

# Creating the Carolina Fence™ Garden Handbook



GREATER GREENVILLE  
*Master Gardeners*

**Greater Greenville Master Gardeners**

January 2010

**CLEMSON**  
MASTER GARDENER

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# Carolina Fence™ Garden

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As members of the South Carolina Wildlife Federation W.A.I.T.™ (Wildlife And Industry Together) team traveled to sites around the state, they explored the ways in which a simple landscape element could incorporate native and historical values. They were eager to attract native species to habitats, while providing a landscape element that could be adapted to most any public or private setting. As a result of their discussions, the Carolina Fence™ was born.

Utilizing some very basic elements, the Carolina Fence™ incorporates both natural and cultural elements, which have been designated as symbols of our state. The Carolina Fence™ is a landscape component that can be adapted to a variety of settings. The Fence can function as a valuable habitat element while showcasing symbols of natural and cultural history. Most importantly, as a habitat device, the Fence has the ability to attract and support native animal species.

<http://www.scwf.org/index.php/education-programs/habitats/fence-garden>

The Clemson Master Gardeners, helping schools and communities develop the Carolina Fence™ Garden, prepared this handbook to explain how to create this unique wildlife habitat.

## History

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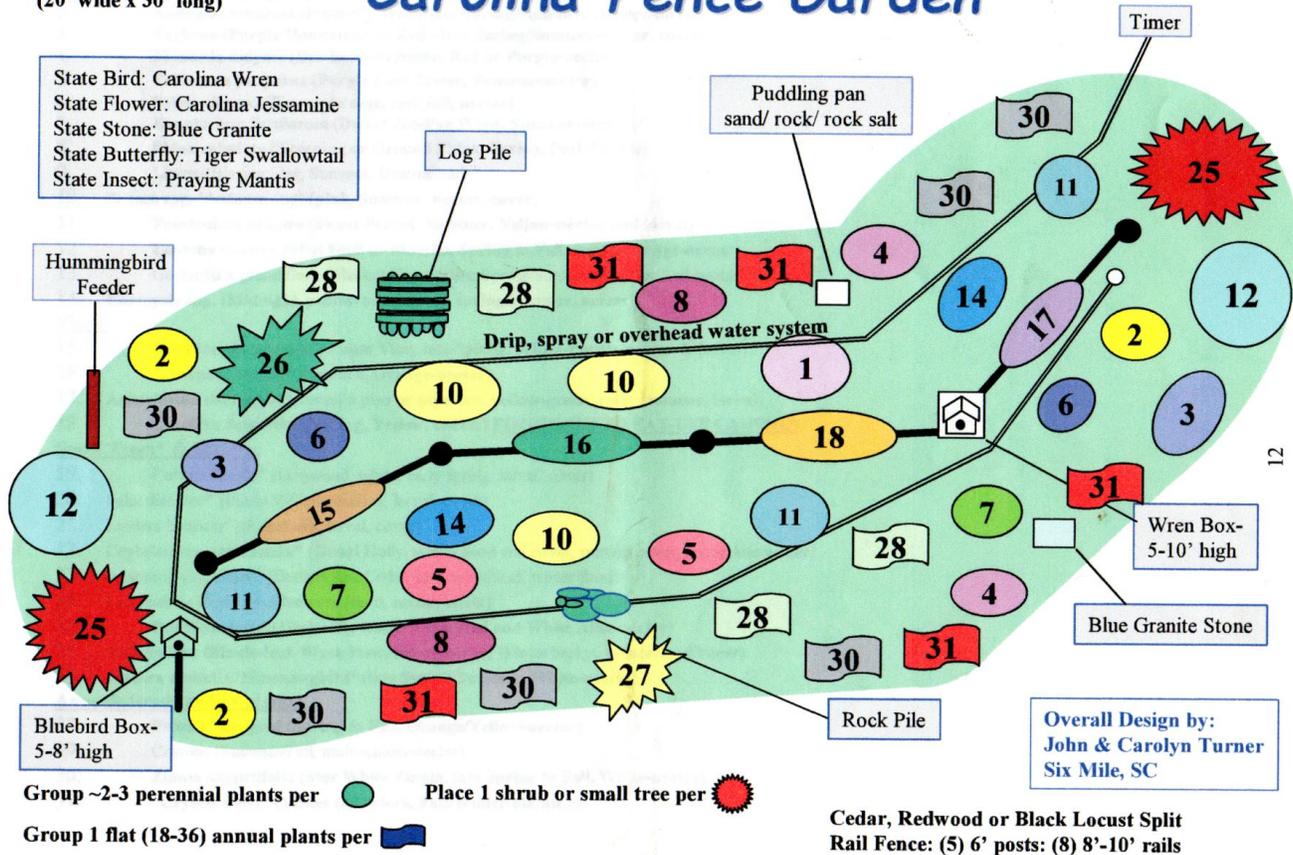
The Carolina Fence™ Garden's historical element is the **split rail fence**. In late 1800's and early 1900's new laws in South Carolina called for fencing live stock. Landowners responded with the split rail fence.

It is the base of the garden and can be laid out in "snake fashion" with no vertical posts, or as a post and rail fence. Other elements cluster around or on the fence.

Sample design:

SMALL Design ~600 sq. ft.  
(20' wide x 30' long)

# Carolina Fence Garden



1. **Aster novae-angliae** (New England Aster- Fall, Purple-nectar, cover)
2. **Asclepias tuberosa** (Butterfly Weed-late Spring/Summer, Orange-larval)
3. **Verbena** (Purple Homestead or Red - late Spring/Summer-nectar, cover)
4. **Monarda didyma** (Bee Balm-Summer, Red or Purple-nectar)
5. **Echinacea purpurea** (Purple Coneflower, Summer-nectar)
6. **Salvia elegans** (Pineapple sage, red, fall, nectar)
7. **Eupatorium fistulosum** (Dwarf Joe-Pye Weed, Summer-nectar)
8. **Phlox subulata** (Creeping or Ground Phlox, Spring, Pink-Purple)
9. **Liatris**-(Blazing Star, Summer, Blue-nectar)
10. **Sedum spp. 'Autumn Joy'** (pink, Summer, nectar, cover)
11. **Foeniculum vulgare** (Sweet Fennel, Summer, Yellow-nectar and larval)
12. **Lantana camara** (Miss Huff or Mozelle, Spring to Fall, yellow/orange-nectar)
13. **Gaillardia x grandiflora** (Blanket Flower, late Spring/Summer, Yellow/Red-nectar)
14. **Coreopsis spp.** (Midnight, yellow-orange, late spring/summer, nectar)

**Vines:**

15. **Passiflora incarnata** (Passion Vine, late Spring, White-Purple-nectar & larval)
16. **Trumpet Creeper** (Summer, Orange-nectar)
17. **Aristolochia durior** (Dutchman's pipe or pipevine, yellow-green, early summer, larval)
18. **Carolina Jessamine** (Spring, Yellow, nectar) **POISONOUS TO EAT-USE CAUTION**

**Small Trees\* & Shrubs:**

19. **Cornus florida\*** (Dogwood, white, early spring, larval, cover)
20. **Salix discolor\*** (Pussy Willow, catkins, larval, cover)
21. **Lindera benzoin\*** (Spicebush, larval, cover)
22. **Cephalanthus occidentalis\*** (Dwarf Holly, winter food and cover, nesting cover, nectar late winter)
23. **Juniperus virginiana\*** (Eastern Red Cedar, bird cover/nest, winter food)
24. **Lowbush or Highbush Blueberry** (food, nectar, cover)
25. **Buddleia davidii** (Butterfly Bush, Royal Red and White Alba-nectar)
26. **Virbernum** (Maple-leaf, Black Haw, Nannyberry, Winterberry, nectar/food/cover)
27. **Clethra alnifolia** 'Hummingbird' (late Spring/Summer, White-nectar)

**Annuals (seeds and/or plants):**

28. **French Marigold** (Spring to Fall, Orange/Yellow-nectar)
29. **Cosmos** (Summer/Fall, multi-colors-nectar)
30. **Zinnia angustifolia** (Star White Zinnia, late Spring to Fall, White-nectar)
31. **"Crystal Bowl" Pansies** (all colors, Fall/Winter plantings)

(**Bold:** Indicates plants selected for **small** garden design, ~ 600 sq. ft.)

# Hardscape

**Blue Granite**, the official **Stone** of South Carolina, will add an aesthetic state symbol to the Carolina Fence™ Garden.

From SCIWAY's Guide to SC's State Stone, Blue Granite! <http://www.sciway.net/facts/sc-state-stone-blue-granite.html>



The South Carolina State Stone, Blue Granite, is unique to the Midlands and the Piedmont region of our state, where granite can be found in abundance. When the [bill designating this symbol](#) was passed in 1969, legislators declared that it had been used "to beautify all areas of South Carolina" and was thus the most appropriate choice. It was even used in the 1908 construction of the South Carolina Statehouse.

Often referred to as [Winnsboro Blue Granite](#) or simply Winnsboro Blue, this light-blue or gray-colored stone was quarried in Fairfield County between 1883 and 1946. Granite is an igneous stone, meaning that it was formed when magma (or molten rock) was trapped beneath the surface of the earth. There, it intermingled with other stones and particles (in this case, flecks of mica and quartz), cooling very slowly and then crystallizing.

Granite has many uses beyond that of kitchen tile and counter tops. It can be cut into block and carved into monuments, or set as curbstone and building facing. Granite blocks with irregularities can be used in the construction of coastal jetties, which help prevent beach erosion.

A 1909 document from the Board of Public Works of Charleston reported that more than 28,000 linear feet (5.3 miles!) of granite curb were placed along its streets that year. Another 12,000 square yards of granite block were used to pave Charleston streets in the traditional cobbled style.

South Carolina has historically been one of the nation's top producers of granite. Granite weighs approximately 180 pounds per cubic foot, so transporting it by rail was the most efficient means. The Rockton and Rion Railway, based in Fairfield County, allowed large quantities of stone to be transported all over the country, where it was then used in building construction.



A Street Paved in Granite Cobblestones

Buildings from Columbia all the way to Philadelphia were built from the stone quarried at the Winnsboro mine, pictured below. Local granite companies and the Rockton and Rion Railway made it possible for this small farming community to jump headfirst into the Industrial Revolution.

A 1893 publication by Clinton-native Thornwell Jacobs describes South Carolina's State Stone as "the silk of the trade." A prized stone, it was used in the 1912 construction of Songbird Manor, the first home in Fairfield County to boast an indoor bathroom. Prior to the official mine's operation, this beautiful stone was used in the 1803 construction of the [Little River Church](#), located only a mile from the modern quarry. The foundation, steps, and even the fenceposts were all carved from blocks of Blue Granite.



#### More about Blue Granite

- [Geological map of South Carolina](#) - handy color-coded map shows the locations of granite deposits in SC – PDF
- [Map of non-fuel mineral production by SC county](#) - granite, stone, clay, gold, and more – printable lesson-plan map for use by teachers and students – PDF
- [History of the South Carolina Railroad Museum](#) - ties the mining industry to the history of the railroad in South Carolina
- [Rockton and Rion Railroad Historic District](#) - images and information specific to Fairfield County and the granite mining industry

*Winnsboro Blue Granite, Abandoned Mine, Fairfield County, SC – Joel Gillespie*

*Thanks for using SCIWAY's Guide to SC's State Stone, Blue Granite!*

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Blue Granite Source (for schools)  
Project Leader – Gary Taylor  
Geologic Mapping-Piedmont  
Geologic Survey/SCDNR  
5 Geology Road, Columbia, SC 29210  
(803) 896-7708

## Other hardscape –

- Bird bath; variety of bird feeders, including hummingbirds; bluebird house, wren house, log or rock pile provide food, water, cover, and places to raise young.
- Drip, spray or overhead water system.

## Plants

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### South Carolina State Flower

Yellow Jessamine  
*Gelsemium sempervirens*

Officially adopted by the General Assembly on February 1, 1924, for the following reasons: it is indigenous to every nook and corner of the State; it is the first premonitor of coming Spring; its fragrance greets us first in the woodland and its delicate flower suggests the pureness of gold; its perpetual return out of the dead Winter suggests the lesson of constancy in, loyalty to and patriotism in the service of the State. "No flower that blooms holds such perfume, As kindness and sympathy won. Wherever there grows the sheltering pine Is clinging a Yellow Jessamine vine." From "Legend of the Yellow Jessamine," by Mrs. Teresa Strickland of Anderson, South Carolina, when the flower was made the emblem of Dixie Chapter, U.D.C., about 1906. The "Carolina or Yellow Jessamine" is defined by the New International Encyclopedia as "A climbing plant which grows upon trees and fences and bears a profusion of yellow, funnel-shaped flowers an inch in diameter, with a fragrance similar to that of the true Jasmine." Its odor on a damp evening or morning fills the atmosphere with a rare and delicate sweetness.



Carolina jessamine (*Gelsemium sempervirens*) is one of the most beautiful vines of the South. It covers fences and trees in open woodlands and along roadsides throughout the Southeast with its slender vines and bright yellow flowers. It is the state flower of South Carolina.



Karen Russ, ©2007 HGIC, Clemson Extension

Carolina jessamine is South Carolina's state flower.  
Karen Russ, ©2007 HGIC, Clemson Extension

### **Mature Height/Spread**

Carolina jessamine grows to 20 feet or more when grown as a vine. It can also be grown as a ground cover, maintained with a yearly cutting in late spring after flowering to 3 feet or less.

### **Growth Rate**

This vine's growth rate is moderate, growing rapidly once established or with rich soil and adequate water.

### **Ornamental Features**

Sweetly scented, golden yellow flowers cover the cascading, fine textured foliage from February to April. The trumpet-shaped blooms are 1 to 1½ inches long and are attractive to butterflies.

The shiny evergreen leaves are 1 to 3 inches long on 10- to 20-foot tall vines. In colder areas of the state, it may be semi-evergreen and the leaves may turn bronze in winter.

### **Landscape Use**

Carolina jessamine is easy to grow. It is attractive on an arbor where the slender branches hung with yellow flowers can be seen from below. This plant will stay in scale and can be used on decks and porches and near patios and entryways. It is good in containers and as a ground cover along steep banks to help control erosion.

Carolina jessamine tolerates either full sun or partial shade. Flowering is more prolific and foliage growth is denser in full sun.

This vine is very adaptable and will grow in a variety of conditions. For best results, plant it in rich, well-drained soil. Moist soil is ideal, but the vine is able to withstand periods of drought once established.

Plant from containers during cool weather, spacing 3 feet apart for ground cover and 4 to 8 feet apart for wall or trellis climber.

Fertilize while the plant is actively growing with moderate amounts of a balanced fertilizer. Do not overfeed, since excessive fertilizer can reduce flowering.

Older vines that become top heavy or sparse can be pruned back to a few feet above ground level after flowering. Remove dead or broken branches and shape the plant each year after bloom. Mow groundcovers every few years to maintain density.

## Cultivars & Related Species

'Pride of Augusta' - also known as 'Plena' - is a popular double-flowered cultivar that stays in bloom longer. The flowers are very attractive at close range.



'Pride of Augusta' Carolina jessamine  
Karen Russ, ©2007 HGIC, Clemson Extension

## Problems

All parts of this plant are poisonous. The sap may cause skin irritation in sensitive individuals. Children can be poisoned by sucking the nectar from the flowers. Insects or diseases rarely trouble Carolina jessamine. Deer will not eat it.

Swamp jessamine (*Gelsemium rankanii*) is a native southeastern species. It flowers heavily in fall as well as in spring and has yellow flowers that are not fragrant.

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Prepared by Karen Russ, HGIC Horticulture Specialist, and Bob Polomski, Extension Consumer Horticulturist, Clemson University. (New 3/99. Images added 04/07.)

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## South Carolina State Wildflower

After years of effort, the work of Nancy Odom, State Wildflower Chairman for the Garden Club of South Carolina paid off when, on May 14, 2003, Governor Mark Sanford signed legislation making the **tall Goldenrod** (*Solidago altissima*) the official wildflower of South Carolina.

Spearheading a statewide effort, Odom had contacted garden clubs throughout the state with her idea of a state wildflower to spark interest in native plantings. To educate the public, garden clubs were asked to present programs on wildflowers and then nominate a preferred flower for promotion as the state's official wildflower.

Queen Anne's lace was the big winner with the clubs, but it was determined that this plant was not native to South Carolina. The runner-up, goldenrod moved to the forefront.

Bills introduced in the 114th Session of the General Assembly (2001-2002) failed to gain traction. Efforts continued however.

House Bill No. 3233 of the 115th Session of the South Carolina General Assembly met a different fate. Introduced for the first time in the House on January 14, 2003 by Representative Scott F. Talley of Spartanburg, the offering met with a more receptive audience. House Bill No. 3233 was approved and on its way to the Senate before the end of the month.



## WILDFLOWERS

Growing wildflowers in gardens and landscapes continues to rise in popularity for several reasons. Wildflowers add interest and beauty to any landscape. They often attract birds and other wildlife. Some species can be used as cut or dried flowers.

What is a wildflower? A horticultural definition is a flowering plant that grows in a natural uncultivated state or survives in a given area with little care. They may be annuals, biennials or perennials. Most are native to the United States.

Although wildflowers require little maintenance, especially when compared to traditional cultivated gardens, they do require some level of effort. You need to spend some time on the proper selection of wildflowers, knowing that the success of a wildflower species or mixture depends on the adaptability of the species to its environment. Select the right wildflowers for your area. Be aware that many wildflowers have specific needs regarding soil, light and moisture. In some cases, the conditions can be changed to create more favorable growing conditions, but in the long run, it is always easier to select wildflowers that are suited for the existing location.

### Moisture

Wildflowers vary in their moisture requirements depending on their natural habitat. There are drought-tolerant wildflowers such as black-eyed Susan (*Rudbeckia hirta*), butterfly weed (*Asclepias tuberosa*) and woolly mullein (*Verbascum thapsis*). Moisture-loving wildflowers such as cardinal flower (*Lobelia cardinalis*), rose turtle-head (*Chelone obliqua*) and pale gentian (*Gentiana villosa*) are best cultivated in low, moist areas of the garden, including bogs and along stream banks.

Consider the low maintenance approach to wildflower gardening by choosing species that are drought-tolerant, knowing that watering may be necessary to help them get established. Once they are established they will not require supplemental irrigation. Avoid wildflower species that have high moisture requirements unless those conditions exist naturally in your landscape.

### Soil

Many wildflowers have specific soil requirements. Most prefer well-drained soils, while other species can be grown in poorly drained, boggy conditions. Woodland wildflowers prefer soils high in organic matter; meadow species prefer less fertile soil. To choose the right wildflowers for your situation, familiarize yourself with the site and the cultural requirements of the particular wildflowers.

To improve the growing conditions for your wildflowers, maintain the proper soil pH by having your soil tested through your local Clemson Extension service. See [HGIC 1650, \*Changing the pH of Your Soil\*](#), for an explanation of soil pH, and [HGIC 1652, \*Soil Testing\*](#), to learn how to take a soil test.

### Propagation

Wildflowers can be propagated or reproduced through sexual (seed) and asexual (vegetative) means. Seed propagation is easier and less expensive than vegetative propagation by division or stem or root cuttings. You can, however, expect a certain amount of variability among the seedlings.

### Seeds

Propagating wildflowers from seed is similar to propagating cultivated annuals and perennials. Many seeds will germinate as soon as they ripen or

dry. Others may require a period of stratification - moist, cool temperatures of six to 12 weeks at around 40 °F. Stratification satisfies the dormancy requirements of the seeds that cause germination to occur.

Some seeds with hard seed coats need to be scarified - a chemical or physical treatment which breaks down the seed coat to allow the seed to absorb water. Some wildflower species may require both stratification and scarification. Before seeding, learn about the specific germination requirements of the species.

For slow-germinating wildflower seeds, seedlings that are slow to develop and those with few available or rare expensive seeds, sow the seeds in flats or other containers instead of directly to a bed outdoors. Select a well-drained, well-aerated medium that holds adequate moisture, such as a mixture of peat and sand or commercially available peat-lite mixes. The seedlings can be transplanted to individual containers or directly to beds after they have reached sufficient size.

## **Establishment**

**Soil Preparation:** Wildflowers germinate and grow best in soils that have been prepared prior to seeding and have plenty of moisture available. In South Carolina, sow seed from September through November when the soil temperatures are cool. This time is ideal for spring- and early summer-flowering wildflowers. Seeding in the fall takes advantage of rains and cooler soil temperatures. The seedlings, especially winter annuals and perennials, can become established during this favorable time.

Spring plantings from March to late April are fine if you pay attention to meeting the moisture demands of the young seedlings. Perennials planted in the spring generally will not flower until the second growing season.

Transplants or container-grown wildflowers that flower in early spring are usually best transplanted in the fall. Those that flower late in the year are best transplanted in spring. Late spring- and summer-flowering species can usually be planted in spring or fall. There are, of course, many exceptions

depending on the time of year the plant is active or dormant.

Once you select the planting site, submit a soil sample to your county Extension agent four to six weeks before planting to determine the soil pH and fertility levels of the site. Wildflowers tend to thrive at a soil pH from 5.5 to 7.0.

For meadow plantings, closely mow the area to be planted. After the regrowth reaches 6 to 8 inches high, spray with a nonselective postemergent herbicide containing glyphosate (Roundup) according to label directions. Wait several weeks before lightly cultivating the soil. If green vegetation is still present, make a second application of the postemergent herbicide. Avoid deep tilling which can bring more weed seeds to the soil surface.

When preparing a site for moisture-loving woodland wildflowers, it may be necessary to cultivate the soil more deeply to a depth of 8 to 12 inches deep and add generous amounts of rotted leaves or peat moss to retain moisture.

Generally, fertilizers should not be applied to planting sites because the added fertility will stimulate the growth of competing weeds. Also, do not use topsoil as an amendment because it contains weed seeds.

**Direct Seeding:** Select wildflower species and mixes adapted to your area and planting site. For large areas use the seeding rate recommended for the individual wildflower mix or species, which is usually 10 pounds per acre. For smaller areas seed at the rate of 4 to 5 ounces per 1,000 square feet.

Mix the seeds with sand or perlite before broadcasting for easy and uniform application. Seeding large areas may be accomplished with a special drill seeder or by mixing seed with dry sand and then spreading with either a drop-type or rotary spreader. To ensure good seed-to-soil contact after seeding, lightly rake and tamp or roll the area. Following seeding, apply a light mulch of straw, pine needles or wood chips to conserve soil moisture and protect young seedlings.

Keep the planted area moist for four to six weeks during seedling germination and development. Planting when normal seasonal rains occur is ideal. **Transplanting:** The transplanting techniques are similar to those for cultivated plants. Set the plant at the same depth it was growing in the nursery; for most wildflowers, the crown should be even with or just below the soil surface. Also, pay careful attention to watering during the first few weeks of establishment. Mulch to help conserve moisture and keep the roots cool. Some wildflowers with rhizomes or running underground stems benefit from several applications of a leaf mulch during the year to help conserve moisture and enrich the soil.

### Maintenance

Wildflowers are "low maintenance," not "no maintenance." Without some attention, most will not flourish for long.

**Weeding:** Meadow wildflower gardens pose special maintenance requirements because of the potential for weed invasion. While a meadow garden does not have to be weed-free to be attractive, extremely vigorous or invasive weeds may require control. Isolated weeds can be removed by hand, and herbicides may be more effective in certain situations. Read the label carefully and exercise caution in the use of herbicides to avoid injuring desirable plants.

**Fertilizing:** Wildflower seedlings can be lightly fertilized when nutrient deficiencies are evident. Broadcast applications of 500 to 1,000 pounds per acre of general purpose fertilizer in spring or early summer can benefit wildflower plantings in typically infertile sites.

**Mowing:** Generally, meadow gardens should be mowed at least once a year in late fall or early spring at a height of four to six inches. Small areas can be cut with a swing blade or scythe. During the growing season several mowings may be needed around the outside of meadow plantings to better define the wildflower beds.

### Insects & Diseases

Wildflowers are not pest-free. Wildflowers persist in given areas largely because they adapt to soil and climatic conditions and are less prone to serious insect and disease problems. Thus, an important consideration in choosing wildflowers is their relative freedom from pests.

### Wildflower Mixes & Species

Many commercial wildflower mixes for meadows are available that have been designed for the Southeast. Ideally, the annuals and biennials reseed themselves, and the perennials go on blooming year after year. In practice, however, some species disappear while others flourish, so that the mix of species and colors is likely to change with time and seasonal growing conditions.

For more information about specific woodland and meadow wildflowers that are suited for the southeast, refer to the following publications: *Growing and Propagating Wild Flowers* by Harry R. Phillips (1985, the University of North Carolina Press); *Wildflower Gardening in South Carolina* by J. B. Aitken (1994, Clemson University Cooperative Extension Service, EC 680); and *Wildflowers* by W.L. Corley and others (1995, University of Georgia Cooperative Extension Service Bulletin 994).

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Prepared by Bob Polomski, Extension Consumer Horticulturist, and Lisa Wagner, Education Director, SC Botanical Garden, Clemson University. (New 05/99.)

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## South Carolina State Grass

**Indian Grass**, *Sorghastrum nutans*, was designated as the official State Grass by [Act Number 94 of 2001](#). It is a native, perennial, warm-season grass that grows 3 to 5 feet tall, with broad blue-green blades and a large, plume-like, soft, golden-brown seed head. This showy perennial's fall color is deep orange to purple.

### *Benefit*

**Use Ornamental:** Grows in clumps, Accent

**Use Wildlife:** Seeds-Small mammals, Seeds-granivorous birds, Nesting material

**Conspicuous Flowers:** yes

**Interesting Foliage:** yes

**Attracts:** Butterflies

**Larval Host:** Pepper-and-Salt Skipper butterfly.

**Deer Resistant:** High



# Why Use Native Plants?

<http://www.ncsu.edu/goingnative/whygo/benefits.html>

## Benefits of Going Native

There are many benefits to using native plants in your landscape -- for you, for your community, and for wildlife.

### Wildlife



Hickory nuts are valuable food for squirrels.

With habitat disappearing at an alarming rate, you can help provide wildlife with an oasis of the habitat they need to thrive. The native plants that you use can meet the needs, including food and cover, of native wildlife without causing long-term damage to local plant communities. With the right diversity of native plants in your urban landscape, you can provide:

- Protective cover for many animals.
- Seeds, nuts, and fruits for squirrels and other mammals.
- Seeds, fruits, and insects for birds.
- Nectar for hummingbirds and butterflies.
- Larval host plants for butterfly caterpillars.

## Prevent Introduction of Invasive Plants

The use of only native plants in your landscape helps limit the chances that potentially invasive, exotic plant species will be introduced into the environment around your home. Many of the invasive, exotic plant species present in the South's natural areas today were introduced as landscape plantings many decades ago. **Continued introduction of new exotic plants into suburban landscapes will result in many new invasive plants in the future.**



Orange coneflower is attractive to people and wildlife.

### **Beauty**

Many native plants produce showy flowers, abundant fruits and seeds, and brilliant fall foliage. By planting native plants, you will have a beautiful yard that is friendly to wildlife.

### **Low Maintenance**

Native plants generally grow well and require little care when grown on proper soils under the right environmental conditions. By choosing the right native plants, you may be able to use fewer pesticides and less water.

### **Community**

As more people use native plants in their urban landscaping, it adds to the available habitat for wildlife and benefits the community as a whole. Going native helps save our natural heritage for future generations.

# WILDLIFE

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## South Carolina State Bird

The **Carolina Wren** (*Thryothorus ludovicianus*) was designated as the official State Bird by Act Number 693 of 1948. This Act repealed an earlier Act designating the Mockingbird as the State Bird. The Carolina Wren is found in all areas of South Carolina. It is a small bird with a conspicuous white stripe over the eyes. The back of its body is rufous-red and the tail is finely barred with black. The song of the wren may be interpreted as " *tea-ket-tle, tea-ket-tle, tea-ket-tle*" and may be heard year-round, day and night, in all kinds of weather.



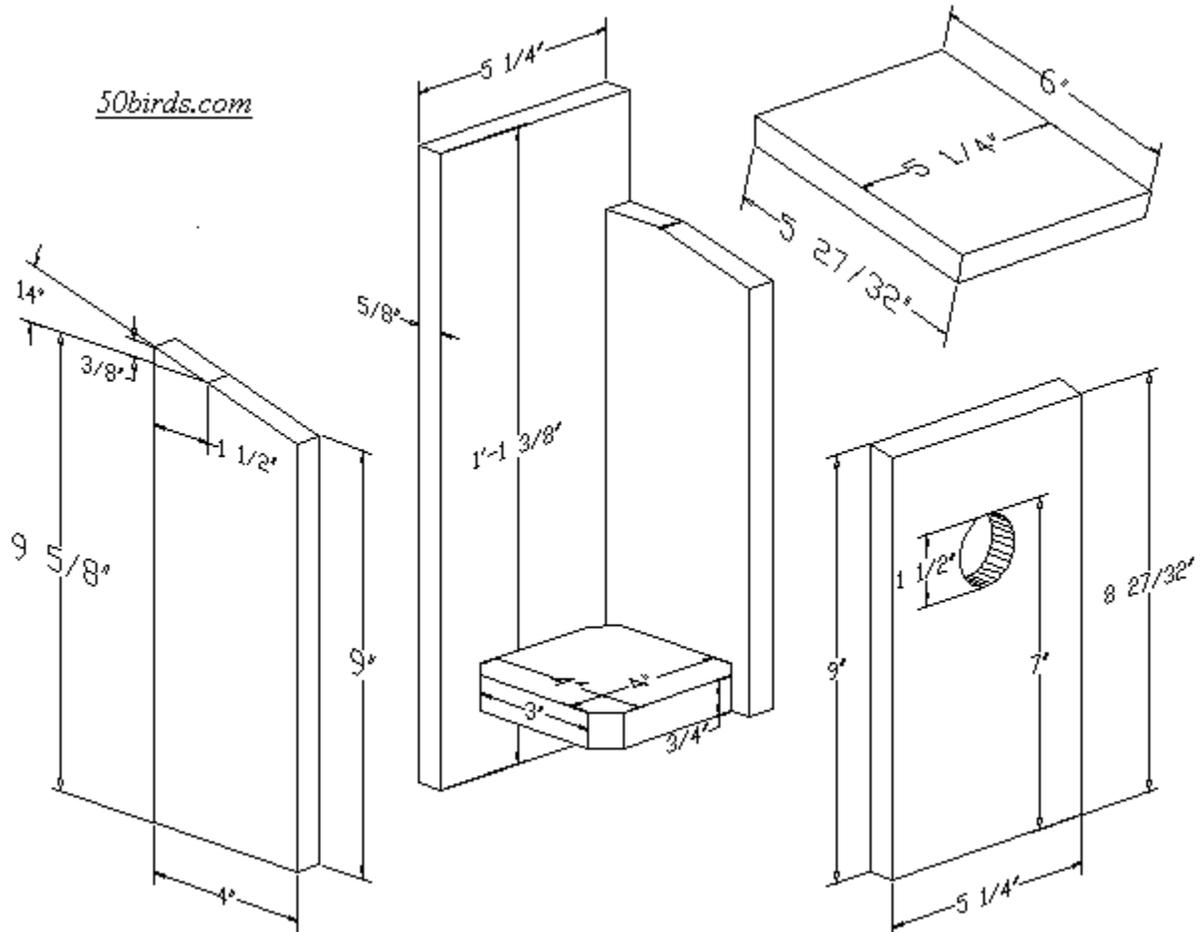
The Carolina Wren is sensitive to cold weather. Since they do not migrate and stay in one territory the northern populations of Carolina wrens decrease markedly after severe winters. Because of this sensitivity to weather, gradually increasing temperatures over the last century may have been responsible for the northward range expansion seen in the mid-1900s.

They eat insects, found in leaf litter or on tree trunks; they may also eat small lizards or tree frogs. In winter, they occasionally eat seeds, berries, and other small fruits.

These birds prefer sites with dense undergrowth, either in mixed forests or in wooded suburban settings, in a natural or artificial cavity. The nest is a bulky, often domed structure, with a small hole towards the top. Nests of the more domestically-inclined wrens have been reported in a great variety of nooks and crannies in, about, or under buildings of various kinds, under bridges, or in holes in any structure such as a porch, fence-post, flowerpot, tree, house or barn. Almost any kind of receptacle may offer an acceptable nesting site. Pairs may mate for life.



## Carolina Wren Nesting Box Plans



The Carolina Wren nest box should have a 4" by 4" floor, 8" inside ceiling, 1 1/2" diameter entrance hole located 6" above the floor, ventilation openings, hinged roof secured with shutter hooks. Other wrens, chickadees, titmice, nuthatches and sparrows may also use this box.

To increase your chances of getting a wren to nest in your box, set it 5 - 10 feet above the ground, in secluded locations with partial sun and shade in the vicinity of thick underbrush. Wrens are the only birds likely to nest in a dangling nest box, but they also select boxes that are firmly anchored on a pole or fence post. Male Wrens will build several nests for the female to choose from so hanging several nest boxes may make an area more attractive.

### South Carolina Wildlife Federation

2711 Middleburg Drive, Suite 104, Columbia, SC  
29204 (803) 256-0670 ~ [www.scwf.org](http://www.scwf.org)

## South Carolina State Butterfly

The **Eastern Tiger Swallowtail** *Papilio glaucus* was designated the official Butterfly of the State by Act Number 319 of 1994. The Garden Club of South Carolina has identified the Tiger Swallowtail of particular interest to South Carolinians because it serves as a pollinator in orchards and gardens. The males are yellow with four black tiger-like stripes on the forewing.



There are two morphs of adult females, a yellow and a dark one. The yellow morph is similar to the male, except that the hind wings have an area of blue between the black margin and the main yellow area. In the dark morph, most of the yellow areas are replaced with a dark gray to a black. A shadow of the "tiger stripes" can still be seen on the dark females. The dark form is more common in the Southern portions of the range.



The Eastern Tiger Swallowtail can be seen in deciduous woods, along streams, rivers and wooded swamps and in towns and cities throughout South Carolina.

## South Carolina State Insect

The **Carolina Mantid** *Stagmomantis Carolina* was designated as the official State Insect by [Act Number 591 of 1988](#). Carolina Mantids vary in color from gray, to brownish-tan to light green and grow to approximately 2½ inches. It was designated the State Insect for the following reasons: it is a native, beneficial insect that is easily recognizable throughout the State; it symbolizes the importance of the natural science of entomology and its special role in all forms of agriculture in helping to control harmful insects; and it provides a perfect specimen of living science for the children of this State.



## Other native animals

The Carolina Fence™ Garden will attract other wildlife as well, especially squirrels and chipmunks.

### THE STATE AMPHIBIAN

The **Spotted Salamander** was designated as the State Amphibian by [Act Number 79 of 1999](#) as a result of a campaign by a third grade class at Woodlands Heights Elementary School in Spartanburg. It is the only amphibian indigenous to the whole State. It is a stout-bodied species with two rows of yellow round

spots on a dark background. It prefers deciduous forests with ponds free of fish.



# CHOOSING THE SITE FOR THE GARDEN

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## Soil –

### Soil test –

- Provides soil pH;
- Provides soil levels of phosphorus, potassium, calcium, magnesium, zinc and manganese;
- Provides fertilizer and lime recommendations (if needed)
- Costs \$6

### Soil pH –

1	6-7	14
Acidic	Ideal for most plants	Alkaline

- Proper pH is MOST important step in having a healthy garden.
- Lime raises pH. Sulfur lowers pH.
- It is better to lime than to fertilize. If pH is not where it needs to be, the soil will not take up fertilizer.

### Soil Chemistry

- Soil is a combination of minerals, organic matter, water, air, and microorganisms.
- Soil Texture is the relative proportions of sand, silt, and clay. (Equal amounts is loam.)
- Adding organic matter
  - Improves physical condition
  - Improves drainage in heavy clay
  - Improves soil tilth
  - Decreases erosion losses
  - Supplies plant nutrients

### Fertilizer

N	P	K
N nitrogen	P <sub>2</sub> O <sub>5</sub> phosphorus or phosphate	K <sub>2</sub> O potassium or potash

- Grades – slow release, conventional, manures
- Ratios – complete (16-4-8), incomplete (0-45-0), balanced (10-10-10)
- Applications – broadcast (yard), banding (before), side dressing (after), and foliate (blue water)

**Sun** – Average – 6 to 8 hours a day

## Water –

- Source – convenient
- When to water – screwdriver test 4 – 6 inches into soil
- How much to water – 1 inch per week, average
- Method – drip is best
- Time – best between 9 PM and 9 AM

# MAINTAINING THE GARDEN

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## INTEGRATED PEST MANAGEMENT (IPM)

### Monitor the Garden

- Watch for both beneficial and harmful insects.
- Watch for disease.
- Identify the problem.
- Determine tolerance.
- Choose the best control strategy:
  - Cultural
  - Mechanical or physical
  - Biological

### Cultural Controls

- Choose disease resistant plants recommended for this area.
- Choose proper location and planting procedures.
- Maintain proper soil management, watering, and mulching.

### Mechanical or Physical Controls

- Handpick insects.
- Pull or hoe weeds.
- Exclude pests (fence, weed cloth, mulch, and traps).
- Maintain sanitation (remove dead or diseased plants).



### Biological Controls

Encourage beneficials like predators, parasites, and competitors (ground cover).



**Use chemical controls as a last resort!**

# Soil Testing

There are several nutrients that are essential for plant growth. A soil test is used to determine the amount of these nutrients in the soil. The soil test results are subsequently used to make a soil test report. In addition to indicating the level of nutrients in your soil, the report will also tell you the [pH](#) value or how acidic or basic your soil is, and it will make a recommendation for the amount and type of fertilizer and/or lime you need to add to the soil for optimum plant growth. This allows you to customize your soil fertilizer and lime applications to your plants' needs. Following the recommendations will help prevent problems with nutrient deficiencies (in the case of under-fertilization) or problems associated with over-fertilization such as excessive vegetative growth, delayed maturity, salt burn and wasted money. In addition, it can protect against any environmental hazards resulting from excessive fertilizer applications.

## How to Take Soil Samples

To have a soil analysis done you need to collect 12 or more cores which will be combined as one composite sample. The samples should include soil from the surface to a depth of 6 inches in all areas except for lawns where cores should be taken from a depth of only 2 to 3 inches. A simple garden trowel can be used to collect the samples. Place the samples in a clean bucket and mix them thoroughly. It is imperative to use clean sampling tools. Pesticide or fertilizer residues will create misleading results. The sample must not be excessively wet before it goes to the lab. Bring a minimum of 2 cups of soil per sample to your county Extension office. Be sure to keep track of which part of your yard the sample came from. At the Extension office they will ask you to fill out the information on a soil test box, fill out a record sheet and check the appropriate

boxes for the analyses desired. The cost of a standard soil test is \$6.00 per sample. This test provides unbiased, scientific information on:

- The [soil pH](#) value.
- The current soil levels of phosphorus, potassium, calcium, magnesium, zinc and manganese.
- Fertilizer and lime recommendations (if needed) for the plants you are growing.

## How Many Samples to Take

You need to take a soil sample from each section of your yard or garden. Usually this means, for example, one sample in your turf area, one in any foundation or perennial bed and one in your vegetable garden. If you have a problem area where plants do not seem to grow well, take a separate soil sample from that location.

## Sampling Frequency

The Clemson University Extension Service recommends soil sampling every year.

## Time of Sampling

Soil samples can be taken at any time of the year, but it is best to sample the soil a couple months before planting a garden, establishing perennials or before the optimum time for fertilizing lawns to allow ample time for the lime to react with the soil.

## Soil Test Results

Within seven to fourteen days, a copy of your soil analysis will be mailed directly to you from the Agricultural Service Lab. Your county Extension office will also receive a copy. Your soil analysis will have a bar graph representing the amount of soil nutrients found and the soil pH value. It will have a section at the bottom of the first page which

shows how much lime (if needed) to add for each 1000 square feet and refer you to specific comments on the last page. The comments page will tell you what type of fertilizer you need, how much you need and how to apply it. These recommendations are specific for whatever type of plant you want to grow (as you indicated on the soil test record sheet).

## Understanding Your Soil Test Report

**Soil pH:** Soil pH is a measure of how acidic or alkaline your soil is. Soil pH directly affects nutrient availability. The pH scale ranges from 0 to 14, with 7 as neutral. Numbers less than 7 indicate acidity, while numbers greater than 7 indicate an alkaline soil. Plants thrive best in different soil pH ranges. Azaleas, rhododendrons, blueberries and conifers thrive best in acid soils (pH 5.0 to 5.5). Vegetables, grasses and most ornamentals do best in slightly acidic soils (pH 5.8 to 6.5). Soil pH values above or below these ranges may result in less vigorous growth or symptoms of nutrient deficiencies.

**Nutrients:** Nutrients for healthy plant growth are divided into three categories: primary, secondary and micronutrients. Nitrogen (N), phosphorus (P) and potassium (K) are primary nutrients, which are needed in fairly large quantities compared to the other nutrients. Calcium (Ca), magnesium (Mg) and sulfur (S) are secondary nutrients which are required by the plant in lesser quantities but are no less essential for good plant growth than the primary nutrients. Zinc (Zn) and manganese (Mn)

are micronutrients which are required by plants in very small amounts. Most secondary and micronutrient deficiencies are easily corrected by keeping the soil at the optimum pH value.

**Nitrogen:** Available nitrogen is taken up by plant roots in the form of nitrate (NO<sub>3</sub><sup>-</sup>) and ammonium (NH<sub>4</sub><sup>+</sup>). Nitrogen testing is not recommended because the levels of available nitrogen are variable due to its mobility in the soil. The available forms of nitrogen are very water soluble and move rapidly through the soil profile with rainfall and irrigation. This causes the amount in the root zone to fluctuate over time. Recommendations are based on the requirements of the particular plants you are growing.

If you need help interpreting the results of your soil tests, call the Home & Garden Information Center at 1-888-656-9988.

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## Growing Annuals

Annuals quickly provide more color in the landscape for longer periods of time than any other garden plants. They are versatile, sturdy and inexpensive.



Annual zinnias, salvia and petunias  
Karen Russ, ©2007 HGIC, Clemson Extension

### Growth Rate

True annuals sprout from seed, flower, set seed and die within one season. Many flowers that are not hardy such as begonias, impatiens and geraniums are also grown as annuals. Biennials complete their life cycle in two growing seasons. In South Carolina many can be planted as seed in summer or fall to bloom the following spring or summer. A practical definition of annuals could be plants that must be replaced every year in the garden.

Annuals are commonly grouped as hardy, half-hardy or tender. Hardy annuals - such as pansies and ornamental kale - are grown for color in cool and cold seasons. They are usually planted in the fall. Most decline or die with the onset of summer heat.

Half-hardy annuals -such as allysum and dianthus - can tolerate light frost and are usually planted in early spring for spring and early summer color. They usually decline in summer heat but may bloom again in the fall.

Tender annuals - such as vinca, zinnia and impatiens - cannot tolerate freezing temperatures. They should be planted in the spring after all danger of frost is past.

### Landscape Use

Most annuals need full sun for at least 4 to 6 hours a day to flower well. Choose shade-tolerant species such as impatiens, coleus or begonias for locations that receive less sun.

Avoid planting in areas where water stands after a heavy rain. Also avoid areas near large trees and shrubs that may have many thirsty feeder roots.

Good bed preparation is essential for good performance of annuals. Deeply spade the beds to a depth of 6 to 10 inches. Amend clay soils by mixing in at least 2 inches of pine bark humus, compost, leaf mold or small pea gravel to improve drainage and aeration. Improve water retention in sandy soils by mixing in 2 to 3 inches of pine bark humus, composted leaf mold or peat moss. Raised beds can be used to ensure adequate drainage.

Base fertilizer and lime applications on the results of a soil test for best results. In the absence of a soil test, add a complete fertilizer such as 10-10-10 at the rate of 1 pound per 100 square feet of bed area or a complete slow-release fertilizer following label directions.

A pH of 5.8 to 6.5 is satisfactory for most annuals. Most South Carolina soils are acidic and require the addition of lime to correct pH. Incorporate lime and fertilizer into the top 4 to 6 inches of soil after mixing in the soil amendments. Rake the soil surface smooth.

Avoid working soil while it is wet since this can cause lumping and shallow "pans," which resist air, water and root penetration. Soil that is ready for cultivation holds its shape when squeezed, but crumbles easily.

Most annuals are grown from seed. They can be direct-seeded in prepared beds, started indoors for transplanting outside later or purchased as ready-to-plant transplants.

The recommended seeding date, depth and spacing are usually listed with other information on the seed packet. Some annuals that are listed for late winter or early spring sowing can be planted in late fall in the warmest parts of the Coast. Most outdoor-sown annuals should be thinned to a recommended spacing when they develop the first pair of true leaves.

If seed is sown indoors for later transplant, seedlings must be located close to a light source for at least 16 hours daily. Insufficient light will result in weak, spindly seedlings.

Most summer annuals can be seeded indoors 6 to 8 weeks before the last frost. Seeds should be sown according to label directions in a sterile soilless mix. Seedling flats should provide good drainage.

Wait to plant tender annuals until the danger of frost has passed. Many annuals, even if not injured by low temperatures, will not grow well until the soil warms. Plant winter annuals at least 6 weeks before expected first fall frost date to

allow time for root development. Plant annuals with the top of the roots just under the surface of the soil. Be sure to remove paper, fiber and plastic pots before planting. Remove the upper edges of peat pots so that the pot will not act as a wick, pulling water away from the roots.

Pinch off any buds and flowers when planting to promote better branching and a stronger plant.

Once transplanting is complete, water the plants thoroughly. Pay especially close attention to watering the first few weeks while plants develop their root systems. Adequate moisture is essential for the growth of flowering annuals. Most annuals need at least 1 to 1½ inches of water per week from rain or irrigation. More may be needed during very hot weather.

To promote deep root growth, water thoroughly and deeply. Allow the soil surface to dry before watering again. Soaker hoses and drip irrigation are ideal watering methods since they save water and avoid wetting leaves and flowers.

Mulch flower beds with 2 to 3 inches of pine bark or pine straw to help conserve soil moisture and reduce weed growth. Mulches shade weed seeds and prevent their germination, eliminating or reducing the need for hand or chemical weed control.

Annual plants may require additional fertilizer during the growing season. Water-soluble fertilizers give fast, but temporary, effects. Slow-release fertilizers are expensive but convenient and easy to apply without waste. If plant growth and appearance looks normal, fertilization will be unnecessary.

As flowers fade, remove them before seeds are formed to keep plants looking attractive

and encourage continuing flowering. Heavy pruning can invigorate some species. For instance, petunias can be cut back in midsummer to within a few inches of the ground, fertilized and heavily watered, and they will be full and attractive again in just a few weeks.

## Problems

Annuals vary in their insect and disease susceptibility. Some are virtually trouble-free in the landscape while others require considerable care to look their best.

Choose insect-and disease-resistant species and cultivars when possible. Keep the garden clean and weed-free, and be alert for early signs of trouble to reduce the need for pesticides. To prevent the spread of leaf diseases, avoid overhead watering if possible and water early in the morning to allow the plants to dry quickly. Overwatering can lead to root decay.

A variety of insect pests attack annuals. The most common are aphids, spider mites, white flies and caterpillars. Infestations are more easily controlled early, before the population has a chance to expand.

There are a number of pesticides available for controlling insects and diseases of annuals.

Accurate identification of the insect or disease is the first step. Misuse of pesticides may cause injury to desirable plants. Always read the label carefully.

## Annuals for Various Uses

### Annuals for Hot, Dry Locations

All annuals will need watering attention while becoming established. These are the most likely to survive some neglect once well rooted.

African Daisy (*Dimorphotheca*)

Annual Vinca (*Catharanthus roseus*)

Calliopsis (*Coreopsis tinctoria*)  
Cosmos (*Cosmos* species)  
Creeping Zinnia (*Sanvitalia procumbens*)  
Dusty Miller (*Senecio cineraria*)  
Gaillardia (*Gaillardia pulchella*)  
Globe Amaranth (*Gomphrena globosa*)  
Gloriosa Daisy (*Rudbeckia hirta*)  
Gold Medallion (*Melampodium paludosum*)  
Moss Rose (*Portulaca grandiflora*)  
Snow-on-the-Mountain (*Euphorbia marginata*)  
Spider Flower (*Cleome hasslerana*)  
Verbena (*Verbena* species)  
Zinnia (*Zinnia* species)

## Annuals That Thrive in Heat

These annuals will also tolerate very hot weather, but do best with additional soil moisture.

Blue Daze (*Evolvulus glomerata*)  
Castor Bean (*Ricinus communis*)  
Cockscomb (*Celosia argentea*)  
Cypress Vine (*Ipomoea quamoclit*)  
Dahlia (Dahlia species and hybrids)  
Fan Flower (*Scaevola aemula*)  
Flowering Tobacco (*Nicotiana* species)  
Four o'clock (*Mirabilis jalapa*)  
Hyacinth Bean Vine (*Dolichos lablab*)  
Joseph's Coat (*Amaranthustricolor*)  
Mexican Bush Sage (*Salvia leucantha*)  
Mexican Heather (*Cuphea hyssopifolia*)  
Mexican Sunflower (*Tithonia rotundifolia*)  
Moon Vine (*Ipomoea alba*)  
Morning Glory (*Ipomoea* species)  
Salvia (*Salvia* species)  
Silk Flower (*Abelmoschus manihot*)  
Starflower (*Pentas lanceolata*)  
Sunflower (*Helianthus annuus*)

## Annuals for Shade or Part Shade

Most annuals need at least 6 hours of sun to flower well, although many will tolerate shade in the afternoon, if they have had a full morning of sun. These annuals will bloom with less sun, although all will need some sun for flowering. Those marked with a \* will tolerate the most shade.

Ageratum Begonia (*Begonia* species)

Caladium (*Caladium* species)\*  
Coleus (*Solenostemon scutteleriodes*)  
Forget-me-not (*Myosotis sylvatica*)  
Impatiens (*Impatiens* species)\*  
Edging Lobelia (*Lobelia erinus*)  
Monkey Flower (*Mimulus hybridus*)\*  
Woodland Tobacco (*Nicotiana sylvestris*)  
Pansy (*Viola x wittrockiana*)  
Wishbone Flower (*Torenia fournieri*)\*

### **Annuals for Moist Soil**

No annuals will grow in water-logged soil, but the following will tolerate damper conditions than others.

Forget-me-not (*Myosotis sylvatica*)  
Monkey Flower (*Mimulus hybridus*)  
Blue Woodruff (*Asperula orientalis*)  
Caladium (*Caladium* species)

### **Annuals for Poor Soil**

Annual Vinca (*Catharanthus roseus*)  
Calliopsis (*Coreopsis tinctoria*)  
Cockscomb (*Celosia argentea*)  
Cornflower (*Centaurea cyanus*)  
Cosmos (*Cosmos* species)  
Four o'clock (*Mirabilis jalapa*)  
Gaillardia (*Gaillardia pulchella*)  
Gold Medallion (*Melampodium paludosum*)  
Joseph's Coat (*Amaranthus tricolor*)  
Mexican Sunflower (*Tithonia rotundifolia*)  
Moss Rose (*Portulaca grandiflora*)  
Nasturtium (*Tropaeolum majus*)  
Purple Fountain Grass (*Pennisetum setaceum*)  
Spider Flower (*Cleome hasslerana*)  
Verbena (*Verbena* species)

### **Hardy & Half-Hardy Annuals**

Those marked with a \* can be sown as seed in the fall. The others are planted as transplants either in the fall, late winter or early spring.

Allysum (*Lobularia maritima*)\*  
Annual Lobelia (*Lobelia erinus*)  
Annual Phlox (*Phlox drummondii*)\*  
Cornflower (*Centaurea cyanus*)\*  
Delphinium (*Delphinium* species)

Dianthus (*Dianthus* species)  
English Daisy (*Bellis perennis*)

Flowering Cabbage and Kale (*Brassica oleracea*)  
Foxglove (*Digitalis purpurea* 'Foxy')\*  
Johnny-jump-up (*Viola tricolor*)  
Larkspur (*Consolida ambigua*)\*  
Monkey Flower (*Mimulus hybridus*)  
Nasturtium (*Tropaeolum majus*) - seed in early spring.  
Pansy (*Viola x wittrockiana*)  
Poppy (*Papaver* species)\*  
Pot Marigold (*Calendula officinalis*)\*  
Snapdragon (*Antirrhinum majus*)  
Stocks (*Matthiola incana*)\*  
Sweet Peas (*Lathyrus odoratus*)\*

### **Biennials**

Plant seed in late summer or early fall for spring bloom.

Foxglove (*Digitalis purpurea*)\*  
Hollyhock (*Alcea rosea*)  
Sweet William (*Dianthus barbatus*)  
Wallflower (*Erysimum* species)

### **Annuals That May Reseed Year After Year**

Alyssum (*Lobularia maritima*)  
Calliopsis (*Coreopsis tinctoria*)  
Cornflower (*Centaurea cyanus*)  
Cosmos (*Cosmos* species)  
Flowering Tobacco (*Nicotiana* species)  
Forget-me-not (*Myosotis sylvatica*)  
Four o'clock (*Mirabilis jalapa*)  
Hollyhock (*Alcea rosea*)  
Impatiens (*Impatiens* species)  
Johnny-jump-up (*Viola tricolor*)  
Larkspur (*Consolida ambigua*)  
Morning Glory (*Ipomoea tricolor*)  
Moss Rose (*Portulaca grandiflora*)  
Petunia (*Petunia* species and hybrids)  
Poppies (*Papaver* species)  
Silk Flower (*Abelmoschus manihot*)  
Snow-on-the-Mountain (*Euphorbia marginata*)  
Spider Flower (*Cleome hasslerana*)  
Zinnia (*Zinnia* species)

### **Annuals for Use as Cut Flowers**

Annual Carnation (*Dianthus caryophyllus*)  
Annual Phlox (*Phlox drummondii*)  
Pot Marigold (*Calendula officinalis*)  
Cockscomb (*Celosia argentea*)  
Cornflower (*Centaurea cyanus*)  
Cosmos (*Cosmos* species)  
Dahlia (*Dahlia* species and hybrids)  
Dianthus (*Dianthus* species)  
Larkspur (*Consolida ambigua*)  
Marigold (*Tagetes* species and hybrids)  
Snapdragon (*Antirrhinum majus*)  
Statice (*Limonium sinuatum*)  
Stocks (*Matthiola incana*)  
Sweet Peas (*Lathyrus odoratus*)  
Zinnia (*Zinnia* species)

### **Fragrant Annuals**

Alyssum (*Lobularia maritima*)  
Dianthus (*Dianthus* species)  
Four o'clock (*Mirabilis jalapa*)  
Heliotrope (*Heliotropium arborescens*)  
Moonflower (*Ipomoea alba*)  
Flowering Tobacco (*Nicotiana* species)  
Nasturtium (*Tropaeolum majus*)  
Petunia (*Petunia* species)  
Stocks (*Matthiola incana*)  
Sweet Peas (*Lathyrus odoratus*)  
Sweet William (*Dianthus barbatus*)  
Wallflower (*Erysimum* species)  
Sweet Sultan (*Centaurea moschata*)

### **Large Bold Annuals**

Joseph's Coat (*Amaranthus tricolor*)  
Castor Bean (*Ricinus communis*)  
Cosmos (*Cosmos* species)  
Hollyhock (*Alcea rosea*)  
Woodland Tobacco (*Nicotiana sylvestris*)  
Purple Fountain Grass (*Pennisetum setaceum*)  
Sunflower (*Helianthus annua*)  
Mexican Sunflower (*Tithonia rotundifolia*)  
Spider Flower (*Cleome hasslerana*)

### **Trailing Annuals**

Licorice Plant (*Helichrysum petiolatum*)  
Trailing Verbenas (*Verbena* species)  
Geranium, Ivy-leaved (*Pelargonium* species)  
Fan Flower (*Scaevola aemula*)  
Nasturtium (*Tropaeolum majus*)  
Trailing Lantana (*Lantana montevidensis*)  
Petunias, Cascade and Wave series

### **Annual Vines**

Black-eyed Susan Vine (*Thunbergia alata*)  
Cardinal Vine (*Ipomoea x multifida*)  
Cup and Saucer Vine (*Cobaea scandens*)  
Cypress Vine (*Ipomoea quamoclit*)  
Hyacinth Bean Vine (*Lablab purpureus*)  
Love-in-a-Puff (*Cardiospermum halicacabum*)  
Moonflower (*Ipomoea alba*)  
Morning Glory (*Ipomoea tricolor*)  
Nasturtiums (*Tropaeolum majus*)  
Purple Bell Vine (*Rhodochiton atrosanguineum*)  
Scarlet Runner Bean (*Phaseolus coccineus*)  
Spanish Flag (*Mina lobata*)  
Sweet Pea (*Lathyrus odoratus*)

### **Annuals That Attract Hummingbirds & Butterflies**

Calliopsis (*Coreopsis tinctoria*)  
Cosmos (*Cosmos* species)  
Cypress Vine (*Ipomoea quamoclit*)  
Four o'clock (*Mirabilis jalapa*)  
Gaillardia (*Gaillardia pulchella*)  
Globe Amaranth (*Gomphrena globosa*)  
Heliotrope (*Heliotropium arborescens*)  
Lantana (*Lantana* species)  
Nasturtium (*Tropaeolum majus*)  
Phlox (*Phlox drummondii*)  
Salvia (*Salvia* species)  
Starflower (*Pentas lanceolata*)  
Verbena (*Verbena* species)  
Zinnia (*Zinnia* species)

Prepared by Karen Russ, HGIC Information Specialist, and Bob Polomski, Extension Consumer Horticulturist, Clemson University. (New 06/99. Images added 08/07.)

## Growing Perennials

Herbaceous perennials generally live for three or more seasons, but usually the tops die back to the ground each fall. The crown and roots of the plant resume growth in spring. A few perennials are evergreen or keep a green rosette of leaves at the base in winter. Hardy perennials can live through the winter without protection.

Many plants, such as cannas and dahlias, are hardy perennials in South Carolina that will not live through the winter outside farther north. On the other hand, many of the perennials that grow well in the Northeast United States or England will not tolerate hot, humid summers. Since books about perennials are often written for those cooler climates, it is important to use care in selecting plants that are adapted to Southern heat and humidity.

### Ornamental Features

Perennials provide year-round color and interest; with endless variations in colors, sizes, habits and time of bloom. Although some perennials flower for only a few weeks, the ever-changing color display forms much of the excitement of a perennial garden. Many perennials will rebloom in the warm climate of South Carolina.

Some perennials, such as ferns and hostas, are grown principally for their beautiful foliage. Include foliage plants to extend seasonal color and texture in the garden.

### Landscape Use

While the traditional English perennial border was entirely made up of herbaceous perennials, they are attractively used in combination with other plants in the total landscape. Perennials are easily used as ground covers, mixed with annuals, grown in containers, and used as accents or specimen plants.

There are perennials for full sun or heavy shade, for dry or wet soil. Select perennials that are suited to the growing conditions where they will be planted. Select a planting area with good air circulation to help avoid diseases.

### Planting Perennials

#### Soil Preparation

Good soil preparation is extremely important for perennials, since they may be in place for many years. Deeply spade the beds to a depth of eight to 10 inches. Amend clay soils by mixing in at least 2 inches of pine bark humus, compost, leaf mold or small pea gravel to improve drainage and aeration. Improve water retention in sandy soils by mixing in 2 to 3 inches of pine bark humus, composted leaf mold or peat moss. Good soil drainage is critical to the success of most perennials. Raised beds can be used to ensure adequate drainage.

Base fertilizer and lime applications on the results of a soil test for best results. In the absence of a soil test, add a complete fertilizer such as 10-10-10 at the rate of 1 pound per 100 square feet of bed area or a complete slow-release fertilizer following label directions.

A [pH](#) of 6.0 to 6.5 is ideal for most perennials. Most South Carolina soils are acidic and require the addition of lime to correct pH. Incorporate lime and fertilizer into the top 4 to 6 inches of soil after mixing in the soil amendments. Rake the soil surface smooth.

#### Planting

Most perennials can be planted in the fall or early spring. Fall planting gives the plant more time to become established before the start of active growth in the spring. Fall-planted perennials are usually well-established before hot weather. Fall planting should be finished at least 6 weeks before hard- freezing weather occurs.

Early spring is also considered a good time to plant perennials. Planting early, just after killing frosts have passed, is better than later spring planting.

Many perennials can be grown from seed, but most gardeners prefer to start with established plants. Perennials are available grown in containers, field-grown, or shipped bare-root and dormant.

If plants are somewhat pot-bound at planting time, loosen the roots around the bottom and sides of the root ball and spread them out in the bottom of the planting hole. To encourage side root growth, make the hole twice as wide as deep. Refill the hole, firming the soil in around the plant to avoid air pockets. Be sure the crown of the plant (the point where roots and top join) is even with the soil surface.

## Watering

Water plants thoroughly following planting to settle the soil around the roots. Pay especially close attention to watering the first few weeks while plants develop their root systems. Adequate moisture is essential for the growth of perennials. Most perennials require at least 1 to 1½ inches of water per week from rain or irrigation. More may be needed during very hot weather.

To promote deep root growth, water thoroughly and deeply. Allow the soil surface to dry before watering again. Soaker hoses and drip irrigation are ideal watering methods since they save water and avoid wetting leaves and flowers.

Mulch with a 1- to 2-inch layer of compost, pine bark or pine straw to help keep down weeds and conserve moisture. Avoid overly heavy mulching to help prevent crown rot.

## Maintenance

Weed control should usually be done by hand-weeding or with the use of herbicides to avoid damaging shallow roots. Read and follow label directions before using any herbicide.

Maintenance fertilization should be based on the results of a [soil test](#). In the absence of a soil test, apply a complete fertilizer such as 8-8-8 or 10-10-10 at the rate of 1 to 2 pounds per 100 square feet of bed area just before new shoots emerge in the early spring. Avoid touching any emerging leaves with fertilizer to avoid leaf damage.

Many newly planted perennials will not bloom the first year. A few, such as peonies, may take several years to bloom heavily.

Many perennials should be staked to prevent them from bending or falling over during wind and rain. When staking is done correctly, the plants grow to cover the stakes.

Remove old flowers to encourage rebloom on perennials. Many perennials should be cut back to ground level after bloom is finished to encourage new leaf growth from the base.

Remove dead foliage and stems in the fall, and mulch to protect crowns and roots from alternating mild and freezing weather.

Most perennials eventually become overcrowded and require division. Information on division is available in [HGIC 1150, Dividing Perennials](#). Many perennials are also easily propagated in this way. Other methods of propagating perennials include stem cuttings, root cuttings and seed.

## Problems

Perennials vary considerably in their susceptibility to pests. Selection of resistant species and cultivars, proper site selection, and good cultural practices will prevent many disease problems.

## Perennials for Various Uses

Many perennials are available in several cultivars with different color, height or other attributes. Some, such as the heat-and humidity-tolerant cultivar of lamb's ears called 'Big Ears,' are better suited to our climate than the species. Consult with a local nursery person or extension specialist for cultivars that are especially suited to your area.

## Perennials for Shade

Those marked with a \* will tolerate the most shade.

*Acanthus mollis* Bear's Breech  
*Alchemilla mollis* Lady's Mantle  
*Amsonia tabernaemontana* Blue Star  
*Anemone* species  
*Aquilegia* species Columbine  
*Arum italicum* Painted Arum \*  
*Asarum* species Wild Gingers \*  
*Aspidistra elatior* Cast Iron Plant \*  
*Astilbe x arendsii* Astilbe  
*Begonia grandis* Hardy Begonia  
*Bergenia cordifolia* Heartleaf Bergenia  
*Brunnera macrophylla* Siberian Bugloss  
*Carex elata* Golden Sedge  
*Ceratostigma plumbaginoides* Plumbago  
*Chelone obliqua* Turtlehead  
*Chrysogonum virginianum* Green and Gold  
*Cimicifuga* species Bugbane  
*Convallaria majalis* Lily-of-the-Valley \*  
*Cyclamen* species Hardy Cyclamen  
*Dicentra* species Bleeding Heart  
*Digitalis* species Foxglove  
*Epimedium* species Barrenwort \*  
Ferns \* (most)  
*Galium odoratum* Sweet Woodruff \*  
*Geranium maculatum* Wild Cranesbill  
*Gillenia trifoliata* Bowman's Root  
*Helleborus foetidus* Bearfoot Hellebore  
*Helleborus orientalis* Lenten Rose  
*Heuchera* species Coral Bells  
*Hosta* species Plantain Lily  
*Iris cristata* Crested Iris  
*Lamium maculatum* Spotted Dead Nettle \*

*Lobelia cardinalis* Cardinal Flower \*  
*Lobelia siphilitica* Great Blue Lobelia \*  
*Mertensia virginica* Virginia Bluebells \*  
*Myosotis sylvatica* Forget-me-not  
*Phlox divaricata* Wild Sweet William  
*Phlox stolonifera* Creeping Woodland Phlox  
*Polygonatum* species Solomon's Seal \*  
*Primula* species Primrose  
*Pulmonaria* species Lungwort \*  
*Salvia koyame* Japanese Yellow Sage  
*Saxifraga stolonifera* Strawberry Begonia  
*Shortia galacifolia* Oconee Bells \*  
*Sisyrinchium angustifolium* Blue-Eyed Grass  
*Smilacina racemosa* False Solomon's Seal  
*Spigelia marilandica* Indian Pink  
*Thalictrum* species Meadow Rue  
*Tiarella* species Foam Flower \*  
*Tradescantia virginiana* Spiderwort \*  
*Tricyrtis* species Toad Lily \*  
*Trillium* species Wake Robin \*  
*Viola* species Violet \*

## Tolerant of Moist or Damp Soils

Those marked with a \* will tolerate wetter soils.

*Acorus gramineus* Sweet Flag \*  
*Aster novae-angliae* New England Aster  
*Astilbe x arendsii* Astilbe  
*Canna* species Canna \*  
*Carex* species Sedge \*  
*Chelone* species Turtlehead \*  
*Cimicifuga* species Bugbane  
*Colocasia esculenta* Elephant's Ear \*  
*Crinum* species Milk and Wine Lily, Crinum  
*Cyperus alternifolius* Umbrella Sedge \*  
*Eupatorium purpureum* Joe-Pye Weed  
*Filipendula* species Meadow Sweet  
*Galium odoratum* Sweet Woodruff  
*Helianthus angustifolius* Swamp Sunflower\*  
*Hemerocallis* species Daylily  
*Hibiscus* species Rose Mallow, Confederate Rose  
*Hibiscus coccineus* Texas Star \*  
*Iris ensata* Japanese Iris \*  
*Iris virginica* Blue Flag\*  
*Iris laevigata* \*  
*Iris* hybrids Louisiana Iris \*  
*Ligularia* species Golden Ray \*

*Lobelia cardinalis* Cardinal Flower \*  
*Lobelia siphilitica* Great Blue Lobelia \*  
*Matteuccia pennsylvanica* Ostrich Fern  
*Monarda* species Bee Balm  
*Myosotis sylvatica* Forget-me-not  
*Osmunda regalis* Royal Fern \*  
*Physostegia virginiana* Obedient Plant  
*Primula* species Primrose  
*Tradescantia virginiana* Spiderwort  
*Zantedeschia aethiopeca* Calla \*

### Perennials for Hot, Dry Conditions

*Achillea* species Yarrow  
*Agapanthus africanus* Lily-of-the-Nile  
*Agave parryi* Hardy Century Plant  
*Andropogon* species Bluestem Grass  
*Artemisia* species Artemisia  
*Asclepias tuberosa* Butterfly Weed  
*Baptisia* species False Indigo  
*Belamcanda* Blackberry Lily  
*Coreopsis* species Coreopsis  
*Cortaderia selloana* Pampas Grass  
*Delosperma cooperi* Hardy Ice Plant  
*Festuca ovina* Blue Fescue  
*Gaillardia* species Blanket Flower  
*Gaura lindheimeri* Gaura  
*Helianthus* species Perennial Sunflower  
*Hemerocallis* species and hybrids Daylily  
*Hesperaloe parviflora* False Red Yucca  
*Iris* hybrids Bearded Iris  
*Kniphofia uvaria* Red Hot Poker  
*Lantana* species Lantana  
*Lavandula x intermedia* Provence Lavender  
*Liatris* species Gayfeather  
*Limonium latifolium* Sea Lavender  
*Nepeta* species Catmint  
*Oenothera* species Evening Primrose, Sundrops  
*Opuntia humifusa* Prickly Pear Cactus  
*Perovskia atriplicifolia* Russian Sage  
*Phlomis* species Jerusalem Sage  
*Rudbeckia* species Black-eyed Susan  
*Ruellia brittoniana* Mexican Petunia  
*Salvia greggi* Texas Sage  
*Santolina* species Lavender Cotton  
*Sedum* species Stonecrop  
*Sempervivum tectorum* Hens & Chickens

*Solidago odora* Sweet Goldenrod  
*Stachys byzantina* Lamb's Ear  
*Verbena* species Verbena  
*Yucca* species Yucca

### Perennials for Poor, Sandy Soil

*Achillea* species Yarrow  
*Anthemis tinctoria* Golden Marguerite  
*Asclepias tuberosa* Butterfly Weed  
*Baptisia* species Wild Indigo  
*Belamcanda chinensis* Blackberry Lily  
*Euphorbia* species Spurge  
*Gaillardia* species Blaket Flower  
*Gaura lindheimerii* Gaura  
*Hemerocallis* species Daylily  
*Hesperaloe parviflora* False Red Yucca  
*Lantana* species Lantana  
*Plumbago auriculata* Plumbago  
*Salvia greggi* Texas Sage  
*Setcreasea pallida* Purple Heart  
*Yucca* species Yucca

### Attractive Foliage

Those marked with a \* are gray or silvers that tolerate heat and humidity.

*Acanthus* species Bear's Breech  
*Alchemilla mollis* Lady's Mantle  
*Artemisia* 'Powis Castle' Wormwood \*  
*Baptisia* species False Indigo  
*Chrysanthemum pacificum* Gold & Silver Mum  
*Cynara cardunculus* Cardoon  
*Delosperma cooperi* Hardy Ice Plant \*  
*Dianthus gratianopolitanus* Cheddar Pink \*  
*Helleborus orientalis* Lenten Rose  
*Heuchera* species Coral Bells  
*Hosta* species and hybrids Plantain Lily  
*Iris pallida* 'Variegata' Varigated Sweet Iris  
*Lamium maculatum* Spotted Dead Nettle  
*Marrubium incanum* Silver Horehound \*  
*Opuntia humifusa* Prickly Pear  
 Ornamental Grasses  
*Phlomis fruticosa* Jerusalem Sage \*  
*Polygonatum* species Solomon's Seal  
*Pulmonaria* species Lungwort  
*Santolina chamaecyparissus* Lavender Cotton \*  
*Sedum* species Stonecrop

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*Sempervivum tectorum* Hen-and-chicks  
*Stachys byzantina* 'Big Ears' Lamb's Ear \*  
*Teucrium fruticans* Silver Germander \*

## **Perennials That Can Be**

### **Invasive**

*Aegopodium podagraria* Goutweed  
*Ajuga* Bugleweed  
*Artemisia ludoviciana* Western Mugwort  
*Arundinaria* species Bamboo  
*Arundo donax* Giant Reed  
*Bambusa* species Clumping Bamboo  
*Campanula rapunculoides* Creeping Bellflower  
*Chrysanthemum leucanthemum* Ox-eye Daisy  
*Coronilla varia* Crown Vetch  
*Cortaderia jubata* Purple Pampas Grass  
*Equisetum hyemale* Horsetail  
*Euphorbia cyparissias* Cypress Spurge  
*Elymus arenarius* Blue Lyme Grass  
*Eupatorium coelestinum* Hardy Ageratum  
*Hemerocallis fulva* Common Daylily, Ditch Lily  
*Houttuynia cordata* Chameleon Plant  
*Imperata cylindrica* Japanese Blood  
Grass *Iris pseudocorus* Yellow Iris  
*Lantana camara* Lantana  
*Lychnis coronaria* Rose Campion  
*Lysimachia* species Loosestrife  
*Lythrum salicaria* Purple Loosestrife  
*Miscanthus sinensis* Silver Grass; Zebra Grass  
*Macleaya* species Plume Poppy  
*Mentha* species Mint  
*Oenothera* species Evening Primrose  
*Persicaria virginiana* Tovar  
*Phalaris arundinaceae* var. *picta* Ribbon Grass  
*Phyllostachys* species Japanese Bamboo  
*Physostegia virginiana* Obedient Plant  
*Polygonum* species Knotweed  
*Tanacetum vulgare* Tansy  
*Vernonia* species Ironweed

Prepared by Karen Russ, HGIC Horticulture Specialist, and  
Bob Polomski, Extension Consumer Horticulturist, Clemson  
University. (New 06/99.)

*This information is supplied with the understanding that no  
discrimination is intended and no endorsement by the  
Clemson University Cooperative Extension Service is  
implied. All recommendations are for South Carolina  
conditions and may not apply to other areas*

# FUNDING

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Possible Funding Sources. Landscapes for Learning. Updated May 2008

## **Some Possible Sources of Funding for School Grounds Projects** **Compiled by Landscapes for Learning** **Clemson University** **Clemson, South Carolina**

American Honda Foundation

<http://corporate.honda.com/america/philanthropy.aspx?id=ahf>

Mary Reynolds Babcock Foundation

102 Reynolds Road, Winston-Salem, NC 27106-5123

Tel: 336-748-9222 Email: [info@mrbf.org](mailto:info@mrbf.org)

Captain Planet Foundation

One CNN Center, Tenth Floor, South Tower, Atlanta, GA 30303

Tel: 404.827.4130

Note: All activities must be child initiated and child driven.

<http://captainplanetfdn.org/>

DoSomething Grants. Check out the Plum Award and the Spring Into Action Grants, [http://www.dosomething.org/grant\\_list](http://www.dosomething.org/grant_list)

EIA Teacher Incentive Grants

Office of Professional Development, SC Dept. of Education, 1429 Senate Street, Columbia, SC 29201 Tel: 803.734.8446

Fiskars – Project Orange Thumb.

[http://www.fiskars.com/content/garden\\_en\\_us/Garden/Community/project+orange+thumb](http://www.fiskars.com/content/garden_en_us/Garden/Community/project+orange+thumb)

Green School Project, <http://www.greenschoolproject.com/>. Collect spent ink cartridges, printers, pdas, cell phones, etc. Send them in. Receive a check.

Hamburger Helper. (General Mills) <http://myhometownhelper.com>

Healthy Sprouts Award, National Gardening Association. Next deadline:

October 15, 2008. Awarded to schools that use the garden to teach about nutrition and the issue of hunger in the United States. Must plan to garden in 2009.

<http://www.kidsgardening.com/healthysprouts.asp>. See the NGA's web pages for more awards: <http://assoc.garden.org/grants/>

Lorrie Otto Seeds for Education Fund

Email: [www.for-wild.org/](http://www.for-wild.org/)

Possible Funding Sources. Landscapes for Learning. Updated May 2008

Love Your Veggies Grants

<http://www.loveyourveggiesgrants.org/>

Lowe's Outdoor Classroom Program,

<http://www.lowes.com/lowes/lkn?action=pg&p=AboutLoves/outdoor/index.html>

The National Environmental Education & Training Foundation, Inc.

<http://www.neetf.org>

National Geographic Society Education Foundation

1145 17<sup>th</sup> Street, NW, Washington, D.C. 20036-4468 Tel: 202.828.6674

Note: All grants must relate to geography. A number of categories (types) of grants are available. <http://www.nationalgeographic.com/foundation/>

Phillips Environmental Partnership Awards

The Center for Environmental Education, 104 Industrial Bldg., Stillwater, OK 74078

Up to \$5,000. Project must be beneficial to the community.

Rodale Institute. Organic School Gardens Award.

<http://www.kidsgreen.org/gardens/index.html>

South Carolina Department of Health and Environmental Control. Champions of the

Environment. <http://www.scdhec.net/environment/water/champion.htm>

Toyota Motor Company, various categories of grants, teaching & environmental included,

<http://www.nsta.org/pd/tapestry/>;

[http://www.toyota.com/about/our\\_commitment/philanthropy/education/toyota\\_usa](http://www.toyota.com/about/our_commitment/philanthropy/education/toyota_usa)

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### **Other:**

Wal-Mart has a school gardens program that operates locally. Wal-Mart has an Environmental School grant program. <http://www.walmartfoundation.org> Check with your local store for more information.

Most national/international companies (e.g., banks) have community giving projects. Typically, the first step is to contact the facility in your own community.

Extension Service offices, Local civic organizations, local businesses, and local garden clubs may be able to offer cash or in-kind donations, as well as *pro bono* expert advice.

Possible Funding Sources. Landscapes for Learning. Updated May 2008

South Carolina Wildlife Federation – source for resource material and information on funding. [www.scwf.org](http://www.scwf.org) Has had a mini-grant program.

Check for community foundations in your area or region.

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This information was provided by Brenda Vander Mey ([vanmey@clemson.edu](mailto:vanmey@clemson.edu)) and Vanessa Dodd ([vdodd@clemson.edu](mailto:vdodd@clemson.edu))

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Any statements, comments, and conclusions are those of the authors and do not necessarily represent the views and opinions of the United States Department of Agriculture, those of Clemson University, or those of other persons or agencies that have helped support this project.

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## **Challenge for the Environment Grant**

The PalmettoPride Challenge for the Environment grant is designed to get elementary, middle and/or high school students involved in activities that will educate them and their communities about the importance of keeping their state clean and attractive, while promoting in the next generation a sense of pride in the community. Successful projects will be designed to refurbish the environment and change the attitudes of those who do not value a clean and beautiful environment.

### **Levels of Funding**

Grant awards may range up to up to \$4,500. Eligible grant activities may include any combination of the following projects:

#### **Carolina Fence™ Garden – Up to \$2,500, 1 per school, per school year**

The South Carolina Wildlife Federation's Carolina Fence™ Garden is a simple landscaping program that attracts native wildlife species to habitats by using plantings and landscaping materials that are readily found in local garden shops and nurseries. The Carolina Fence™ Garden incorporates both natural and cultural elements, which have been designated as symbols of our state.

#### **Recycling Troopers – Up to \$1,500, 1 per school, per school year**

Dorchester County Recycling and Keep Dorchester County Beautiful developed the award-winning Recycling Troopers program as a recycling educational outreach in the Dorchester County Public Schools. This student led white paper recycling program teaches students responsibility for their school and the environment. It also helps develop strong leadership skills. This program is easy and fun for the whole school. The students take pride in their accomplishments, and it unites the school on a single project. This program can be open to newspaper recycling and can work with schools that have existing recycling programs.

#### **Green Readers – Up to \$500, per school year**

Establish a Green Readers program in your school. Purchase from a suggested list of environmentally focused books that fall within the current ELA guidelines.

**Items not covered by grant:** Absolutely no Salary/Labor Costs

### **Eligible Applicants**

Any accredited school in South Carolina. There are two ways a school may apply for a grant:

1. The school, as a whole
2. A school club/organization or national service program

### **Grant Guidelines**

1. Must include the PalmettoPride and Department of Education [K-12 Litter Curriculum](#) as part of their lesson plans during the grant period.
2. Participate in the Great American Cleanup (March - May)
3. Must submit cleanup results online by June 30, 2010
4. Must submit an Expenditure and Final report

For more information please contact our Grants Manager, [Sherryl Jenkins](#).

# HABITAT CERTIFICATION

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A school garden can be certified as a Wildlife Habitat, Schoolyard Habitat, and/or Carolina Fence™ Garden. The application for certification for the Schoolyard Habitats Program of the National Wildlife Federation is included.



# Application for Certification

A *Schoolyard Habitats*® site is an incredible addition to your learning community. The information you provide on this application describes the steps you have taken to develop your site and how you will use it for educational purposes, so that it can be considered for official NWF certification.

Name of School or Organization: \_\_\_\_\_

Office Use:

Name of Principal or Director: \_\_\_\_\_

School Address: \_\_\_\_\_

Habitat # \_\_\_\_\_

Date Received:

\_\_ / \_\_ / \_\_\_\_

State \_\_\_\_ County or District \_\_\_\_\_ Zip Code \_\_\_\_\_

Certified \_\_\_\_\_

School or Organization Telephone: \_\_\_\_\_

Amt. Paid \_\_\_\_\_

On-site Contact Name: \_\_\_\_\_

Source Code:

Contact E-mail Address: \_\_\_\_\_

In what type of area is the school property?

- urban     suburban     rural

What is the size of your Schoolyard Habitats site?

- less than 1/8 acre     1/8 to 1/4 acre     1/4 to 1/2 acre     1/2 to 1 acre     more than 1 acre

## PROJECT COMPONENTS

**WILDLIFE:** *What types of wildlife does your Schoolyard Habitats site support?*

- insects/invertebrates     fish     birds  
 amphibians     reptiles     mammals

**FOOD:** *Plants are the best food source for wildlife. Feeders can be used as a supplemental source of food. Remember some creatures will become food*

*for others in a balanced habitat. Encourage natural diversity of wildlife in the schoolyard to ensure a healthy ecosystem. How do you provide food for wildlife? (requirement = 3 or more)*

*Plant food:*

- seeds     nuts     berries     fruits  
 nectar     sap     foliage/twigs     pollen

*Feeder Types:*

- tube     platform     suet  
 hummingbird     squirrel     butterfly

nwf.org

**WATER:** *Wildlife needs a clean water source for drinking and bathing. How do you provide water for wildlife?* (requirement = 1 or more)

- bird bath     water garden/pond     lakefront
- riverfront     stream     coastal     spring
- puddling area     seasonal pond     wetland

**COVER:** *Wildlife needs places to find shelter from the weather and from predators. How do you provide cover for wildlife?* (requirement = 2 or more)

- wooded area     dense shrubs/thicket
- bramble patch     evergreens     ground cover
- brush pile     log pile     rock pile or wall
- caves     meadow/prairie     roosting box
- water garden/pond     burrows

**PLACES TO RAISE YOUNG:** *In order to provide complete habitat, you must provide places for wildlife to engage in courtship behavior, mate, and then bear and raise their young. How do you provide places for wildlife to raise young? (e.g., nesting birds, egg-laying amphibians)* (requirement = 2 or more)

- mature trees     dead trees
- meadow/prairie     dense shrubs/thicket
- nesting box     water garden/pond
- burrows     caves     wetland
- host plants for caterpillars to eat

**PLANT LIST:** *Plant communities form the foundation of habitat for all wildlife. Plants that are native to your region are best. Check the plant types that grow in your Schoolyard Habitats site.*

- evergreen trees     deciduous trees
- evergreen shrubs     deciduous shrubs
- vines     grasses and grass-like plants
- cacti/ succulents     aquatic plants
- wildflowers     ferns     other

*Optional: List plant species included in your Schoolyard Habitats site:*

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**MAINTENANCE AND SUSTAINABLE GARDENING PRACTICES:** *How you manage your Schoolyard Habitats site will have effects on the health of the soil, air, water, and habitats for wildlife. How will you maintain your Schoolyard Habitats site?* (requirement = 2 or more)

*Water conservation:*

- vegetative buffer zone around water feature
- rain garden     mulching     reduce lawn areas
- capture rain water from roof     xeriscape
- drip or soaker soaker hose     reduce erosion
- do not use chemical pesticides
- do not use chemical fertilizers

*Soil conservation:*

- mulching     reducing erosion
- composting     not using chemical pesticides
- not using chemical fertilizers

*Controlling exotic species:*

- monitor nesting boxes     removing invasive plants
- restoring native plants     reducing lawn areas

*Organic practices:*

- no chemical pesticides     no chemical fertilizers
- attracting beneficial insects     composting

nwf.org

**WIDENING THE CLASSROOM WALLS: Your Schoolyard Habitats site opens doors to exciting adventures beyond the classroom. How does your learning community plan to make use of this site?**

Please check all that apply:

- support state and local standards for:
  - science  math  language arts  fine arts
  - social studies  physical education
  - technology  other \_\_\_\_\_
- develop and implement interdisciplinary lessons
- increase teacher content knowledge
- offer greater variety of learning experiences that build on multiple intelligences
- increase student exposure to experiential learning in the natural world
- provide inquiry-based instruction that reaches all students, including those with limited English proficiency, special needs, or disabilities.
- support enrichment programs and after-school classes
- promote community engagement
- other \_\_\_\_\_

**SITE ACCESSIBILITY: What features make your Schoolyard Habitats site more accessible to individuals with disabilities?**

- raised planting beds
- wide pathways
- other \_\_\_\_\_

**SCHOOLYARD HABITATS PROJECT TEAM MEMBERS: Who helped create your site?**

- Classroom Teacher  Teacher Specialist
- Parent  Administrator
- Resource Professional  Student
- Habitat Steward  Community Member

Optional:

\_\_\_\_\_  
(Name of Habitat Steward)

**OPTIONAL MATERIALS:**

Send a sketch, site diagram, or landscape design (no larger than 11x17) of your *Schoolyard Habitats* site to NWF. Label any features included that help make the habitat more accessible (e.g., wide pathways and raised planting beds).

Send us 1-2 photos of your site. Photos that include people must be accompanied by a signed photo release form for each person in the photos and for the photographer.

Please call: **1-800-822-9919** for a release form or download it online at:

[www.nwf.org/schoolyardhabitats/printnow.cfm](http://www.nwf.org/schoolyardhabitats/printnow.cfm)

Be sure to label each item submitted with the name, address, and phone number of your school. NWF will not return these photos or site diagrams, so please keep duplicates for your records.

nwf.org

- To apply, please send:  completed application  
 \$15 nonrefundable fee  
 \$28 for each sign, if desired

... to: Schoolyard Habitats Program  
National Wildlife Federation  
11100 Wildlife Center Drive  
Reston, VA 20190-5362



*Please keep a copy of this application for your records. Allow 3-4 weeks for processing. Thank you.*

## RESOURCES

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<http://www.scstatehouse.gov/studentpage/coolstuff/plants.shtml>

<http://www.scwf.org/index.php/education-programs/habitats/fence-garden>

<http://www.sciway.net/facts/sc-state-stone-blue-granite.html>

<http://www.ncsu.edu/goingnative/whygo/benefits.html>

<http://www.clemson.edu/extension/hgic/>

<http://en.wikipedia.org>

[http://www.clemson.edu/extension/hgic/videos\\_posters/posters/tree\\_planting.pdf](http://www.clemson.edu/extension/hgic/videos_posters/posters/tree_planting.pdf)

*The South Carolina Master Gardener Training Manual*, Clemson University, 2007.

*The Southern Living Garden Book*, Oxmoor House, Inc., 2004.

For pictures and diagnosis ONLY –

*Ortho Home Gardener's Problem Solver*, Meredith Books, 2004.

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**In an article at <http://www.hgtv.com/landscaping/why-garden/index.html> Paul Mckenzie, horticulture extension agent in Durham, N.C. writes:**

**In a world where conflict and strife seem to surround us, gardeners create a space where peace and beauty reign. In a time of rampant selfishness, gardeners set the example of selflessness. For it's impossible to garden only for yourself. The colors and textures you splash upon the ground are soaked up by all the birds, butterflies and passersby in your neighborhood.**

**But mostly, it's important to be a good steward of a small patch of earth and to know that you are one among millions who are helping to heal a wounded planet, one garden at a time.**