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Extension Gardener provides timely, research-based horticultural information. We publish four issues per year. Send comments about *Extension Gardener* to:

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Designing for small spaces

Times are changing. Homes with an acre lot aren't the norm any longer. As we get older, I'm not sure we want lawns that large anyway! But if you have a gardener's spirit, it is difficult to give up precious growing space. Whether your forte is flowers, shrubs, or veggies, it isn't easy to decide which plant to delete from the garden.

Much can be done with a small space, if you just teach yourself to think a little differently. First of all, think vertical. Vines of all kinds give wonderful color and texture to a garden, whether ornamental or edible.

When planted in containers, plants are mobile, which means they can become even more adaptable to a space. Think of shade for a hot summer's day or even a wind or noise barrier where a vine in a pot can serve double duty.

When trying to design for a small area, remember that upright and columnar plants can give the illusion of space. Using plants with a variety of leaf sizes and textures makes a bold statement and gives the impression of lots of space.



Trellised plants can make a delightful focal point, and a sitting area gives visitors a destination.

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Plants with a variety of leaf sizes and textures give the impression of more space.

©Mandy Jansen, Creative Commons, cc-by-nc-nd20

Use interesting visual elements such as paving stones or boardwalks to break up open areas into smaller individual spaces. Have one or two destinations in the landscape with a path leading to them, such as a sitting area or perhaps a water feature with a bench or a swing. This gives visitors a place to go. With a destination in sight, the walk through the garden will seem longer.

Throw in some interesting design elements along the way—such as unusual containers or a piece of artwork like a simple sculpture. These distractions will keep the eye moving from place to place and give the feeling of a much larger space.

Color is also a great way to make a garden feel bigger. Bold colors catch our attention initially, making the remaining landscape recede in the distance and thereby giving the illusion of space.

The use of dwarf plants is another way to save space. Take advantage of a wall or a structure by using some espalier plants. These don't take much room and certainly give an interesting look to a growing shrub or tree. Trellised plants can also be a delightful surprise and can add architectural interest to the landscape while using space efficiently.

A downsized garden can give just as much pleasure as a large one. Although downsizing might take a little more planning, isn't that half of the fun?

—Donna Teasley

Extension Showcase

Pollinator Garden Success

About 80 percent of flowering plants depend on pollinators, which require forage and nesting habitat to thrive.

Agriculture Agent Debbie Roos with the Chatham County Extension center created a demonstration pollinator garden in 2008 to teach visitors about creating pollinator habitat.

The garden contains 180 species of pollinator plants, 85 percent of which are native to the NC piedmont. Debbie has conducted more than 100 workshops and tours of the pollinator garden for a diverse audience of farmers, gardeners, and educators from across the state.

A recent survey highlighted the many positive impacts of the garden tours and workshops. Not only were hundreds of visitors inspired to plant their own garden, but 88 percent of visitors said they spent money eating out and shopping in Pittsboro when they came to visit the garden, contributing to economic development.

See www.carolinapollinator-garden.org for photos, plant lists, a garden tour schedule, and more.

—Debbie Roos

Pollinator garden
©Debbie Roos



extensiongardener.ncsu.edu

Smart Gardening: How to grow mushrooms



©Dannelle Cutting

From February until early April, many people start growing their own Shiitake mushrooms. Whether you choose to go with a kit or start from scratch, you can easily create an environment at home to produce Shiitake mushrooms. Most homeowners start by purchasing quality mushroom spawn, which is available from several mushroom suppliers and from some seed catalogs. Spawn is usually sold in a sawdust form or in plugs. The tools needed to create a shiitake log include a power drill, mushroom drill bit, inoculation tool, wax melting pot, and wax applicator. With these tools, you are ready to prep your logs.

The best logs are red or white oak. Cut them no more than two weeks prior to inoculation. Logs need to be no longer than 4 feet and no more than 8 inches in diameter. Drill into the logs, making holes roughly 4 to 5 inches apart. Plug or pack the holes with the sawdust mushroom spawn. Finally, seal the holes with melted cheese wax. If experimenting with multiple spawn varieties, you may want to label the logs using metal tags. After the logs are finished, find a location under a few trees or a shaded area where the logs will receive moisture. Logs are usually stacked in a crib or a lean-to. Fruiting can take six months to a year, so be prepared to wait for the fruits of your labor. For more information, see this Cooperative Extension publication: *Producing Shiitake Mushrooms* (AG-478) at content.ces.ncsu.edu/producing-shiitake-mushrooms-a-guide-for-small-scale-outdoor-cultivation-on-logs.

—Dannelle Cutting

Food Production: Tips for growing blueberries

Blueberries require well-drained, acidic soils to thrive. Whether you are about to plant blueberries for the first time or you have existing plants that are not performing to your satisfaction, consider these steps to promote success.

Test the soil. Blueberries require acidic soils with a pH between 4.5 and 5.3. If your soil has a pH higher than 5.3, you will need to lower the pH by adding acidifying organic matter, such as peat moss, pine bark, or aged sawdust.

If the pH is over 6.3, you might need to add elemental sulfur. If you have a basic soil pH, over 7.0, plant blueberries in raised beds filled with acidic planting material.

Blueberries require well-drained soils. If planted in heavy red-clay soil, common in the NC piedmont, drainage could be an issue. Adding organic matter will both lower the pH and improve soil drainage. If your plants are already in the ground, you might consider relocation, especially if the area stays wet for long periods of time.

If you leave them in a wet area, blueberry plants will not reliably produce fruit and they will eventually die. Check the pH and drainage first, and you are well on your way to a bucket full of fresh blueberries. For more information on growing blueberries, see blueberries.ces.ncsu.edu/blueberries-home-gardeners/



©Scott Schopieray

—Hanna Pettus

Pest Alert: Early season pests of apples and peaches

If you grow fruit trees, you know they can be challenging when it comes to insects and diseases. Problems can start as soon as the trees begin to break bud in the spring and continue on throughout the season. Many of the early season pests of apples and peaches can be difficult to find, but you can be sure they are there. A group of piercing-sucking insects cause cat-facing damage on peaches. The fruit damage is first noticed when oozing appears from feeding wounds made by stink bugs, plant bugs, and other insects with sucking mouthparts. As the peach grows, the cat-face eventually looks like a large crater on the fruit.



Cat-facing
©Bill Hanlin

Another insect that attacks both peaches and apples is the plum curculio. These beetles show up shortly after all the petals have fallen off the bloom. The females make a distinctive crescent-shaped scar when they lay their eggs in the fruit. In peaches, the larvae hatch from the eggs and feed inside fruit. But in apples, the larvae will develop only on apples that have dropped on the ground. One or two cat-facing insects and plum curculios can do a great deal of damage and can be really difficult to spot. The best way to control these insects is to apply an insecticide only after all of the bloom petals have dropped off. Two or three spring insecticide applications, spread a week or two apart, may be necessary to control these pests. For more information on disease and insect management in the home orchard, see www.cals.ncsu.edu/plantpath/extension/clinic/fact_sheets/index.php.

— Bill Hanlin

Lawns: Ground-nesting bees in turf

As we approach spring and the soil begins to warm, lawns become active with small ground-nesting bees. These bees are not social and do not live in colonies. Membrane bees, digger bees, sweat bees, mason bees, and leafcutter bees are examples of solitary, ground-nesting bees common in the NC piedmont. Many of these insects are more efficient pollinators than honeybees, so a few nests in a yard can provide significant benefits to gardens. Other native bee species, also important pollinators, nest in hollow stems, wood, and other habitats.

Ground-nesting bee activity typically occurs in March and April. Most activity at nest sites in early spring is that of males looking for female mates. Males cannot sting. Females spend the day foraging for nectar and pollen and excavate nesting burrows in the evening. Burrows have a small opening with small mounds of excavated soil appearing around each nest opening. Each hole belongs to an individual female. When bees are numerous, many holes may be present, creating a city-like aggregation.

These bees prefer nesting areas with morning sun, low organic matter, and bare ground or sparse vegetation. They usually avoid damp soils. Heavy watering or irrigation during the nest-building period can discourage activity, but dense turf is the best discouragement to nesting. Ground-covers and heavy mulches can also be considered for bare areas where grass will not grow.

These solitary ground dwellers are not aggressive and should not be destroyed. A person may be stung if handling one roughly, or if one was accidentally caught in clothing. Mowing and outdoor activities can be continued with little problem. The faint of heart may prefer to avoid an area for the four to six weeks of nesting activity.

For more information on native bees, see grad.ncsu.edu/news/2015/07/protect-and-save-native-bees-student-offers-tips/.

— Colleen Church

Tips & Tasks

It is time to begin preparing for the summer garden so a bountiful harvest can be enjoyed. Here are some tips to help you get ready:

- Choose your garden location. Garden sites should receive full sun, be as level as possible, and be well-drained.
- Take a soil test to determine your soil's condition. Vegetables do best in a soil with a pH of 6.5. A pH that is too acidic or too basic may prevent vegetables from taking up much needed nutrients.
- Remove or till-in garden residue to remove any fungus or bacteria spores that may cause disease in this year's crop. Till when the soil moisture is such that the soil crumbles through your fingers. Tilling when it is too wet will yield hard-to-manage clods.
- If recommended based on your soil test, add lime if not previously done in the fall. Lime and phosphorus work best if tilled into the seedbed.
- Add organic matter to build up the soil. Compost, leaves, and bark mulches are beneficial.
- Lay out garden rows and select vegetables for planting.
- Shop for seed with good disease resistance. This will reduce spray usage later.
- Gather needed materials, such as fertilizer, stakes, string, and garden tools, to have on hand for planting. Staking cucumbers, tomatoes, and beans helps to keep vegetables off the ground, which prevents disease and keeps vegetables clean.

Once these tasks are completed, wait until the last frost and begin planting. For more information, see gardening.ces.ncsu.edu/plants-2/vegetables-2/.

— Joanna Radford

Helping You Grow

Horticultural Science Summer Institute

High school students are invited to spend a week discovering the many facets of the Department of Horticultural Science at NC State University through the Horticultural Science Summer Institute (HSSI), July 10 – 15, 2016.

HSSI students will have hands-on opportunities designed to connect students to the many career opportunities within horticulture. Students will experience breeding fruits and vegetables, propagating a diverse selection of woody ornamentals, lengthening the life of cut flowers, learning sustainable production and design practices, and delving into practical tools that enhance our understanding of plants.

Students will visit innovative NC farms, markets, greenhouses, and gardens. Youth will also explore decision-making, leadership development, team-building, and living in a campus residence hall. The camp provides a forum for students across the state (and country) to broaden their interest and knowledge about horticulture.

Any high school student with an interest in a horticultural career is encouraged to apply. The cost for the week is \$550 and includes lodging on campus, most meals, field trips, workshop materials, and entertainment. Apply online at www.go.ncsu.edu/hssi.

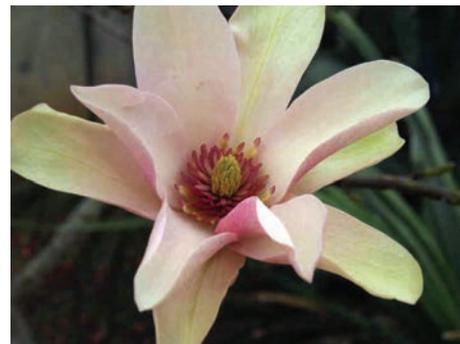
—Liz Driscoll

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Plant Watch: New magnolia varieties

If you want to break away from the traditional white magnolia flowers, look no further than varieties such as 'Coral Lake', 'Spectrum', 'Lois', and 'Royal Robes'.

- 'Spectrum' is a fast-growing variety but stays short, reaching 30 feet or so at maturity. It is bare in the winter. The bright-pink flowers in late spring, however, make this one a must-have.
- 'Coral Lake' is an interesting variety that has been called a "breakthrough in color for magnolias." This variety has petals streaked with yellow and pink, giving the appearance of changing colors throughout the day as the light changes.
- 'Royal Robes' reaches approximately 15 feet, making it ideal for hedges. This one is relatively slow-growing and may not fill in for several years. The deep-burgundy flowers in early spring make it well worth the wait.



Magnolia 'Coral Lake'
©JC Raulston Arboretum

— Sam Marshall

Incredible Edibles: A carrot of many colors

Carrots (*Daucus carota*) are an easy-to-grow cool-season crop. With so many varieties to choose from, a gardener can have a rainbow of carrots—red, purple, black, white, yellow, and the traditional orange. Plant seeds in late winter as soon as the ground is workable, in soil that is well-cultivated and free from rocks. Seeds should be planted with ¼-inch spacing in rows 12 inches apart. Keep the seedbed moist as carrot seeds are often slow to germinate. Once the seedlings are 1 to 2 inches tall, thinning to a 2-inch spacing is necessary to ensure adequate room for root development. Because the desirable carrot root is a storage structure, fertilization and water are important. Complete a soil test for recommendations, and water to a 6-inch depth. Weed the area often. Carrots do not compete well with others but are virtually insect- and disease-free. Pick a color, and plant the rainbow!

—Kerrie Roach

Sustainability: Recycling plastic plant containers



©NC Agricultural Recycling Program

Recycling plastic pots, packs, and flats in which plants are grown is not always as simple as recycling drink bottles and food containers. Plant containers are made from a different type of plastic than most food and beverage containers—a type of plastic few municipal recycling centers accept. But there are local options for keeping these plastics out of the landfill.

- **Reuse them at home.** You can reuse plastic pots for your own gardening. Larger pots are particularly useful for growing vegetables. Save four- and six-packs to start seedlings or root cuttings. Hanging baskets can be replanted with new plants each year. Wash and sanitize pots before reusing by first scrubbing off any soil or plant debris and then soaking the pots for at least 30 minutes in a 10 percent bleach solution.
- **Take them to Lowe's.** Nationwide, all Lowe's Home Improvement stores accept plastic plant pots, flats, and packs for recycling. Look for the recycling rack in the outdoor garden center.
- **Take them to a nursery.** A local nursery may be able to reuse plastic pots if you return them clean and in good condition. Call first and ask if the nursery is willing to take back pots and what sizes are needed. Most nurseries will gladly take back larger pots in which perennials, trees, and shrubs were grown. But many nurseries are not able to reuse six-packs or pots in which annuals or vegetables were grown. Your best option for recycling these is Lowe's.

To learn more about agricultural plastics recycling in North Carolina, visit ncagplastics.org.

—Charlotte Glen