quickly become accustomed to these and they will be ignored. To increase their effectiveness, move these devices around frequently. Bird cannons and distress broadcast systems are available with motion detectors that trigger when a bird enters the area. Since these devices do not operate until triggered, birds are more likely to be frightened and the device should be effective longer. One method being researched by Montana State University is the use of monofilament fishing line. In fruit trees, a pole is set next to the tree that extends two feet above its top. Lines are connected to the top and run to ground where they are staked. Space the stakes about 2 feet apart on the ground. For blueberries and brambles, use poles alongside the plants and run the line 2" above the crop and 12" apart. The spacing is such that birds could easily pass through between the lines but reasons are unclear why they do not. Some speculate that the monofilament line seems to appear and disappear confusing the birds to the uncertainty of a real barrier. It may also be that birds fear becoming entangled in the line. The monofilament line method works best on sparrows, but fails to repel robins and starlings. Research still continues on the use of this technique.

Groundcovers and Lawns:

Although, seeding can be done in the spring, conditions are best for sowing a cool season lawn in the fall (August 15- September 20). Cool temperatures and moist soils during fall promote plant growth and reduce the heat and drought stresses associated with spring seeding.

What about growing grass in the shade? Chances are you will not be successful at growing grass in heavy shade. Grass is a full sun plant and competition from trees for light and moisture often result in a thin lawn more susceptible to disease and less tolerant of heat, cold, and drought. Red fescue continues to be recommended as the best choice of all the cool season grasses for shade; however this species generally lacks heat tolerance and may die out in the summer. Overseeding annually may be required to

maintain lawngrass density in shade. Seeding tall or red fescue under deciduous trees during late summer will provide the longest period of sunlight exposure. Of course, you could always consider vinca, hosta, or mulch beds as an alternative.

Perennial Flowers and Vines:

Roses will benefit from a final fertilizer application in mid-July. Apply fertilizer to rose beds at the rate of three pounds per 100 square feet. Spread the fertilizer around evenly and scratch it into the surface; then follow-up by watering the roses and the soil. Avoid fertilizing roses after mid-August. A late application may cause the roses to put on new growth which will be damaged by frosts.

Removing faded blossoms from perennials will prevent seed formation and possibly encourage more flowers to bloom late in the summer.

Trees and Shrubs:

Summer temperatures and drought can cause problems for newly planted trees. If you have a tree that has been planted during the last five years, it will require watering during the driest parts of summer to prevent excessive stress. Allow the water to penetrate the soil profile. Soaker hoses work well because they emit a small amount of water over a long period of time, allowing water to be absorbed instead of running off the surface. Applying mulch around the base of the tree can also help retain soil moisture. Avoid planting any new trees or shrubs this summer. Waiting until fall or winter, when temperatures are cooler and rainfall is more abundant, will increase the plant's survival.

The Orange-striped Oakworm is an occasional pest in our area. Since it feeds late in the summer, it usually has little impact on trees. However problems can be severe on young trees just becoming established, where Oakworms may defoliate large areas. The Orange-striped Oakworm prefers white oaks but will feed on other oaks, maple, hickory, and birch. The caterpillars usually feed in groups and will skeletonize leaves leaving only the larger veins. The Orange-striped Oakworm is black with orange stripes, about 2 ½ inches long, and has two hornlike projections just behind the head. Larvae overwinter in the soil and the adult moths appear in early summer. A Bt product such as Dipel and Javelin implemented in mid to late July will help curb populations.

Yellow-necked caterpillars are active in early August. These caterpillars feed as a group, defoliating one branch at a time. They prefer birch and oak although they may attack crabapple, elm, basswood, willow and many other hardwood trees. The first leaves to be fed upon appear skeletonized and turn brown, often remaining on the tree. As the caterpillars grow they devour whole leaves. These brightly colored caterpillars have eight yellow longitudinal lines. The body is reddish brown when young and turns black as they mature. They are about 2 inches long when fully grown. Directly behind their black head, they have a yellowish-orange segment, which is where they get their name.

Vegetables and Herbs:

Several diseases have the potential to wreak havoc on your tomatoes this summer. Here are some of the more common ones and how to recognize and prevent them.

Fruit rots are caused by bacteria and fungi that enter an insect or mechanically damaged tomato plant. This generally occurs when temperatures are warm and humidity is high. Symptoms can vary according to the causal agent, but may occur as sunken lesions, water-soaked spots or scars. Avoiding injury when working around the plants, applying mulch to the soil to keep fruit from direct contact, and improving air movement by spacing plants or planting them in the direction of prevailing winds can help reduce disease pressure.

Tomato spotted wilt virus symptoms vary on tomato, but small, orangish-yellow flecks on older leaves are the first noticeable symptom. Later, new growth will be blighted and die. Fruit usually show characteristic green, yellow and red, slightly raised concentric rings. This virus is transmitted by thrips

and has a wide host range including pepper where infected plants show light-green bud leaves and a black blighting of young growth. There are no effective controls for disease on either vegetable. Eliminate thrips or use resistant varieties.

Bacterial speck and bacterial spot can be suppressed by spraying plants with a fixed copper pesticide. This disease can appear on all the above ground parts of tomato plants as dark brown spots. Tank mixing the copper with maneb or mancozeb, improves the effectiveness of the copper and also provides early-blight control. Bluestone copper is not recommended since it will burn the plants. Avoiding overhead sprinkler irrigation can also reduce problems from this disease.

High temperatures can encourage outbreaks of two-spotted spider mites on beans, tomatoes and other garden crops. Watch for discolored plants and webbing and treat promptly with at least two sprays of Kelthane or malathion about 5 days apart.

If you are having trouble with raccoons, deer and rabbits in your vegetable garden fencing may be your most effective method of keeping these pests at bay. Small gardens do not require a lot of fencing. A two-strand electric fence (one wire at 6 inches and the other at 12 inches) will keep raccoons and groundhogs out of sweet corn and leafy vegetables. A chicken-wire fence two feet tall and tight to the ground will prevent rabbits from gaining access. For deer, try one strand of electric fence, 2 feet off the ground, with aluminum tabs attached every 3-5 feet. Smear peanut butter on these tabs which will attract the deer. When their nose or mouth touches the electric tab, they will learn to stay away. Many small animals can be trapped and removed. The secret in traps is the type of bait to use. Try sardines for raccoons, fruits for groundhogs and leafy vegetables for rabbits. If you have the space, you can grow a patch of ladino white and red clover to lessen garden feeding. Taste repellents are also available for deer and rabbits but are short lived and less effective.

A frequent question I receive during vegetable garden growing season concerns plants such as cucumber, pumpkins, squash and zucchini that are dropping their blooms and not producing a fruit. The reason is really quite simple. These vegetables all belong to the Cucurbit family which produces both male and female flowers. Male flowers produce pollen rather than fruit and usually appear on the plant first. As female flowers emerge a few days later they are pollinated and will begin fruit set, male flowers having finished their purpose will then drop off the plant. To check your blooms for male or female, look below the bloom at the base of the flower. You should see a small fruit beginning to form on the female flowers. Anything that interferes with pollination may reduce fruit set and yield, including rainy weather or improper use of pesticides that may disturb bee activity.

July and August is a great time to start a fall vegetable garden. Some vegetables that do well in the fall include: bush and snap beans, broccoli, cabbage, cauliflower, collards, cucumbers, kale, kohlrabi, leaf lettuce, mustard, Irish potatoes, , radish, spinach, summer squash, tomatoes, and turnips.

Around the Home:

Birds need water just like us and during the drying heat of summer this can sometimes be hard to find. Help out our feathered friends by using water features in your garden. Birdbaths are simple and do an excellent job of providing a source of water and a way for birds to cool down. For best success with birdbaths, place them in the open away from shrubs and tall plants. This gives birds more security when 'bathing'. Choosing a birdbath that has sloped sides will attract a greater variety of birds. Water gardens will also provide a drinking source for birds, but often the sides are too steep to allow birds access for bathing. Try putting a flat rock, which is slanted and partially covered with water, into the pond. This will give them easier access. Keep birdbath water clean and fresh by changing it every other day; this will also help prevent algae buildup.

You can make your own hummingbird feeder solution by mixing sugar in water at a 3:1 ratio. No dye is necessary, although red color on feeders or nearby plants may help attract hummingbirds. Change the

solution when it starts to look cloudy. You can feed your hummingbirds through the summer without fear of keeping them from winter migration. The changes in day length and temperature is what triggers hummingbirds to migrate, not the availability of sugar solution.

Velvet ants, which are actually a type of solitary wingless wasp, cause a lot of confusion during the summer. People often think this insect is a fire ant. Their features however, confirm they are not. Although velvet ants resemble ants they lack the typical bump on the waist found on most ants. They are also covered in velvety orange or red hair with black stripes. This feature is often how the 'fire ant' label gets applied. You will not see velvet ants in groups, because they are a solitary insect. The larvae of velvet ants feed on ground-nesting bees, other wasps and some flies and beetles. The female is more often encountered than males and can be a concern to children. Their stinger is long and females can sting repeatedly. Most stings occur when people walk in an infested area barefooted. Chemical control is rarely needed. Telling children not to handle these insects and wearing proper footwear is often all that's required.

Yellowjackets hurt. Just ask anyone that has been stung. They can be troublesome at picnics but downright dangerous when they nest near your home. This wasp lives in underground nests that have been constructed in hollow cavities. Yellowjackets are very aggressive and is why most people are stung while mowing the lawn. Other nesting sites include old tree stumps and rotted roots. Yellowjackets are more noticeable during summer because the colony has increased to its full size. Some nests can have as many as 5,000 wasps. To control this hazardous pest, locate the nest during the day. Return during the night when temperatures are cooler and yellowjackets are less active. Apply a drench treatment of insecticide, such as Sevin, to the entrance hole and then plug the hole with damp soil.

[Top](#)

September

Groundcovers and Lawns:

After a tough summer, what do you need to do to revive that sun-scorched turf? First, take a look at your fertilization schedule. Remember that cool-season lawns need fertilizer when temperatures are cooler (i.e. spring and fall). In fact, if you can only fertilize once a year - do it in the fall. As turf is recovering from the semi-dormant state of summer it will need that boost to prepare for winter. Mark your calendars for September 1, October 15, and November 15 and on each of these days apply one pound of nitrogen per 1,000 sq. ft. Base your phosphorous and potassium applications on a soil test for best accuracy. Lime should never be applied without first knowing the recommended amount based on a soil test. By the way, fall is great time to soil test in Tennessee since the University Soil Lab is less crowded and can often return results in less than two weeks. Considering renting a dethatcher (power rake) and core aerifier to help remove thatch build-up and loosen hard soils. Doing this process before fertilizing will ensure nutrients reach the grass roots.

If you are growing warm-season grasses such as bermuda and Zoysia, it's time to prepare them for winter. Raise your mowing height and allow grass to 'winter-through' taller than your preferred mowing level since taller blades will help buffer the plant from cold damage. Applying a potassium fertilizer on September 1 will also increase warm-season grass cold hardiness. Many of these fertilizers are sold with pre-emergence herbicide that will prevent the germination of winter weeds, alleviating some problems next spring.

Perennial Flowers and Vines:

Ornamental Grasses add texture, contrast, color and year-round interest to the landscape and the beauty of these plants in perennial borders or as mass plantings certainly deserves recognition. There is a large variety of grasses available for Tennessee landscapes and their uses are just as varied. Shorter grasses

are useful for edging, mid-sized grasses add vertical lines and blend textures and taller grasses provide structure or backbone to flower beds. The following are some recommended varieties for various situations:

Grasses for screening: Giant Reed Grass, Feather Reed Grass, Ravenna Grass
Grasses for use as groundcovers: Blue Fescue, Lily Turf, Mondo Grass
Grasses with red foliage: Japanese Blood Grass, Red Switch Grass 'Rubrum'
Grasses for dry sites: Big Bluestem, Love Grass, Fountain Grass

Be aware that some grasses can become invasive. Ribbon Grass and Blue Lyme Grass are two that should be grown in containers with drainage to prevent crowding in a flower bed.

Trees and Shrubs:

In late summer or early fall when hot temperatures fade, cool season mites like the spruce spider mite again become active. The mites remain dormant during the summer in a round, reddish-orange egg stage. With the advent of cooler weather, the eggs hatch and the mites feed on evergreen plants such as arborvitae, juniper, spruce, hemlock, false cypress, and Leyland cypress. Populations can build to damaging levels during the fall. Some of the last eggs laid in the fall will remain dormant and hatch during warm spring days in April. Many people blame the harsh winter weather for the bronzed foliage on evergreen plants in the spring. Many times this discoloration is due to spruce spider mite feeding damage the previous fall. Check plants for active spruce spider mites in both the spring and late summer-early fall. Hold a tablet of white paper directly beneath a branch and strike the branch solidly three times with your hand or a broom handle. Any active mites will be knocked onto the paper and soon start crawling. They are about the size of the period at the end of this sentence. Run your hand across the paper and the smashed spruce spider mites will make olive-green streaks. Other mites may be dislodged from the plant however many are beneficial and feed on fungus or other mites. These mites do not leave streaks when smashed. Chemical control using horticultural summer oil, insecticidal soap or miticides is best achieved when the first flush of mites have hatched from their eggs. A follow-up spray is needed about a week later. A dormant oil spray can be made in late February-early March to kill many of the overwintering eggs. A dormant oil spray works best when the temperature is 50 F or higher.

Fall is a great time to plant trees and shrubs in your landscape. To ensure success during this planting season, follow these six simple guidelines:

1. **Plan.** Have you ever been at a nursery and purchased a plant, brought it home and then asked "Where should I plant this?" Now be honest, remember the small holly that now blocks your rear windows or the sweet-smelling mint that escaped the flowerbed and attacked the front lawn? Most gardeners have been guilty of this process at least once in their garden's life. Successful gardens require planning. Study your lawn to learn how much sun you receive, how well the soil drains, where the underground utilities and power lines run and take a soil sample to determine the pH and fertility of your soil. Ask yourself if your landscape is appropriate for a specific tree.
2. **Select.** Yes, it is cheaper to buy plants that are on the clearance rack but there are dangers in this miser-mentality. Spindly or yellowed plants may be a sign of problems, such as root-rot, a disease that can spread to your other plants, given the right conditions. Select plants that have vigorous growth and good leaf color. Inspect the roots to be sure they are white and firm. You will have more success from a healthy plant.
3. **Handle with Care.** Transporting trees and shrubs home can be hazardous. Take care not to damage the trunk or break limbs. Dropping heavy rootballs can also break tender roots.
4. **Dig a Proper Hole.** A common mistake made when planting trees is digging the hole too deep. Dig your hole as deep as the rootball is high so that when the tree is placed in the hole it is at the original depth that it grew in the nursery. The hole should be two to three times the width of the rootball and sloped inward to allow young roots easier access to surrounding soil.

5. Plant. This is another step where people often make mistakes. The rules you need to remember are simple. First, consider the method by which the plant was sold and prepare the roots accordingly: for bare-root plants, spread out the roots before backfilling the hole; for container plants, remove the container and cut and spread out any girdling roots; for balled and burlapped plants, set the tree in the hole and cut away any strings and burlap from the top and sides of the ball, leaving the bottom in tact, if a wire basket was used, remove as much as possible without damaging the rootball. Use the existing soil to backfill the planting hole, do not amend this soil since problems can occur with water retention and root growth. Apply a two to three inch layer of mulch around the tree keeping the mulch at least six inches from the trunk to prevent disease and rodent problems.
6. Water, water, water. Even if a person follows every step completely, many loose trees and more often than not the problem can be traced back to water. A newly planted tree must have water to survive. The recommendation is at least an inch of water per week, and is best if supplied slowly through irrigation or soaker hoses which will allow it to infiltrate the soil and soak the surrounding ground.

Vegetables and Herbs:

It's near the end of the growing season for many of our vegetables and perhaps you still have produce in the field. What's the best way to store those vegetables for use later? Consider these guidelines:

- Vegetables like swiss chard, collards, green onions, lettuce, greens, and spinach should be kept at 32 to 41F and 85 to 95 percent relative humidity. Try the refrigerator crisper but keep the crisper more than half full to maintain the humidity. Wash and drain the vegetables before storage.
- Asparagus, beets, broccoli, carrots, cauliflower, peas, and rhubarb can also be stored in crisper when in plastic bags but should be kept separate from the vegetables above. These will also keep in containers in the main compartment of the refrigerator.
- Peppers, cucumbers, melons, snapbeans and summer squash will keep best at 45 to 55F and 85 to 95 percent relative humidity. These conditions are hard to reproduce in the home so you should only plan to leave these in a refrigerator for about seven days and use immediately.
- Eggplant, okra, ripe tomatoes, winter squash, Irish potatoes (keep in subdued light), and sweet potatoes can be injured by cold temperatures and should be stored in a cool place, 50 to 60F, such as a pantry, basement or garage.
- Dry garlic, dry onions, and mature green tomatoes can be stored at room temperature, 65 to 70F, and out of direct sunlight.

As you can see, different vegetables require different storage methods. In all cases, you should begin with only the insect and disease free vegetables. Check your vegetables often for spoilage and remove those showing symptoms before rots spread.

Around the Home:

To avoid problems with ladybeetles, boxelder bugs, and spiders invading your home this winter - do some pest-proofing today. Many of you may have experienced lady beetle invasions in the past. The majority of problems with this otherwise beneficial insect are expected later this month. One of the best ways to prevent unwanted invasions by insects (also rodents, birds, etc.) in the home is to deny entry. The following tips will give suggestions that not only block insects from seeking shelter in homes, but also conserve energy and increase the comfort level during summer and winter.

1. Install door sweeps at the base of all exterior entry doors. One way to check the seal around your door is turn on all the lights in the house at night and take a walk around the outside of the house. If you see gaps of light around the seal of 1/16 inch or more from outside the house, there is a possibility for entry of insects and spiders.

2. Seal utility openings where pipes and wires enter the foundation and siding (i.e. outdoor faucets, gas meters, clothes dryer vents). Holes can be plugged with caulking, cement, steel wool or urethane expandable foam.
3. Use a quality silicone or latex caulk around windows, doors, etc. Prior to sealing, cracks should be cleaned and any peeling caulk removed for adhesion.
4. Repair gaps and tears in window and door screens to help reduce entry of flies or gnats in summer or cluster flies and lady beetles in early fall.
5. Install 1/4 inch wire mesh (hardware cloth) over attic, roof, and crawl-space vents in order to prevent entry of squirrels, birds and other wildlife.

Since ladybeetles are such beneficial insects in our gardens, many people hate to destroy those that are overwintering indoors. If this describes you, why not make them feel at home. Obviously, you can't let them fly freely in your home but you can provide them an overwintering site. Collect the ladybeetles and place them in a jar with a piece of cardboard and air holes in the lid. Place this jar in your refrigerator and once per week sprinkle water into the jar. Allow the jar to set out for at least 30 minutes (keep out of full sunlight) while the beetles become active and drink the water, then return the jar to the refrigerator. When temperatures remain above 55 F in the spring, release the ladybeetles back into your garden where aphid populations have already begun.

[Top](#)

October

Bulbs, Corms, Roots and Rhizomes:

Summer blooming bulbs like caladiums, dahlias and gladioli are not frost hardy in Tennessee and should be dug up this month and stored until next spring. To store bulbs cut back the top growth and dig the bulbs prior to frost. Remove the dirt and lay the bulbs on paper to dry. Store them in paper bags with dry potting soil in cool temperatures (45-50F). Gladioli bulbs can be stored loose in a mesh bag.

October marks the last month for planting your spring blooming bulbs. Some bloomers like Daffodils should have already been planted because they need a longer growing season before winter. However, many can still be planted. Consider sunlight when choosing a planting site. Most bulbs need at least 4 to 6 hours of sunlight daily to develop large blooms. Good drainage should also be of concern. Select bulbs that are large, free of blemish, and have good color and weight. Planting should be done before the ground freezes in the fall. Try massing bulbs for a more natural appearance in the landscape. Planting depth for bulbs vary but the rule of thumb is 2 to 3 times as deep as the height of the bulb. Plant your bulbs too shallow and you may risk loss to frost damage.

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Fruits and Nuts:

Your strawberry planting should be mulched to protect against winter damage to strawberry crowns and flower buds. Apply a loose mulch to a depth of four inches after there have been several light frosts, but before a hard freeze. Applying the mulch too early can increase crown rot disease and may inhibit the plant from going dormant. Good options for mulch materials include pine needles, rye or wheat straw. Removing the mulch next spring is as important as applying it in the fall. Remove the mulch when new growth first occurs. Blooming of plants can be delayed by leaving a mulch in place and will reduce your yields.

When you think about your strawberry plants in the fall, mulch should be the first thing to mind. Mulching strawberries provides protection from cold temperatures, reduces weed competition and conserves moisture, all necessary to a strawberry's success. Apply 3 inches of pine needles or rye or wheat straw after several light frosts have occurred, but before a hard freeze. Don't forget next spring after heavy frost periods have ended to rake the straw from the plants to the isles.

Controlling weeds at the base of apple, peach and grapes helps reduce competition for moisture and nutrients, but more importantly, helps to lessen vole problems. Meadow or Pine Voles (similar to field mice) feed on the bark of trees during winter months and can at times completely girdle and kill a tree. Grass and weeds growing at the base of these fruit trees create a suitable habitat for the vole. Your first treatment with herbicides to eliminate weeds can be safely applied late October through early December. The second application should be made in the spring just after pruning. For apples and peach the weed-free-zone should reach from the trunk to the drip-line of the canopy. Three feet on both sides of an arbor is a sufficient weed-free-zone for grapes.

Groundcovers and Lawns:

Cool season lawns, like fescues, do most of their growing in cooler temperatures. They will benefit from an application of 1 pound of Nitrogen per 1000 sq. ft. this October.

If you have finally given-up on the thinning, yellow grass you have been trying to grow in the shade why not consider perennial groundcovers. Groundcovers can be a solution to that troublesome shaded lawn and provide the additional benefits of quick growth while adding interest, either by color or texture, to a corner of your yard.

The best time to establish groundcovers is in the fall. In flat areas, it is recommended that you amend the soil by incorporating four inches of organic matter into the top six inches of soil. This will improve drainage and enrich the soil to give your plants a healthy start. On steep banks, spray unwanted vegetation with a weed killer but allow the dead plants to remain in order to prevent erosion while your new groundcover plants are getting established. If you are planning to plant under trees, you should not till the soil since this process will damage the small feeder roots of the trees. Instead, purchase smaller plants and place them around the roots of the trees to avoid excessive damage. Water newly planted groundcovers every five to seven days with an inch of water. The soil should be moist to a depth of four to six inches after adequate watering. Applying an organic mulch two to three inches deep will help reduce evaporation of moisture and weed emergence. A soil test will show how much fertilizer your plants will need and suggest any changes needed to the soil pH. The proper groundcover will add year-round beauty to your landscape and save you money on grass seed in the future. The following are some groundcovers to consider for full or part shade:

- Bugleweed (Ajuga) – creeping growth habit with blue or purple flowers
- Cotoneaster - flat, horizontal-growing plant with red berries
- Liriope - grass-like, evergreen
- Periwinkle (Vinca)- evergreen, trailing plant with purple, blue or white flowers
- St. Johnswort - semievergreen, turns red in fall, yellow flowers in summer

Do you have trouble growing grass in shady areas? Chances are you will never see a nice dense lawn in heavy shade. Competition for water and light usually results in a sparse and spindly lawn. In these areas, consider mulch or groundcovers like Vinca minor or Pachysandra as a lawn replacement. However, if you have light shade there are some improvements that can be made this fall. Trimming lower limbs and "dead wood" from large trees, can greatly increase the amount of light reaching your lawn. Also, remove fallen leaves and don't allow them to pile up under trees.

Remember that cool season lawns, like fescues, do most of their growing in cooler temperatures. They will benefit from an application of 1 pound of Nitrogen per 1000 sq. ft. this October.

If you reseeded your lawn in September and have been watering daily with a light mist, its time to switch your watering schedule. When grass seeds are germinating they need small amounts of water frequently (almost daily). Once they are growing they need more water but not as often (about 1 to 2 inches weekly). This will encourage the roots to develop deep in the soil, which will better prepare your lawn for the dry seasons next summer.

Perennial Flowers and Vines:

If you are considering planting a vine for your trellis this fall look no further than the showy Clematis. There are over 250 species and hybrids of this vine and each differs in flower form, color, blooming time, and height. There are three general flower forms: 1) small, white flowers in clusters 2) bell-shaped flowers and 3) flat, open flowers. The largest of these blooms may grow ten inches in diameter.

Clematis require full sun, although they will respond well to light shade during the hottest part of the day. Select an open site to allow for good air movement around the plants. The soil should be rich and well-draining with a pH near 7.0. Unlike the vine's stem and foliage, the roots of clematis should be kept shaded, cool, and moist. Select a strong support for clematis. Since this plant climbs by twining petioles, it is important that thin materials such as plastic coated wire be used to allow the vine to grab hold. The wire can be connected to wooden trellis or other supports by fastening the wire with eye hooks, leaving enough gaps for good air circulation. Clematis that are purchased in containers can be planted in the fall or spring, but bareroot plants are best planted in the spring while they are dormant. Dig a hole large enough to spread out the roots of the plant and amend the soil with an organic material. Prune the stems of the clematis back to 12 inches in height to encourage branching and to reduce stem breakage. The crown of the plant should be one to two inches below the soil surface. Water well after planting and consider planting other perennials with shallow roots around the plant to provide the shade the clematis desires. Good examples include Artemisia 'Silver Mound', creeping phlox, or coralbells. A two-inch layer of mulch may also be used to keep the clematis cool. Some recommended species and cultivars of clematis include:

- C. alpina*-blooms lavender or purple in April and May, grows to 8 feet.
- C. chrysocoma*- blooms mauve-pink in May and June, grows to 20 feet.
- C. maximowicziana*- blooms white in September, grow to 30 feet, very vigorous
- C. tangutica*- yellow blooms in July-October, grows 10 to 15 feet in height
- 'Barbara Jackman'- blooms purplish-blue in May and June, grows to 8 feet.
- 'Comtesse de Bouchard'- blooms pink in July and August, grows to 8 feet.
- C. x jackmanii*- blooms deep purple in July and August, grows to 10 feet.
- 'Marie Boisselot'- blooms pink from June to September, grows to 12 feet.
- 'Mrs. Cholmondeley'- blooms lavender blue from May to October, grows to 20 feet.

Many herbaceous perennials can still be added to the garden in October. They should be planted, however, before a hard freeze to allow roots time to become established. Remember that October is typically dry in Tennessee so don't forget to water during establishment.

Wait until spring before cutting back the tops of ornamental grasses. Many grasses will hold their seed heads and drying blades for months creating winter interest in your garden.

Many perennials are noted for their fall blooms. Garden mums typically top the list for autumn color but consider Sedums and Patrina as two alternatives to the norm. Sedum varieties Autumn Joy and Matrona are top choices for their showy blooms, succulent foliage and size (24"). Plant Sedum in sun or light shade with well-drained soil. Patrina (*Patrina scabious*) grows up to 4 ft. and produces bright gold blooms. These do best in full sun with well-drained soils.

Plants in Pots:

Before bringing in your houseplants for winter be sure to give each plant a careful inspection for hitching pests first. Often pests can be removed by washing plants with soapy water, handpicking pests, or using a cotton swab soaked in alcohol to rub and remove pests. Occasionally, insecticides will be need for good control, but when possible, use low risk pesticides such as horticultural oil and insecticidal soap. The following is a list of some of the pests you may expect to find on houseplants and how to control them:

Aphids – These pests are very common on houseplants and typically found on the underside of leaves, stems, or flower buds. They have a pear-shaped body with long legs and antennae and may be winged or wingless. Use horticultural oil or insecticidal soap to control heavy infestations.

Mites – Cyclamen Mites are very small pests that require a magnifying lens to be seen. They cause twisted, curled and brittle leaves where they feed and may cause injury to flower buds as well. Trim off badly infected plant parts to reduce mite populations. Emerge the infested plant (pot and all) in 110 F degree water for 15 minutes for control of the remaining mites.

Fungus Gnats – The larvae stage of this insect feeds on roots and the crown of plants. The adult gnats, a dark-colored flying insect, cause no damage but are a nuisance in the home. Avoid overwatering plants and use insecticide sprays to kill adults.

Scales – Several species of scale occur on houseplants, most occurring on the leaves and stems of plants. Scale suck juices from the plant causing stunted plants. If only a few scale are seen, washing with soapy water will be successful, however heavily infested plants should be discarded.

Thrips – Thrips are a slender, barely visible, pest that fly or leap about on a plant when disturbed. They are found most often on the leaves and flowers of plants feeding on the plant juices. Damaged foliage may be blotched or drop and flowers may be streaked or distorted. Spray the plant and soil surface three to four times on a four-day interval with an insecticide labeled for control.

Whiteflies – Adults of this pest have white wedge-shaped wings and resemble small snow flakes when disturbed. Whiteflies feed on leaves causing them to turn yellow and die. As with aphids and some scale, whiteflies excrete honeydew that will leave a sticky substance on the leaves. Spray with a labeled insecticide at weekly intervals for control.

If your houseplants have been enjoying a double life as porchplants, now is time to bring them indoors. Plants that have been basking in full sunlight may exhibit some signs of shock (mainly leaf drop) as they are moved indoors. You can minimize this problem by placing plants where they can receive the most sunlight, usually near windows on the south side of your home. Over a four-week period, gradually move these plants away from the window and nearer to their normal display area. Humidity indoors differs greatly than outdoors and plants may have trouble adjusting to this change. When you notice leaf drying or curling, spray the leaves with a mist of water in the morning to add moisture. Plants that require high humidity may do better in kitchens or bathrooms.

It's also important to carefully inspect the plants for insects before they are brought in the home. You may expect to find whitefly, spider mites, thrips and even cutworms on some houseplants. Giving your plants a bath in soapy water (2 teaspoons of mild detergent to gallon of water) can remove the bigger portion of these pests. Handpicking is most effective for removal of cutworms, snails and mealybugs.

Trees and Shrubs:

There are many advantages of applying mulch around the base of your trees and shrubs this fall. In addition to helping regulate soil moisture, mulch also protects roots from winter damage and prevents mowers and string trimmer from damaging the bark of trees. However, as with most things in life, too much of a good thing can also be damaging. Often, I have seen were over-zealous landscapers pile mulch a foot or more deep around the base of tree. These 'mulch volcanoes' appear as if a tree has just

erupted from the large pile of mulch. Don't make the same mistake in your yard because excessive mulch can lead to many problems. For example, mulch that touches the trunk of trees creates favorable environments for disease and insects. Also, it provides habitat for voles and other rodents which may feed on the bark and roots of younger trees during the winter. Maintain a mulch free area around the trunk of the tree and at least six inches from the trunk to avoid these problems. Mulch should never be applied over three inches thick since thick layers may keep soil temperatures warmer and delay dormancy of trees. This delay can often lead to winter damage. Consider using organic mulches, such as pine bark, hardwood, or pine needles for mulch, since they will add organic matter to the soil as they decompose. Never use fresh grass clippings, sawdust or bark since they deplete nutrients, especially nitrogen, from the soil and may be toxic to trees.

Although native trees have existed abound in our natural landscapes, it has been fairly recent that they have begun being planted in urban landscapes. This is primarily due to availability and an under-appreciation of these trees. The most compelling reason to consider planting native trees is their ability to tolerate Tennessee weather better than many other introduced plants. Although many native trees are considered drought and cold tolerant, it is important to remember that differences exists between natural landscapes and urban landscape and unless these conditions can be reproduced, including shade density or rich organic soils, your success with natives may be variable. Nevertheless, many native trees provide wildlife benefits and interesting color, form, fruits and aroma, and should not be overlooked. If you are considering a new tree for your landscape, check out some of the following natives first.

Buckeye	<i>Aesculus</i> spp.
Silverbell	<i>Halesia carolina</i>
Yellow-Poplar	<i>Liriodendron tulipifera</i>
Willow Oak	<i>Quercus phellos</i>
Sassafras	<i>Sassafras albidum</i>
American Linden	<i>Tilia americana</i>
Serviceberry	<i>Amelanchier arborea</i>
Pawpaw	<i>Asimina triloba</i>
Fringetree	<i>Chionanthus virginicus</i>
Smoketree	<i>Cotinus obovatus</i>
Sweetbay	<i>Magnolia virginiana</i>

We are very fortunate to have so many natural woodland areas in Tennessee and perhaps there is no other time when they are more noticeable than in autumn. Fall color is a response to cooler temperatures and shorter day lengths, which signals the tree to stop producing chlorophyll, the pigment that gives the tree its green color. As the chlorophyll breaks down, we are left with the Yellows and Golds. Some trees like maples and dogwoods produce pigments that mask the Yellows and make Reds and Purples. They are intensified by sugars produced in the leaves. The average peak period is the last week in October through the first week in November. Regardless of how fall happens, it certainly is beautiful. You can add fall color to your own home lawn by simply selecting and planting trees noted for their autumn beauty. If you would like to see more Reds consider planting Dogwoods, Crape myrtle, Sourwood, Sumac and some Maples. Yellows are found in Paw Paw, American Hornbeam, American Smoke Tree, Eastern Hop hornbeam and Galaxy Magnolia. The trees listed here are considered small trees (under 40 feet tall); however even small trees need space. Consider the mature size of the tree and plant where it will have room to grow. Under a power line or 3 feet from the side of the house is usually not adequate space.

Annual Flowers and Vines:

Some annuals like pansies, violas, snapdragons and dianthus can survive mild winters in Tennessee. These can be planted in September or October and bloom to next spring. Use pine straw to give some winter protection.

Flowering cabbage and kale are slowly gaining popularity in winter gardens. These hardy annuals can be planted in the landscape in fall. After a heavy frost, when garden mums start to lose their luster, these guys can really shine. The color of flowering cabbage and kale develops when green chlorophyll begins to fade from the leaf (when temperatures drop below 50F) and is replaced with reds, pinks and whites. Flowering cabbage has smooth leaves while flowering kale is divided into fringed-leaf and feather-leaf cultivars. All three cultivars have varieties with outstanding color.

Vegetables and Herbs:

What are you going to do with all your leaves this fall? Good gardeners know that composting makes sense. One way that takes minimal time and helps you gain maximum benefit is to apply your leaves to the garden. A layer about 2 to 4 inches deep can be spread over your garden and tilled in this fall. As the leaves decompose they add enriching organic matter to the soil, increase aeration and help hold moisture. This method also limits the amount of work required when composting in bins.

Even if you don't till in leaves to your garden you should till under your vegetable debris. Dead plants left in the garden can become reservoirs on which many common garden pests, such as the cutworm, can continue to develop or overwinter. Overseeding your garden plot with Crimson Clover, Red Clover or rye can help provide additional nitrogen and organic matter. In the spring, this covercrop can be tilled in to the soil.

[Top](#)

November/December

Annual Flowers and Vines:

Thinking of building a new flowerbed for annuals next year? There are a few steps you can do now to give you success next year. Begin by selecting a proper location that has good drainage. Although you can select some perennials that like wet feet, the majority of annuals prefer well-drained soil. You can test your drainage by digging several holes 8-12 inches deep in the planting area. Fill the holes with water and allow the water to soak into the soil. Fill the holes a second time and then start counting the minutes. If the water drains in less than an hour, you have a well-drained soil. If it takes longer than 3 hours you may want to choose a new location.

All planting beds benefit from organic amendments, and if you've been spending weekends raking leaves, you'll know that unlike money, organic matter truly does grow on trees. You can incorporate these leaves (or compost, grass clippings, manure) to improve soil texture, aeration, and drainage, by tilling 3-4 inches of the organic matter into the top 6-8 inches of soil. Next spring, add an all-purpose fertilizer to the bed at a rate of 1-2 lbs per 100 sq. ft. and you are ready to plant. Most annuals like a slightly acidic to neutral pH. Soil test to see if any adjustments are necessary.

Bulbs, Corms, Roots and Rhizomes:

Amaryllis bulbs make great gifts during the holidays. But to force one to bloom during the season will require some special steps. Using a 6 to 8 inch clay pot, fill around the bulb with growing media to within ½ inch of the pot's edge. The bulb should be at least ½ or 1/3 inch above the soil line. Water to settle the soil and keep the plant around 65 degrees for two weeks to allow for rooting. After this time move to a well-light area around 75 degrees until bloom. Growth will take two to eight weeks. Once sprouted, keep the soil moist. Remove the faded flowers, but allow the stalk to remain until it yellows. Use a liquid fertilizer monthly to rebuild the bulb. After danger of frost has past, the bulb can be set outdoors where you should continue watering and fertilizing. Before the fall frost, bring the bulb back indoors and store in a cool, dark place for eight weeks without water. After this period, remove any foliage and move the bulb

into light and warm temperatures. Keep the soil almost dry until new growth begins in 2 to 8 weeks to repeat the cycle.

Fruits and Nuts:

Young fruit trees should be protected this winter from the harsh effects of Southeast trunk injury. During cold winter days when sunlight strikes the lower trunk of the tree, the temperature of the cambium tissue raises upwards to 85 degrees. When night falls and temperatures drop, so will the temperature of the bark resulting in injured or dead tissue. Trunk guards may be used as protection provided they are loose fitting, light in color, and allow for ventilation. However, latex paint may be a cheap and advantageous alternative. White latex paint can be applied to trees 2 years or older in November and December. Use a brush or sponge and apply from the ground to at least 18 inches above ground on all sides of the tree.

Strawberries benefit from mulch during winter. Pine needles and wheat straw are great choices and should be applied after the plants have been exposed to several freezes and are dormant. After growth resumes in the spring, rake mulch off the plants and into the isles to allow sunlight to reach the strawberries.

November through the early part of December is the optimum time for controlling weeds around your apples, peaches, and grapes. You should concentrate your control efforts in two zones around these fruit crops. The first zone is within the drip line of the plants and your objective should be to maintain a bare ground strip devoid of weeds, grass, or mulch. For grapes, this strip needs to be 6 feet wide (3 feet on either side of the vines). For apples and peaches the strip should be 12 feet (6 feet on either side of the trees). Keeping this area maintained will reduce competition with weeds or injury caused by voles. The second management area is between the vegetation-free strips. These should be maintained in permanent grass sod, preferably tall fescue, and selective removal of broadleaf weeds is all that is needed in this zone. Information, including herbicide rates, application requirements, use directions and precautions, can be found in several publications at your local extension office.

- For Apples, *Integrated Orchard Management Guide for Commercial Apples in the Southeast*
- For Peaches, *Southern Peach, Nectarine and Plum Pest Management and Cultural Guide*
- For Grapes, PB 1197 *Commercial Small Fruit Spray Schedules* and PB1475 *Growing Grapes in Tennessee*.

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Groundcovers and Lawns:

Watch for Fusarium Patch developing in cool season grasses. Symptoms include gray or light tan patches up to 6 inches in diameter increasing to 2 feet in diameter under snow cover. This disease occurs most often when leaves are left on the ground during times of cold, wet weather. It can spread rapidly when snow falls, especially on unfrozen ground, and remains as a cover over the infected area. Activity may also occur when daytime temperatures do not reach 60 degrees, regardless of snowfall. The solution, however, is simple. Avoid Fusarium Patch by raking up leaves, avoiding late fertilizer applications and mowing grass until growth stops.

Don't under-estimate the damaging effects of rock salt we use to de-ice walks and drives. Termed the 'white death' by some, salt can cause damage to foliage of plants, reduce vigor and may accumulate in the soil. Salt is also highly absorbent and can deprive plant roots of water. These problems can occur not only in turf, but trees, shrubs and perennials as well. Use alternatives to salt such as coarse sand, cat box

litter or CMA (calcium magnesium acetate), an environmental friendly chemical that biodegrades quickly and does not harm plants.

Fusarium Patch can be a problem in cool season grasses this winter. Symptoms include gray or light tan patches up to 6 inches in diameter increasing to 2 feet in diameter under snow cover. This disease occurs most often when leaves are left on the ground during times of cold, wet weather. It can spread rapidly when snow falls, especially on unfrozen ground, and remains as a cover over the infected area. Activity may also occur when daytime temperatures do not reach 60 degrees, regardless of snowfall. The solution, however, is simple. Avoid Fusarium Patch by raking up leaves, avoiding late fertilizer applications and mowing grass until growth stops.

Weeds like henbit, deadnettle, and common chickweed are called winter annuals. Winter annuals germinate from seed in the fall, begin development but lay semi-dormant over the winter, and complete development in the spring. They then set seed and die in the summer. Last year henbit was horrible in lawns in my county and with that many adult plants you can only imagine how many seeds have been left behind for next year. Most homeowners try to control this and other winter annual weeds when they first find them in March, but plants are often mature at this time, tougher to control, and may have already begun to set seed. If your lawn has a history of winter annual weed problems treat in November. During this time the weeds are in a young stage and much more susceptible to a post-emergence spray of 2, 4-D or Weed Be Gone. This late fall application will also help control wild garlic, another difficult broadleaf weed.

Perennial Flowers and Vines:

Dead plant debris on perennials and vines can be removed in November, however not all plants should be pruned the same way. True herbaceous plants that die back to the ground each year like daylilies, hostas and peonies will turn brown or black after frost. These can be pruned to the ground. Semi-herbaceous perennials like black-eyed susans and coneflower can also be pruned after frost but you should plan to leave 2-3 inches of foliage near the ground that will remain green through the winter. Lavender, sage and hardy rosemary are considered woody evergreen perennials and should not be pruned since they continue to grow during the winter. Ornamental grasses provide a unique winter interest in the garden and are best left for pruning in the spring.

Plants in Pots:

Poinsettias and winter fit together like the beach and summer, but how do you get the most out of your poinsettia this year? It starts with selection. Avoid plants that are yellowed or are dropping leaves. These may have been over-watered and may be inflicted with a root disease. Bringing home your poinsettia requires special attention since even short exposure to cold temperatures can be damaging. Once home, your plant will do best with 6 hours of indirect sunlight. To keep the maximum color, avoid temperature extremes associated with cold drafts or heaters. Keep the soil moderately moist by checking daily and watering until water comes through the drainage holes. Don't allow poinsettias, or any of your houseplants, to set in water since this may cause damaging root diseases.

Is it possible to celebrate the holidays without the poinsettia? These tropical plants have always helped us decorate mantles and table tops with their colorful bracts. Even though they are very showy, there are many other festive plants available at florists and garden centers to help celebrate the season.

Amaryllis

Amaryllis' explode with large red, white, pink, or orange lily-like flowers on a 1 to 2 foot stalk. They can act as a huge exclamation point in your decorations. You can purchase amaryllis as a bulb and then plant in a pot filled with well-drained soil leaving a 1/3 of the bulb above the soil line. You can also purchase a pre-potted plant at various developed stages, including full bloom. Amaryllis need a sunny, warm location (temperatures above 60F). High light intensity will strengthen the stalk and keep the plant from tipping

over. Remove the blossoms as they fade and keep the soil evenly moist. If you're giving a bulb as a gift, keep in mind the larger the bulb the more potential for flower buds.

Gloxinias

These low-growing potted plants produce velvety flowers of purple, pink, and white for up to 3 to 4 weeks on a 6 inch plant. Like their African violet relative, gloxinias need specific care. Primarily, avoid high-intensity sunlight and cold or hot drafts and avoid water on the leaves. Water from the saucer with warm water instead of overhead irrigation.

Christmas Cactus

This easy to grow houseplant is a perfect choice for the holidays. It's even named for the season. To encourage its' brilliant flowers, place your Christmas Cactus in full sun during the winter and fertilize every two weeks. Cacti are damaged most often by over-watering, so let the soil dry out between watering. One common question I'm asked comes from Christmas cactus owners who have over-wintered their plant but are not getting blooms. To induce flower bud formation, during the fall as the days get shorter, reduce the amount of water and place your cactus in a cooler room (55-60 F night temperature). This will encourage a healthy bloom-set.

Jerusalem Cherry

This colorful plant is noted not so much for blooms, but the bright round, orange-red berries that stay on the plants for months. The berries are not really cherries nor are they edible, so use caution around children. They prefer bright, indirect light and cool temperatures (50-68F). Let the soil dry out between watering and fertilize monthly to encourage a longer life span. Jerusalem Cherry is somewhat difficult to over-winter, so consider these an annual purchase.

Other holiday possibilities could include Cyclamen, Christmas Peppers, and even Paperwhite Narcissus, potted and in full-bloom.

Trees and Shrubs:

Late fall and winter planting of dormant trees and shrubs will give you more success and require less maintenance next summer. Temperatures are cooler and rain is more abundant during this time, which creates a less stressful environment for plants. In the spring, trees and shrubs will recover rapidly and become well established before summer heat and dryness increases the amount of watering and care required.

Keep in mind, some general guidelines when planting. First measure the rootball and dig a hole that allows 2 to 3 inches of the rootball to extend above the soil surface. A deeply planted tree creates a moist environment around the base of the trunk that can harbor insects and create disease problems. Dig the diameter of the hole to twice the diameter of the rootball. Backfill with existing soil or amend with a ratio of two parts existing soil to one part organic material. Backfilling with only organic material will create a flowerpot effect where roots stay in the new soil rather than growing into the hard clay. This reduces the plants ability to find water in times of drought and decreases the trees chances for survival. Use water to settle the soil and remove any air pockets that are near the roots. Apply 2 to 3 inches of mulch to the surface of the soil but not directly against the trunk to avoid vole problems. Finally inspect the tree or shrub a remove any broken or misshapen branches.

Trees are a valuable asset to our home landscape. In addition to blooms, texture, and fall color, trees also help reduce energy bills by casting shade on our homes during summer. People are often reluctant to plant large shade trees because they don't want to wait 20 years to enjoy the benefit. Selecting a fast-growing tree therefore is a primary concern. However, I would urge you to read about specific trees that are sold as "fast-growing" and any maintenance problems they may have before purchasing. Bradford Pear trees are an example of a fast-growing tree, but as most people are aware, they are very short lived, often breaking apart in storms after only 20 years of growth.

Selecting the right fast-growing tree for you starts with an analysis of your landscape. Every tree has specific environmental conditions that are needed for optimum growth. The closer your landscape meets these conditions, the better your tree will perform. Some of the conditions to consider are: temperature, sunlight, soil texture, drainage and fertility. Additionally, overhead and underground utility lines will impact the placement of a tree and it is best to avoid these structures in order to reduce future problems. Large shade trees should be spaced one-half the distance of their spread from any structure or overhead obstruction and the full width of the mature tree from the trunk of any other large growing tree. Western, southern and southeastern exposures of your home receive the most heat from the sun and are good locations to place your large shade trees. Although there are many trees that produce shade, the one's listed below are considered fast-growing and very desirable and may be a good choice for your landscape.

Bald Cypress (<i>Taxodium distichum</i>):	H 60-100 ft/W 40-50 ft
Japanese Zelkova (<i>Zelkova serrata</i>):	H 60-80 ft/W 30-40 ft
Lacebark Elm (<i>Ulmus parvifolia</i>):	H 40-60 ft/W 30-40 ft
Red Maple (<i>Acer rubrum</i>):	H 40-60 ft/W 25-40 ft
River Birch (<i>Betula nigra</i>):	H 50-60 ft/W 40-50 ft
Sawtooth Oak (<i>Quercus acutissima</i>):	H 50-60 ft/W 30-60 ft
Tulip Tree (<i>Liriodendron tulipifera</i>):	H 80-100 ft/W 30-40 ft
Willow Oak (<i>Quercus phellos</i>):	H 40-60 ft/W 30-60 ft

Around the Home:

Fall temperatures are a signal to most insects and animals to seek shelter for winter. Often your home may be a cozy and easy place to set up lodging. Exclusionary tactics are your best defense. Check for openings in eaves, unscreened attic vents, knotholes, or openings around cables that may allow squirrels or chipmunks access to attics. Even small holes are potential entrances since squirrels will gnaw to make them larger. Cover these openings with ¼ inch mesh hardware cloth.

Lady beetles and Boxelder bugs may have already made an appearance at your home. If you find them indoors, make caulk your new best friend and seal any cracks and crevices around windows and doorframes. Install weather stripping at the base of garage doors and other entrances that may allow access to these small intruders. One technique for finding entry points around your home is to turn on all your indoor lights at night and walk around your home checking for areas where light is escaping. If light is getting out, chances are pests are getting in.

If you're planning to use a fresh cut Christmas tree this holiday, follow these simple guidelines for a successful selection.

- Feel the needles. The tree's needles should be bendable. If they snap or are easily crushed, they are too dry.
- Lift the tree a few inches off the ground and bring down abruptly on the stump. It is natural for some inside needles to fall but outer needles should not drop off.
- Make a fresh cut across the base of the trunk then immediately place in water. If the base of the tree dries out, a seal will form and you will have to make a new cut.
- Once you have your tree indoors and decorated, these guidelines will help keep your tree fresh and green for many weeks.

Water your tree heavily for the first week. The tree may require from 2 quarts to a gallon of water per day. The warmth inside your house mimics spring, triggering the tree to begin growing. Without water, it will soon dry out. Sprinkling or misting the branches and needles will also help retain freshness.

Place the tree away from heat sources. Cut Christmas trees need to be fresh to maintain their healthy appearance and to help reduce fire hazards. Be sure the base of the tree is well supported and away from open flame or other heat sources.

Never use lighted candles on or near the tree, and don't leave your home with the tree lights left on. The longer the time since the tree was cut, the drier and more combustible it becomes. Remember to check electrical light cords for fraying and worn spots that could easily lead to fires.

Don't forget that many county recycling centers will accept your discarded tree and use it to make mulch. This certainly makes more sense than leaving it on the curb to go to the landfill. If you like to attract birds to your lawn, setting the tree up outside will act as haven to birds until spring.

To avoid problems with ladybeetles, boxelder bugs and spiders invading your home this winter, do some pest-proofing today. Many of you may have experienced lady beetle invasions in the past. One of the best ways to prevent unwanted invasions by insects (also rodents, birds, etc.) in the home is to deny entry. The following tips will give suggestions that not only block insects from seeking shelter in homes, but also conserve energy and increase the comfort level during summer and winter.

1. Install door sweeps at the base of all exterior entry doors. One way to check the seal around your door is at night with the lights on inside. If you see gaps of light around the seal of 1/16 inch or more from outside the house, there is a possibility for entry of insects and spiders.
2. Seal utility openings where pipes and wires enter the foundation and siding (i.e., outdoor faucets, gas meters, clothes dryer vents). Holes can be plugged with caulking, cement, steel wool or urethane expandable foam.
3. Use a quality silicone or latex caulk around windows, doors, etc. Prior to sealing, cracks should be cleaned and any peeling caulk removed for adhesion.
4. Repair gaps and tears in window and door screens to help reduce entry of flies or gnats in summer or cluster flies and lady beetles in early fall.
5. Install 1/4 inch wire mesh (hardware cloth) over attic, roof, and crawl space vents in order to prevent entry of squirrels, birds and other wildlife.

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