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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](http://ncwildflower.org)) and the NC Botanical Garden ([ncbg.unc.edu](http://ncbg.unc.edu)) are excellent resources for information on both invasive plants and recommended alternatives.

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Japanese privet (*Ligustrum japonicum*)

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## Extension Showcase

### Stokes Master Gardeners a big hit at King Farmers' Market

Stokes County Extension Master Gardeners are generating lots of excitement and goodwill for Cooperative Extension and the Extension Master Gardener program at the farmers' market in King, NC. At the market's request, Master Gardeners staffed an "Ask a Master Gardener" information booth throughout the 2014 market season, answering general gardening questions from market goers while also providing assistance with the market's annual tomato tasting contest.

Stoke County Extension Master Gardeners also help with the market's weekly drawing for a free basket of fresh, high-quality produce. The volunteers assist market vendors with setup and takedown of vendor booths and provide any additional support needed to ensure market vendors have the most opportunity to do what they do best—promoting and marketing their products. "The Extension Master Gardeners have been a great help to us here at the market," beamed Harvey Moser, market president. "We would like for them to be here every week."

The Stokes County Extension Master Gardeners have formed a subcommittee to handle volunteer participation at the market in 2015. For the coming year, plans call for expanded involvement with volunteers sponsoring one special event at the market each month.

—Randy Fulk



extensiongardener.ncsu.edu

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## Smart Gardening: Container gardening

A container garden can be defined as a small garden in a pot within a larger environment. The container can be anything that holds enough soil to sustain plant growth while draining excess water to ensure plant survival. The possibilities are endless, so look through your old junk and see if you can transform something into a magical container.

The soil you choose should contain no actual soil. "Soilless" media consist of composted organic and inorganic materials and are designed to have good water holding and draining properties. Potting soil, as it is often called, is free of insects, weeds, and disease. Unless the mix clearly states nutrients are present, add fertilizer. Soilless media dry out faster than native soils, so plants must be watered frequently. Before deciding on plants, think about location. Consider conditions such as sun exposure and wind. Do you have a theme that will influence your choice, such as



© Michelle Wallace

herbs or veggies? Also consider your timeline—is this a seasonal garden or one that will last for many seasons? A few design principles can help with the creation of a balanced container garden:

- Choose a thriller—an upright plant that draws attention upward. This plant has long lasting, aesthetically pleasing textural qualities.
- Choose a filler—this plant fills the central area of the container and draws your attention to the middle of the display. Generally colorful, this plant ties the colors in the composition together.
- Choose a spiller—this plant cascades over the sides of the container drawing attention downward, often covering up the pot.

Container gardens can be moved or changed out as needed. For information about edible container gardening, visit [go.ncsu.edu/containeredibles](http://go.ncsu.edu/containeredibles).

— Michelle Wallace

## Food Production: Organic gardening

Growing fruits and vegetables organically is more challenging than most realize, and there are lots of misconceptions about what it means to grow organically. First, growing organically does not necessarily mean *not* using fertilizers or pesticides. Organic gardening principles emphasize the need to build organic matter in soils by incorporating compost and growing cover crops. Organic matter improves soil structure and helps soils hold moisture and nutrients. Even so, organic gardens often need added nutrients. Organic fertilizers made from animal manures and other natural sources can be purchased at many gardening stores.

There are many pesticides labeled for use by organic growers. And like conventional pesticides, some are more reliable than others. Organic pesticides for insect control include products containing insecticidal soap, horticultural oil, spinosad, or *Bacillus thuringiensis* as the active ingredient. As with any pesticide, read and follow all label directions when using organic pest control products.

Crop rotation is vitally important—refrain from planting crops from the same plant family in the same spot year after year. Good rotations may encompass a three- to seven-year cycle. Scouting for pests and diseases is essential and should be completed at least biweekly. Incorporating flowering plants to attract beneficial insects can help reduce pest populations.

Weeds can be the most difficult problem to control organically, and gardeners typically spend more time on weeding than on any other task. Most organic gardeners rely on mechanical control, such as hand pulling and hoeing, to control weeds. There are a few specialized weeding tools that can be used to extract weeds along with their roots.

— Danelle Cutting



## **Pest Alert:** Leaf galls

In the spring you have probably noticed unusual growths and bumps on leaves, especially on maples and oaks. These protective structures are called *leaf galls*. They form when an insect or mite tricks the plant into protecting the pest's developing offspring. Leaf galls are a type of abnormal plant growth, typically caused by plant growth-regulating chemicals injected by the insect during egg-laying or produced by the developing insect. Usually the growth is so distinct that the insect or mite can be identified by the resulting gall.

More than 2,000 different types of gall-forming insects occur in the United States. Galls can form on any part of the plant, not just leaves. Most are formed by gall wasps, gall midges, or gall mites. Less common gall producers are aphids, psyllids, and gall flies. Some galls are formed by bacteria, fungi, and nematodes.

A leaf gall associated with white oak leaves is caused by the small wasp *Neuroterus saltarius*. The female's ovipositor inserts an egg into the leaves. A gall forms on the leaf's underside around the developing wasp. Once the gall has developed, it drops to the ground, where the insect completes development. Two common galls found on maples are eye spot leaf gall and bladder leaf gall—both caused by mites.

Although leaf galls don't cause problems and insect galls can be ignored, some bacterial and nematode galls do cause problems. If you observe weak growth or stress in a plant with galls, try to identify the gall and find the right treatment. Your county Extension center can help. Otherwise, just enjoy the wonder of Mother Nature.

— Seth Nagy



© Seth Nagy

## **Carolina Lawns:** Caring for tall fescue

Ask gardeners about the start of spring, and they will likely reminisce about the abundant blossoms of April and May. For tall fescue lawns, however, those initial spring chores really need to occur earlier than most of us consider springtime. In fact, the turf scientists at NC State have found it's best to make your spring fertilizer application by mid February. A second application in March is optional, though all applications should be made before March 15.

If you wait until April or May to fertilize, you are encouraging tall fescue to keep growing into the warmer months when it really needs to slow down and take a break. This sets your lawn up to require more watering and increases susceptibility to fungal diseases.

Weed control is another chore that should be completed early. All of those broadleaf weeds that bloom in April, such as chickweed and henbit, germinated in the fall or early winter. All winter they have just been sitting there, lying low and waiting for slightly warmer weather to shoot up and bloom. By April they are tougher to control and have likely already dropped seed for next year. So the vicious cycle continues, unless you remembered to treat by late February.

Crabgrass preventer, however, can be effective if applied right up until the dogwoods bloom. These pre-emergence herbicides are necessary only if you expect a crabgrass problem—that is, you found some in the yard last summer.

What does that leave for late spring tall fescue care? Pretty simple, really. Mow at the right height, around 3 inches, and irrigate once a week if it doesn't rain. For complete details, download the Tall Fescue Maintenance Calendar from NC State's TurfFiles website: [www.turffiles.ncsu.edu](http://www.turffiles.ncsu.edu).

— Paul McKenzie

## **Tips & Tasks**

Spring is a gardener's busy time of year! Along with soil preparation, weeding, and mulching, spring is a great season to plant perennials, shrubs, trees, and spring vegetables.

- Find a quality compost or mulch source. For new gardens, loosen soil and add compost before planting.
- In established beds, top-dress with 3 to 4 inches of mulch to reduce weed germination and add organic matter. Remove weeds before mulching! Perennial weeds and Bermudagrass will grow right through it.
- If adding compost, mix in a 1- to 2-inch layer and then soil test! After April 1, soil testing is free at the NCDA&CS Soil Lab. The soil test report will indicate if you need lime or fertilizer.
- Always choose healthy plants—bargain plants may introduce pest problems.
- Dig up, divide, and replant your perennials now so they will have enough time to reestablish before summer.
- Shrubs and trees can be planted in spring, but do not plant too deeply! The soil will settle, and you don't want the flare of the trunk below soil level.
- Mulch new plantings and give them water during summer dry spells.
- Plant spring vegetable transplants or direct seed those that like cool weather, such as peas and radishes.
- Start warm-season vegetables by seed if you have a sunny indoor spot.

— Jeana Myers

## 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

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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