



Extension Gardener

NC STATE UNIVERSITY

NORTH CAROLINA COOPERATIVE EXTENSION

Fall 2009

Empowering gardeners. Providing garden solutions.

Why Do Leaves Change Colors?

Society is profoundly affected by autumn. Every year as the days get shorter, nights grow longer and the temperature outdoors becomes cooler, the leaves in our abundant deciduous forests across the state and country begin to turn bright hues of gold and crimson. Millions of tourists come to visit our national and state forests every year to experience fall's brilliance. Perhaps the warm coolers are nature's way of warming our spirits in preparation for the cold temperatures that follow.

The changing of color in leaves is largely connected to the change in day length. As days grow shorter, photosynthesis and chlorophyll production in the leaves slow down until they eventually come to a stop. Chlorophyll is what gives leaves their green color. When chlorophyll is absent, the other pigments present inside the leaf begin to appear. These pigments are known as carotenoids. They produce colors of yellow, orange and brown.

In addition to being influenced by the change in day length, a plant's fall color is affected by the weather and the intensity of light. Anthocyanins are red and purple pigments that are produced when excessive amounts of sugar in the leaves combine with bright light. Scientists hypothesize that the anthocyanin pigments in

leaves help to protect the photosynthetic system as plants prepare to go dormant and nutrients are being transferred to other areas of the plant. The anthocyanin pigments produced in some leaves depend largely on the pH level of the cell sap (sugar) in the leaf. Leaves with highly acidic cell sap produce very red hues, while leaves with lower pH levels produce purple hues.

The changing fall weather causes a corky membrane to develop between the branch and the leaf stem. This membrane reduces the flow of nutrients into the leaf and begins the leaf-changing process, which is completed when a layer of cells at the base of each leaf is clogged, sealing the foliage from the environment and finally causing the leaf to fall.

Nature creates this magical canvas every fall, which is an inspiration to gardeners and outdoor enthusiasts. Consider incorporating a few tree specimens into your landscape that have stunning fall foliage. The United States National Arboretum has a wonderful list of plants with fall foliage colors that range from yellow to brilliant red. Visit www.usna.usda.gov/PhotoGallery/FallFoliage/FallColorList.html. To find more information on planting trees and shrubs in North Carolina, visit www.ces.ncsu.edu/depts/hort/hil/hil-601.html.

—Michelle Wallace

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C. Schneider, USDA—NRCS



JC Raulston Arboretum



C. Schneider, USDA—NRCS

Upcoming Events

September 3**Tour the Pitt County Arboretum with a Master Gardener** (10 AM)

Pitt County Arboretum, 403 Government Circle, Greenville
Meet at the shelter in front of the Pitt County Ag Center. For more information, call 252.902.1705

September 9**Snakes of North Carolina**

(12 PM – 1 PM)

Wayne County Cooperative Extension Center, 208 W Chestnut St, Goldsboro

September 3 – October 22**Certified Plant Professional Training** (9 AM – 4 PM each Thursday)

Wilson County Cooperative Extension, 1806 SW Goldsboro Street, Wilson
Contact Cyndi Lauderdale at 252.237.0113

September 15, 6 PM, Cacti and Succulents

Wilson County Cooperative Extension, Wilson
Contact Cyndi Lauderdale at 252.237.0113

October 1**Tour the Pitt County Arboretum with a Master Gardener** (10 AM)

Pitt County Arboretum, Greenville
Meet at the shelter in front of the Pitt County Ag Center. For more information, call 252.902.1705.

October 9**Designing with Native Plants**

(9 AM – 5 PM)

Pitt County Cooperative Extension, 403 Government Circle, Greenville

October 10**Third Annual Master Gardener Plant Sale** (9 AM – 1 PM)

Beaufort County Cooperative Extension Center, 155 Airport Road, Washington

October 17**Master Gardener Fall Plant Sale**

(9 AM – NOON)

Wayne County Cooperative Extension Center, Goldsboro

November 14**Making Green Decorations from Natural Materials** (9 AM – 1 PM)

Wayne County Cooperative Extension Center, Goldsboro

Sustainable Gardening — Composting

For years, a Cooperative Extension mantra has been “feed the landscape, not the landfill.” Towards that end, tons of organic waste are composted annually by homeowners, municipalities and commercial composters.

Composting is the aerobic decomposition of organic materials by micro-organisms, such as bacteria and fungi, into a stable material that can be used to enhance soil. This process generates heat, which kills harmful pathogens and weed seeds.

Compost is used to improve the physical, chemical and biological properties of soils. When added to sandy soils, compost increases moisture-holding capacity to reduce drought injury to plants. When added to heavy clay soils, it improves drainage and aeration. These changes create a better environment for root growth, and help the soil to hold and release nutrients. Repeated applications of compost result in soil that is easier to work than before and better for plant health. Compost enhances the growth of helpful soil microorganisms.

It can also be used as mulch or topdressing for turf and ornamentals. It is being used to prevent erosion of hillsides, embankments and roadsides. It can bind heavy metals in contaminated soils and degrade many pesticides. In ad-

dition, compost is being used in wetland damage mitigation, stormwater filtration and biofilters.

Some cities offer high-quality compost at no charge. Or you can create your own small compost factory. It is simple to convert yard waste, newspaper and leftover meals into a nutrient-rich material. You can also accomplish this with the help of earthworms, which is called *vermicomposting*.

Compost piles can be open or contained in a variety of structures. Plastic bags, woven wire hoops, wooden or plastic bins and 55-gallon drums are good choices, depending on the energy you have and the size you need. Create the compost near where you'll need it, and in a semi-sunny location. Layers of organic waste (veggies, yard waste, grass clippings) and small amounts of soil and fertilizer or manure are the ingredients you need. Keep the pile or bin moist with water. Turning the material on a regular basis is important to facilitate aerobic (smells earthy) instead of anaerobic (smells awful) decomposition. The more often you turn the pile, the quicker you'll have compost. To learn more, visit www.ces.ncsu.edu/depts/hort/hil/pdf/ag-467.pdf.

—Mike Wilder

Food Production — Grow a fall salad garden

Lettuce and other salad greens thrive in the cool temperatures of fall. They can be ready to harvest in as little as 30 days from sowing, making them one of the quickest vegetables to grow. What's more, lettuce and many of the greens popular in salad mixes flourish when grown in containers. You can grow your own salad even if you don't have a vegetable garden! Because most lettuces and salad greens tolerate some frost, plants started in September can provide fresh salad ingredients throughout the holidays.

Though iceberg may be the lettuce most familiar to many, it is not the easiest to grow. Fortunately, other types of lettuce are available that are tasty, beautiful and simple to cultivate in fall and spring. The easiest lettuces to grow are leaf lettuces, which do not make tight heads. Many selections are available, including ‘Simpson Elite’, ‘Red Sails’ and ‘Prizeleaf’. When

mixed together, the assortment of colors and textures that loose-leaf varieties exhibit make a stunning display in the garden as well as in the salad bowl.

Two other types of lettuce that are easily grown in our area are romaine and butterhead, which is sometimes referred to as bibb lettuce. These varieties form more distinct heads than loose leaf types, and offer different textures and flavors to salads.

Other greens for fall often used in salads include arugula, mizuna, red and green leaf mustard, tatsoi and spinach. These can be grown individually, and are also available as seed mixes known as “mesclun.” Mesclun mixes are easy to grow and include a variety of lettuces and salad greens. Mesclun is grown similar to loose-leaf lettuce, as a patch harvested by clipping leaves, beginning 3 to 4 weeks after sowing.

—Charlotte Glen

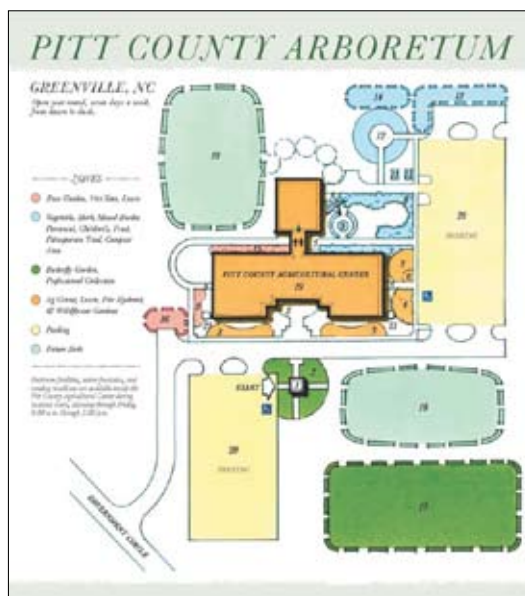
Garden Spot — Pitt County Arboretum

The Pitt County Arboretum is an educational program of Cooperative Extension. Surrounding the Pitt County Agricultural Center, the arboretum shows what you can do in your garden. Four-season color, drought-tolerant plants, a vegetable garden, children's gardens, perennial borders, herbs, a tree-and-shrub arboretum and more await your exploration.

Begun in 1998, the 7-acre arboretum is designed to educate both consumers and the horticultural industry about plant selection, care and pest management practices that will maximize plant performance, sustain economic resources and protect the environment.

The Arboretum is maintained by Extension Master Gardeners and is open year-round, 7 days a week, from dawn to dusk, free of charge. Also featured are butterfly, wildflower, container, mixed-border, rose and wet-site gardens.

One educational focus is water conservation. You will see a green-roof shelter designed to filter and slow runoff, rainwater collection demonstrations and a compost demonstration area. Collecting water from roofs for watering the landscape is a great way to reduce drinking water use for irrigation. Building soils with compost is an inexpensive way to store water in the garden.



The Arboretum includes specialty gardens with many kinds of plants and demonstration areas that display composting and water conservation. (Map courtesy Pitt County Arboretum)

Find out more about the Pitt County Arboretum by calling 252-902-1705, or visit online: <http://pitt.ces.ncsu.edu> (select “programs”) or www.pittcountyarboretum.blogspot.com

—Danny Lauderdale

Environmental Stewardship — Mulching trees and shrubs

Mulching is one of the simplest tasks a gardener can perform to promote a healthy and sustainable landscape. Mulching has many different benefits: helping to conserve soil moisture, reducing competition from weeds, reducing fluctuation in soil temperature and helping to promote soil organisms for increased soil health. Mulches also help to alleviate damage caused by mowers and weed eaters by eliminating the need to mow too closely around trees and shrubs.

Mulch can be added to garden beds year round, but the ideal time is in late spring after the soil has warmed. Apply your mulch in a 2- to 4-inch-deep layer, extending 3 – 6 feet from the trunks of plants. Leave a couple of inches of open, unmulched space between the mulch and trunk. For bedding sites, your best option is to mulch the entire area. Remember to apply your mulch to a weed-free area. Mulch works to prevent weed-seed germination, but does little to control emerged weeds.

Mulching materials come in many forms,

including organic and inorganic materials. Pine straw, pine bark and compost are excellent organic sources. Inorganic sources, such as rocks, stones and fabrics, can be used. If using woodchips, sawdust or leaf litter, allow these products to age before use. Applying these materials in a “green” form may tie up nitrogen as they begin to decompose. The use of landscape fabric with a top covering of organic mulch can also provide excellent weed control. As the mulch decomposes, however, a soil layer may form on top of the fabric, allowing weeds to germinate. You may need to periodically replace the mulch layer to ensure this does not occur. For more detailed information on mulching, refer to these online Extension publications:

Mulches: www.ces.ncsu.edu/depts/hort/hil/pdf/hil-608.pdf

Mulching Trees and Shrubs: www.ces.ncsu.edu/depts/hort/consumer/factsheets/trees-new/text/mulching.html

—Daniel Simpson

Tips & Tasks

Ornamentals

- As autumn arrives, deciduous trees and shrubs will begin to drop their leaves, which you can recycle into mulch or compost.
- October and November are excellent months to plant trees; remember to water new trees through the winter.
- Start planning your spring bulb garden. Plant bulbs such as daffodils, grape hyacinths, snowdrops and snowflakes in November.

Edibles

- Planting a cover crop this fall to turn under in the spring is a great way to improve soil fertility and structure. Good fall cover crops for home gardens include buckwheat, crimson clover and Austrian winter pea.
- Herbs such as chives, cilantro, dill and parsley can be directly sown in the fall to provide fresh spices to your kitchen during the fall and winter.
- Clean up your vegetable garden. Insects such as cucumber beetles, squash bugs, Colorado potato beetles and European corn borers overwinter in garden debris.

Lawns

- Do not fertilize warm-season grasses. Heavy amounts of nitrogen can predispose warm-season lawns to winter-kill.
- If you want to over-seed your lawn with a cool-season grass such as annual ryegrass to ensure a green lawn year-round, seed in mid-September to early October.

—Karen Blaedow



J.C. Raulston Arboretum

Showstopper — 'Rose Creek' abelia

Clusters of tubular-shaped, dainty white flowers cover this dwarf form of abelia. 'Rose Creek' (*Abelia xgrandiflora*) was selected by the University of Georgia for its low mounding growth habit, crimson stem color, mildly fragrant white flowers and exceptionally long blooming period – from May until frost. Since its release in 2001, this shrub has excited gardeners and commercial growers with its landscape potential. Growing 3 feet high and 3 to 4 feet wide, this abelia can be used as a low hedge, foundation plant and in outdoor containers. Truly a four-season plant, this evergreen shrub's leaves emerge in spring with a pinkish cast and turn a lustrous dark-green in summer. A pink calyx remains after the white flowers fade, and the leaves transition to a verdant purple in winter.

Wonderfully compact, 'Rose Creek' abelia will grow in full sun to partial shade. Once established it is very drought tolerant.

—John Vining

Incredible Edibles — Grapes

Do you have muscadines growing in your yard? If you live in the lower piedmont or coastal plain, you should! The fruit has a distinct aroma, and is popular for making wine, pies and jellies. The juice is sweet with a light taste. Throughout the lower piedmont, try 'Magnolia,' 'Carlos' or 'Sterling' varieties. In the coastal plain, try 'Cowart,' 'Noble' and 'Triumph.' Muscadines can adapt to a range of soil types, but prefer a soil pH of 5.5 to 6.5 and well-drained sandy loam. The grapes are tasty, and studies show they are high in healthy antioxidants. Although muscadines do not grow well in the N.C. western mountains, gardeners there can consider 'Niagara' or 'Concord' grapes.

Visit www.ces.ncsu.edu/depts/hort/hil/hil-8203.html.

—Della King

Pest Alert — Hemlock woolly adelgids

Although the native range for hemlocks includes the N.C. mountains and foothills, the eastern hemlock is frequently planted in landscapes throughout the state. A tiny introduced insect, the hemlock woolly adelgid, has spread from New England through the southern Appalachian Mountains and has occasionally been reported in other parts of North Carolina.

The hemlock woolly adelgid resembles an aphid and sucks sap from the needles. A heavy infestation drains so much energy from the tree that even a large tree can be killed in a few years. An infestation is easy to identify by the white cottony masses along the twigs, at the base of the needles.

Homeowners can treat infested trees. Small trees can be sprayed with insecticidal soap or horticultural oil. The best time to spray is Sep-

tember through November. Fair control can also be obtained by spraying in February or March. Trees probably will need to be sprayed every year. Large trees can be treated with a systemic soil drench using either imidacloprid (Merit or Bayer Advanced Tree and Shrub Insect Control) or dinotefuran (Safari). Measure the circumference and diameter of the tree trunk. Using the measurements, carefully follow label directions to calculate how much product to mix per gallon of water. Scrape a shallow trench around the tree's base, and pour in the mixture. Treated trees should not need to be re-treated for 2 to 4 years. See this insect note: www.ces.ncsu.edu/depts/ent/notes/O&T/trees/note119/note119.html

—Linda Blue



White cottony masses indicate a hemlock woolly adelgid infestation. (Photo courtesy USDA—NRCS)

Sustainability

Barnyard Chickens

Backyard chickens can be rewarding and sustainable. They dispose of vegetable scraps, reduce insect populations, lay fresh eggs and produce rich compost. In return, chickens require safe shelter, food and access to fresh water. Rid your garden of pesky insects by locating your chicken tractor over a vegetable bed prior to planting. Letting the chickens feed can reduce the population of borers and other soil insects. Feed all vegetable kitchen scraps to chickens to enhance their diet. Put chicken waste in the compost pile to make it heat up and the materials break down. After collecting fresh eggs in a variety of colors, with deep golden yolks and fresh taste, you won't want to go back to grocery store eggs. So consider adding chickens to your garden.

—Cyndi Lauderdale

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