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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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Stemming the tide of invasive species

Invasive species are nonnative organisms that cause or are likely to cause economic or environmental harm, or harm to human health. Invasive plant species pose a significant threat to our natural communities, ecosystems, agriculture, and economy.

Invasive species generally share one or more characteristics that give them a competitive advantage in the environment. These traits include high reproduction rates, extended life spans, high dispersal rates, adaptability to a wide range of habitats, high genetic variability, and a lack of natural controls. Invasive plants force out native plants, in many cases creating a monoculture in the ecosystem and limiting overall biodiversity. Invasive plants can contribute to erosion, eliminate native plants that wildlife depend on for food, increase the frequency and risk of wildfires, reduce agricultural production and property values, and significantly reduce the recreational value of forests, streams, lakes, and rivers.

Invasive species may be introduced by accident or on purpose. One way some invasive plant



Japanese honeysuckle (*Lonicera japonica*)
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species have been introduced to North Carolina is as ornamental plants. Just because a plant is available for sale doesn't mean it's not invasive. Many invasive plants can be legally purchased in North Carolina at garden centers, nurseries, and through online resources. Examples include callery or Bradford pear (*Pyrus calleryana*), privet species (*Ligustrum sinense*, *L. vulgare*, *L. japonicum*, *L. lucidum*), common nandina (*Nandina domestica*), princess tree (*Paulownia tomentosa*), Japanese honeysuckle (*Lonicera japonica*), English ivy (*Hedera helix*), Chinese and Japanese wisteria (*Wisteria sinensis*, *W. floribunda*) and water hyacinth (*Eichhornia crassipes*).

We can all help stem the tide of invasive plants by learning how to identify and control them and by removing them from our properties. Invasive species should be replaced with suitable alternatives, such as native species and nonnatives that have been proven to be noninvasive. Many resources are available to learn more about invasive plants. Organizations such as NC Cooperative Extension, the NC Native Plant Society (ncwildflower.org) and the NC Botanical Garden (ncbg.unc.edu) are excellent resources for information on both invasive plants and recommended alternatives.

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Japanese privet (*Ligustrum japonicum*)
©J.H. Miller & T. Bodner, Southern Weed Science Society, Bugwood.org

Extension Showcase

Sold on shiitake

In January and February 2015, the Brunswick County Extension Center hosted two shiitake workshops for hobby growers interested in growing mushrooms.

The workshops were well-attended, with over 40 hobby growers participating.

Participants of the workshop each took home a log provided by Cooperative Extension that they had inoculated with spawn.

Jane Kulesza, a first-time grower and 4-H volunteer, was excited about the hands-on learning she gained from the workshop: "It is wonderful to see such a diverse group of people come together for the workshop and learn something new and interesting. With workshops such as these, Cooperative Extension is becoming appealing again to people who work during the day. I am thrilled to see such a great turnout."

Of the participants, at least five now plan to begin commercial production and have already started growing mushrooms with free spawn provided by NC A&T University.

After the initial time and labor investment, mushroom farming can be a viable part of a diversified farm business, with some farmers generating \$3,000 to \$4,000 revenue from their harvest each year.

— Sam Marshall



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Smart Gardening: Ordering plants online

With thousands of sources available, ordering plants online and through mail-order catalogs is a growing trend. Colorful and polished pictures of blooming plants may catch the eye, but remember that pictures can be deceiving. The pictures shown, especially those of flowers with multiple hues, probably don't reflect the true color of the plant. Color can also be exaggerated in pictures.

Watch out for bargain prices and scams, and make sure the selection is suitable for the climate zone in which you live. Also make sure that the delivery time matches optimal planting dates. For example, a live plant that is best planted in April should not be shipped in February. Reputable companies may limit shipping to certain times of year.

When ordering, beware of companies with only a post office box mailing address and no customer service number. Call the company if there are questions or concerns about the ordering process. It is a common practice for mail-order companies to substitute a similar item for one that

is sold out. Usually there is a place on the order form to indicate if substitutions are desired. If there isn't, write clearly on the order that no substitutions are to be made.

Keep a record of purchases. Make copies of all order forms, and if ordering by phone, get an order number that can help facilitate future communication with the company regarding an order. Last, make sure to understand the company's guarantee policy. Usually there is a cutoff date by which a company must be notified of problems or plant failures. It is essential to inspect plant material when it is received. Be ready to hold the company to what it promised if the plants are unsatisfactory.

— Katy Shook



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Food Production: Raised bed gardening

Raised beds are a good solution for problem areas because they give gardeners the chance to amend the soil or to create new soil for the bed. Raised beds allow gardeners to grow vegetables in areas with poor soil or inadequate drainage. By raising the soil 6 to 12 inches above ground level, raised beds increase drainage and allow soils to warm up quickly in the spring, speeding seed germination and transplant growth.

Succession planting helps make efficient use of space. For example, quick maturing cool-season crops such as lettuce or radishes can be planted in early spring. The same bed can be replanted with warm-season crops such as beans, cucumbers, or tomatoes after the cool-season crop is harvested.

A raised bed is very productive if space is used efficiently. Using the space within the bed efficiently will normally result in higher production per square foot than in row type planting. Dense planting techniques are well-suited for raised bed planting and can reduce weed seed germination. Block planting can be used to optimize yield, with 24-inch centers used for tomatoes and squash. Peppers should be spaced at 15 inches. Medium-sized vegetables like snap beans and peas can be planted 4 to 6 inches apart, while carrots and radishes are spaced 2 to 3 inches apart.

Trellises, stakes, caging, and fencing can be used to increase plant density by growing plants vertically. Remember to allow spacing from the edge of the bed when planting. Raised beds may need more attention than vegetables grown in rows as dense plantings require more frequent watering.

— Peg Godwin



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Pest Alert: Kudzu bugs

A fairly new pest, the kudzu bug draws plenty of attention when active near homes. The kudzu bug, *Megacopta cribraria*, has many names including lablab bug, bean plataspid, and globular stinkbug. Mature kudzu bugs are somewhat oval and brownish to olive-green colored with brown speckles. Related to the stinkbug, they emit a foul odor when crushed or threatened. Kudzu bugs are notable in early spring. Warming temperatures signals the overwintering adults to start moving.

Kudzu bugs are also prominent in mid to late fall, when shorter days and cooler temperatures prompt the bugs to seek winter shelter, including your home. Research shows they prefer lighter colored homes, especially white, when seeking places to overwinter.

The home invaders can be swept or vacuumed, placed in a pail of soapy water where they will drown, and then discarded. If vacuumed, the bag should be immediately discarded or sealed in a plastic bag and frozen for several days to kill the insects. Crushing the pests will stain fabric and smell unpleasant.

In the garden, kudzu bugs feed on kudzu, wisteria, soybeans, and other legumes. Damage to ornamentals has not been reported. If chemical control becomes necessary, contact your county Extension center for advice on which products to use. To minimize impact on bees, avoid spraying plants in bloom and only apply after 3:00 p.m. when most bees have stopped foraging for the day. Always read and follow the label carefully when applying any pesticide.

— Mack Johnson



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Carolina Lawns: A healthy lawn starts with maintenance

Regardless of the type of lawn you have, turfgrass is healthiest and most attractive when it is properly maintained. Proper maintenance begins with mowing at the correct height, which varies for each species of turfgrass. Common turfgrass species and their recommended mowing heights are as follows: Bermudagrass, 1 to 1.5 inches; centipede, 1 to 2 inches; St. Augustine, 2 to 3 inches; zoysia, 1 to 2 inches; and tall fescue, 3 to 4 inches.

Keep mower blades sharp. Lawn mower blades should be sharpened at least once a year. Each time the lawn is mowed, the grass blades are being cut. With a sharp mower blade, this cut seals quickly, keeping out troublesome fungi. A dull mower blade tears grass blades. This type of wound heals slower and gives fungi an opportunity to enter the blade and cause disease. Also, a lawn of ragged, torn blades does not look as appealing as a lawn with neatly cut grass.

Water intentionally. A lawn will give clues when it needs water. If footprints are left when you walk across the lawn or the lawn has a purple hue in late afternoon light, the grass likely needs water. Grass blades wilt by rolling inward, creating a drinking-straw-like appearance. This is another clue your lawn should be watered. Turfgrass needs approximately 1 inch of water per week, ideally split between two half-inch applications.

A common problem for homeowners who use irrigation systems is overwatering. Make sure your irrigation system is functioning properly and consider adding a rain shutoff sensor. Inspect sprinkler heads regularly for damage and proper coverage.

— Sam Marshall

Tips & Tasks

- Fertilize spring-blooming bulbs just as new growth emerges. If your bulbs have already flowered, wait until November to fertilize. Summer-flowering bulbs can be fertilized when shoots emerge.
- March is an excellent time to relocate plants or transplant container grown plants. Fall-blooming perennials can be divided now. Provide adequate water to new plants and replanted divisions throughout the spring and summer to ensure they establish well.
- Fertilize perennials and annuals in April with a slow-release fertilizer.
- Transplants of cool-season crops such as broccoli, cauliflower, and cabbage can be planted in March. Asparagus beds should be established by the end of March.
- Lettuce, mustard, radishes, turnips, and spinach can be started from seed through the beginning of April. Plant potatoes by late March.
- Wait until after the last frost to plant warm-season crops such as tomatoes, cucumbers, squash, and peppers. Be prepared to protect these crops if necessary in the event of late frosts.
- Heat-loving crops such as okra, eggplant, sweet potatoes, and watermelons perform better if you wait an extra couple of weeks for soil and air temperatures to warm.

— Lisa Rayburn

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Helping You Grow

Extension's plant database

Trying to find the right plant for your yard? Extension's Plant Database can help. Available online at plants.ces.ncsu.edu, the database allows you to quickly and easily search for the perfect plant among its 2,793 entries. Search parameters include plant type, mature height, sun or shade tolerance, attraction to wildlife, as well as flower and leaf color. Each plant profile features images, information about where the plant is from and where it will grow, as well as propagation tips. Pick the right plant the next time you plant—the information you need is only a click away!

— Charlotte Glen

Stemming the tide of invasive species

(continued)

Another excellent resource is the NC Invasive Plant Council (NC-IPC). The NC-IPC (nceppc.weebly.com) provides education and solutions for controlling a wide variety of invasive plants.

This year, NC-IPC is hosting the Southeast Exotic Pest Plant Council annual conference with attendees representing eight states. The conference is being held at the NC Botanical Garden, May 26 – 28, 2015, and is a great opportunity to learn more about invasive plant issues in the southeast United States. For more information on registration, agenda, and field trips, check the NC-IPC website.

— Jim Burke

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New from NC State: *Exochorda* 'Blizzard' pearlbusch

'Blizzard' pearlbusch was bred at the Mountain Horticultural Crops Research & Extension Center in Mills River, NC, and is the progeny of three different species of *Exochorda*. The cultivar name 'Blizzard' comes from the larger than normal flowers that cover the bush in spring. When fully mature, this deciduous shrub reaches a height and width of 4 to 5 feet. As with other spring-flowering shrubs, 'Blizzard' pearlbusch may be pruned in the spring immediately after flowering if needed.

'Blizzard' pearlbusch prefers to grow in well-drained acidic soils but is very adaptable to soil type. For best flower production, plant this shrub in full sun. It will also grow in part shade, though flowering will be reduced. 'Blizzard' pearlbusch is hardy in USDA hardiness zones 4 – 8, and adapted to grow throughout North Carolina.

— Shawn Banks



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Incredible Edibles: Edible flowers

Want to liven up your salads and other dishes? Add edible flowers. The blossoms of many plants are edible and can be used raw to garnish a wide range of recipes. Many edible flowers have a mild flavor. Examples include pansies, violas, sweet peas, tulips, gladiolus, and dianthus. A few flowers are known for their intense flavor. One example is nasturtium, an annual vine with large, brightly colored red, orange, or yellow blossoms and a sharp, peppery taste. Nasturtiums are easy to grow from seed. When sown directly in the garden after the last spring frost, nasturtiums germinate quickly and grow vigorously until the heat of summer sets in. Toss their blossoms in salads to add color, fragrance, and zesty flavor. Learn more about growing edible flowers from the new online Extension fact sheet, *Choosing and Using Edible Flowers*: go.ncsu.edu/edibleflowers

— Charlotte Glen

Sustainability: In the lawn

Lawn and *sustainable* are two words not commonly used together. Most people think of lawns as a high input landscape feature. With thought and persistence, it is possible to reduce inputs and create a sustainable lawn. Here are five ways to move your lawn toward sustainability:

1. Reduce the amount of fossil fuels used in maintenance. Replace your gas mower with an electric, or consider a manual reel mower if you have a Bermuda, zoysia, or centipedegrass lawn. Keep blades sharp! Sharp blades equal an efficient mower.
2. Reduce pesticide use by getting down and dirty. Bend your knees, kneel, grab weeds at the base ... and pull! It sounds silly, but you can reduce chemical use by pulling weeds before they take over the lawn.
3. Use a mower that mulches clippings and leaves them on the lawn. By removing clippings, you are actually throwing money away. Clippings return nutrients to plants and reduce the need for additional fertilizer inputs.
4. Follow a proper maintenance schedule. Check out www.turffiles.ncsu.edu for a calendar specific to your turfgrass. Watering, fertilizing, and liming at the wrong time or in the wrong amount significantly increases inputs.
5. Reduce watering. Most turfgrass species need only 1 inch of water per week, and that only during the growing season. Use a rain gauge to measure rainfall, and water only when needed. Use a low-angled spray sprinkler instead of an oscillating head to reduce the amount of water lost to evaporation.

Lawns are not typically considered part of a sustainable landscape. But with a few modifications, your lawn can be on the road to sustainability.

— Kerrie Roach