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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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Tried-and-True: The Chaste Tree

Vitex or chaste tree (*Vitex agnus-castus*) is the perfect shrub or small tree for gardeners who are looking for something that thrives in unforgiving conditions, particularly in sandy soils in full sun. Chaste tree originated in China and India and was first introduced into North America in 1670. Today this tree is still cultivated—mainly because of its wide range of medicinal and herbal uses. Interestingly, the “chaste” part of the common name comes from the medieval belief that the potions made from the berries helped monks maintain their vows of chastity. Chaste tree has also served as a replacement tree or shrub for gardeners who yearn for the lilacs they had to leave behind when they moved south of the Mason Dixon line.

Growing conditions for vitex are clear: well-drained soil, full sun, and plenty of room. If your site meets those conditions, simply plant vitex and watch it thrive. Vitex can even be grown in partly shaded areas, but flower production and growth will not be as prolific as in full sun. Once established, chaste tree makes an excellent specimen plant for your xeric garden. Chaste tree is also salt-tolerant, so it is a great addition in areas near the ocean that receive salt spray.

In the past, gardeners without a lot of space could not grow chaste tree. Some cultivars, such as ‘Cooke’s Blue’, ‘Cooke’s Pink’, or ‘Cooke’s Purple’, could grow as tall as 25 to 30 feet with the same spread. But recent introductions are appealing to gardeners with smaller spaces. A new variety introduced in 2015, ‘Blue Diddley,’ is a Proven Winners cultivar with lavender-blue flowers. This cultivar spreads from 3 feet to 6 feet high and just as wide.



Vitex requires well-drained soil, full sun, and plenty of room to thrive. ©Elizabeth, CC BY-NC-ND-4.0



‘Blue Diddley’ offers lavender-blue flowers and a 3-foot to 6-foot spread.

Courtesy of Proven Winners, www.provenwinners.com.



‘Blushing Spires’ has soft-pink flowers and reaches small tree size. ©Dawe’s Arboretum, Newark, Ohio.

‘Blue Puffball’, a 2016 introduction, is a compact, densely-branched shrub with a maximum height and spread of 3 feet. The spot-resistant leaves are shiny and bluish-green. ‘Delta Blues’ is a larger cultivar from First Editions that has more compact flower spikes and a smaller profile of 8 to 10 feet high at maturity. This variety works well as a container tree for summer color. If you want something other than purple or blue flowers, try ‘Blushing Spires’, a cultivar with soft-pink flowers and the potential to reach 15 feet by 15 feet at maturity. Its variety of growth habits and flower colors, as well as its tried-and-true ease of care, pleasant aroma, and benefit to pollinators, means that chaste tree deserves a spot in your garden.

Extension Showcase

How to become a beekeeper

Did you know that it takes 12 visits from a honeybee to a cucumber flower to develop a perfectly shaped cucumber? Honeybees are an integral part of the local ecosystem and are one of the most important insect pollinators in the state. They are also the state insect of North Carolina.

Without honeybees, our diets would be much different. According to NC State's Department of Entomology, honeybees directly account for approximately \$96 million in North Carolina's annual fruit and vegetable production. I'd say that's something to be buzzing about!

The North Carolina State Beekeepers Association is the largest and most active association of its kind in the country with 4,000-plus members statewide.

There are local chapters throughout the state, with many located here in eastern North Carolina. These chapters offer beginner beekeeping classes each spring for individuals who have an interest in honeybees.

Upon completion, each participant has the option to become a certified beekeeper. The classes are part of the Master Beekeeping Program, which serves to provide valuable information about beekeeping through various outreach services.

For more information on the Master Beekeeping Program and your local beekeeping chapter, visit the association website at ncbeekeepers.org or contact your local NC Cooperative Extension center.

—Colby Griffin

Smart Gardening: Less toxic insecticides

With proper plant care, you can minimize damage from insects and reduce plant stress. Less stress can equal fewer insect problems, but sometimes insects can still become a problem.

Insecticidal soaps are relatively nontoxic to humans, other mammals, and beneficial insects. As insecticidal soaps are contact killers on soft-bodied insects, be sure to spray the top and bottom of the leaves and all stems. Repeated applications may be needed for best results.

Horticultural oils smother soft-bodied insects on contact. The type of oil purchased depends on when you plan to apply it. Summer or superior oil is applied in the summer or warmer months. No matter which horticultural oil you use, do not apply if the temperature is above 90°F or if rain is predicted within 24 hours.

Botanical insecticides are made from plant extracts. Natural toxins from the extracts act as the insecticide rather than synthetic chemicals. Three of the common botanical insecticides are neem oil, azadirachtin, and pyrethrins. Neem oil is derived from the seeds of *Azadirachta indica*, a species in the mahogany family native to south Asia. Neem oil kills primarily by smothering, not unlike horticultural oils. Neem oil is used to control many insects, including leafminers, whiteflies, thrips, caterpillars, aphids, mealybugs, spider mites, scale crawlers, and beetles. Neem oil is more effective on immature insects. Azadirachtin is the active ingredient in neem extracts, and acts by inhibiting feeding, molting, and egg-laying. Pyrethrins are derived from pyrethrum, a relative of chrysanthemums. Pyrethrins have short residual activity but can be harmful to beneficials. Be sure not to confuse pyrethrins with pyrethroids, which are synthetic insecticides that are chemically analogous to pyrethrins.

—Shannon Newton



Pyrethrum (*Chrysanthemum cinerariifolium*). ©Whitney Cranshaw, Bugwood.org, CC-BY-NC 3.0

Food Production: Selecting blueberries for your garden

Blueberries are among the easiest fruits to grow. Along with fresh fruit in summer, blueberry shrubs also provide great red foliage color to the autumn garden. Early spring is the time to make plans for planting blueberries. A key point to remember about blueberries is they require more acidic soils than other plants. An NCDA&CS soil test can tell you the soil pH and how to lower the pH to the 4.0 to 5.3 range that blueberries require.

So many cultivars are available that the number of choices can quickly become overwhelming. Be sure to plant two or more different cultivars. Weather conditions vary year to year, with variable late-spring frosts and other conditions that can cause cultivars to perform differently. Planting more than one blueberry cultivar will help you avoid putting all your berries in one basket, so to speak. Also consider selecting cultivars with different harvest times to extend your season.



Rabbiteye cultivars perform well in home gardens.

©Bill Cline, NC State University

The rabbiteye group of cultivars are recommended for home gardeners because they are tough plants and drought-tolerant. Rabbiteye blueberries are harvested June through July. Cultivars of rabbiteye blueberries recommended for the NC coastal plain and sandhills include early season ones such as 'Climax' and 'Premier', and early to midseason ones such as 'Tifblue', 'Ira', and 'Yadkin.' 'Powderblue' is a midseason to late-season cultivar that performs well in our climate.

As you make plans for your gardens in 2017, consider planting a few blueberry plants. Give the plants a couple of years to grow and mature, and you will soon be enjoying fresh fruit grown in your backyard. For more information on growing blueberries, see the NC State Blueberry Portal: blueberries.ces.ncsu.edu.

—Jessica Strickland

Pest Alert: Crape myrtle bark scale

A new and potentially serious pest is making its way across our state and onto the trunks and limbs of our beloved crape myrtles.

The crape myrtle bark scale (CMBS), a native of Asia, was first identified in Texas in 2014 and was noticed in North Carolina in early 2016. CMBS is the only known scale insect to feed on crape myrtles. It is important that you begin monitoring crape myrtles in early spring and through the growing season because populations of CMBS can build quickly if left unchecked. Signs of infestation include black sooty mold on the bark of trees, gradual decline in flower production, gradual decline in the health of the tree, or all of these signs.

Crape myrtle bark scale infests in areas where old pruning cuts have been made or in branch crotches. As populations build, CMBS will move outward on tree limbs and trunks.

This pest can be difficult to control, and soil drenches or ground injections of an appropriate systemic insecticide are the preferred methods for control at this time. For more information, visit the NCDA&CS: ncagr.gov/PLANTINDUSTRY/plant/entomology/documents/CrapeMyrtleBarkScalePestAlert.pdf.



Crape myrtle bark scale. ©S.D. Frank, NC State University

— Sam Marshall

Lawns: Top five tips for herbicide use in lawns

If used properly, preemergent and postemergent herbicides can help control weeds in your lawn.

- 1. Properly identify the target weed.** Proper identification will not only point you to the right product, but may indicate why that weed is present in the first place. Improving management practices like fertility and mowing height can help reduce your reliance on chemical herbicides.
- 2. Know thyself. Know thy product.** Define your threshold for weeds: Higher expectations for fewer weeds will require more aggressive and frequent herbicide applications. Regardless of what product you choose, it is extremely important to read the label thoroughly. Pesticide labels are extensive, and they are all different. Consider printing out the label and highlighting the critical pieces of information. Keep these labels in your records so that you can refer back to them next season.
- 3. Use the full rate.** Using less than the recommended rate for a given turf and weed species can contribute to the evolution of herbicide resistance. Pay careful attention to temperature restrictions and the volume of water applied, as this will vary from product to product.
- 4. Apply during optimal weather conditions.** Never apply herbicides prior to a heavy rain event or when wind speeds have exceeded the label restrictions, or when both conditions occur. These conditions will cause drift and off-target injury. Herbicides should be applied during periods of warm, sunny days with light, predictable wind direction.
- 5. Avoid sensitive areas.** Be careful around low-lying, compacted, and thin areas of your lawn. Flag these areas, and return using a lower rate to avoid injuring sensitive turf. Use caution around ornamental beds, especially if the product is systemic or has high solubility or drift potential. A few weeds along a bed edge are far better than having to replace a valuable specimen tree or shrub! For more information about turfgrass, visit turffiles.ncsu.edu.

— Jason Weathington

Tips & Tasks

Vegetable crop rotation

Most pests and diseases are host-specific, so avoid successively planting a crop from the same plant family in the same spot year after year. Employing a three-to-four-year rotation helps break the life cycles of pests and diseases that depend on crop residues or otherwise over-winter near specific crops.

Planting noncrop green manures or leaving a bed fallow likewise interrupts pest and disease life cycles. Rotation also takes advantage of variation in nutrient removal and root depth among different crop species.

A plant family is a formal taxonomic ranking most commonly used by plant scientists to organize and reference large groups of related species. Because of their shared evolutionary (and selective breeding) history, plant species in the same family share similar physiological characteristics that make them more vulnerable to particular sets of pests and diseases.

Here are some plant families and example crop species:

- Alliaceae:** chive, garlic, leek, onion, shallot
- Apiaceae:** carrots, celery, cilantro, dill, fennel, parsley
- Asteraceae:** artichoke, lettuce, sunflower
- Brassicaceae:** arugula, Bok choy, broccoli, cabbage, cauliflower, collards, kale, mustard, radishes
- Convolvulaceae:** sweet potato
- Cucurbitaceae:** cantaloupe, cucumber, gourds, melons, pumpkins, squashes
- Fabaceae:** beans, clovers, peas, lentils, peanuts
- Malvaceae:** okra
- Solanaceae:** eggplant, peppers, 'Irish' potatoes, tomatillo, tomato

—Matt Jones

Helping You Grow

NC Planting Calendars

With the welcome arrival of warmer months, gardeners begin to plan and plant spring gardens! Don't know where to start? These resources can help! Successful gardening is a proactive hobby that takes planning. The tables linked below list recommended fruit, herb, and vegetables, the method of planting, and start dates for the three growing regions in North Carolina.

Central North Carolina:
content.ces.ncsu.edu/central-north-carolina-planting-calendar-for-annual-vegetables-fruits-and-herbs

Eastern North Carolina:
content.ces.ncsu.edu/eastern-north-carolina-planting-calendar-for-annual-vegetables-fruits-and-herbs

Western North Carolina:
content.ces.ncsu.edu/western-north-carolina-planting-calendar-for-annual-vegetables-fruits-and-herbs

—Eric Derstine



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Plant Watch: Loofah sponge gourd



Loofah sponge gourd.
 ©Forest and Kim Starr, CC-BY-2.0.

Loofah sponge gourd, *Luffa aegyptiaca*, is commonly used as a bath sponge, but young fruits less than 7 inches long can also be eaten as a squash or fresh cucumber substitute. As common as loofah sponges are, most people don't realize that they are the fruits of a vine that can be grown right here in North Carolina! These cucurbit vegetables need at least 6 hours of full sun, well-drained soil, good air circulation, and a good, sturdy trellis to thrive. Mature looahs can be harvested in the fall when the gourds are brown, light, and dry, and the seeds shake inside when rattled. To make your own "loofah," simply soak the fruit in warm water for 5 to 20 minutes until the skin can be easily stripped off. When the skin is off, remove the seeds and excess pulp and rinse in a 10% chlorine bleach solution to lighten the sponges.

—Hanna Smith

Incredible Edibles: Spring into action to prevent tomato wilt

The issue for many tomatoes in North Carolina is southern bacterial wilt (*Ralstonia solanacearum*). The first symptom is wilted leaves. Then the plant wilts completely, dying in a matter of days. The vascular system shows brown discoloration, and the root system will reveal several black or decayed roots. The disease shows up in mature plants in midsummer. It spreads quickly through the soil during heavy rains or watering. Infected plants will not survive; however, the soilborne bacteria will survive for years without a host. One of the best practices to combat this disease is sanitation. Remove infected plants, including roots, immediately. Use a three-year rotation schedule for solanaceous crops to prevent disease buildup. Some disease protection is available when you grow resistant varieties of tomatoes and also traditional varieties grafted onto a resistant rootstock. Grafted plants can be purchased at many garden stores.

—Andrea Gibbs

Sustainability: Organic matter matters!

Organic matter provides plant nutrients and food and habitat for beneficial soil organisms, and it improves soil structure. Organic matter is simply carbon, which consists of plant or animal material that has begun to decompose. These broken down organisms form humus, which holds together soil particles to give soil the crumbly texture that gardeners love. Organic matter also slowly releases minerals that plants need to survive, and it feeds beneficial microbes that improve plant health. Many microbes live in a beneficial relationship with plants by sharing water and nutrients. Organic matter helps to facilitate this arrangement. Also, the microbes that break down organic matter moderate soil pH, reducing the need for lime to battle soil acidity. To build organic matter in garden soil and promote beneficial soil organisms, till in compost when the garden is first created, but do not till in subsequent years. Instead, apply thin layers (1 inch to 3 inches) of organic mulch or compost to the soil surface each year. As this material breaks down, the organic matter levels in the soil will gradually increase. Making your own compost is a great way to know exactly what is going into your garden. For more information about making compost, including what to use and what *not* to use, see these links: content.ces.ncsu.edu/extension-gardener-handbook/2-composting and composting.ces.ncsu.edu.



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—Steve Pettis