

mentioned problems, weeds can also be a present where the turfgrass is competitive and being managed properly. A good example in warm-season turf is crabgrass and goosegrass. Both of these weeds can germinate prior to breaking dormancy of the warm-season turf species. In this case, it is impossible for the turf to have a competitive edge early in the spring because it is still dormant.

Large and smooth crabgrass can germinate when soil temperatures near the soil surface average about 52 to 55 degrees F. over several consecutive days. In many areas of the South, this can be as early as February through April. Goosegrass germinates when soil temperatures are approximately 60 degrees F., which is usually a minimum of two to three weeks later. Depending on the area, many warm-season turf species may not reach the maximum growth potential until late April until mid-June. Where crabgrass and goosegrass problems exist, the use of appropriate preemergence or postemergence herbicides are generally required.

For maximum control with preemergence crabgrass/goosegrass herbicides, application must occur prior to any weed seed germination. Probably the most common cause of poor control with preemergence herbicides is application after crabgrass germination. Not only must these herbicides be applied prior to any germination for maximum control, they must also be watered in to set up a chemical barrier. For proper application and maximum control, it is helpful to understand how these herbicides work.

It is a fairly common misconception that these preemergence herbicides prevent weed seed germination. They do not prevent weed seed germination!

The germinating weed seedlings die as they grow through the herbicide treated zone. With the case of dinitroaniline herbicides such as Barricade, pendimethalin, Team, Balan, Surflan, and XL the herbicide is absorbed into young roots and shoots of emerging weeds. Cell division is inhibited and the weed seedling dies.

A common question regarding preemergence control of crabgrass and goosegrass is "Can I enhance control by splitting the herbicide application?"

The answer to this question depends on where you are at geographically. As a general rule, the

longer frost-free season, the more advantage there will be to splitting the herbicide application. For instance, in North Carolina, we often see enhanced crabgrass control by splitting the application in the eastern part of the state but seldom see an advantage in the western part of the state.

Again, this is due to the difference in the length of the season. In the far eastern part of the state, crabgrass can germinate as early as early March and the first frost is usually in November, whereas in the western part of the state, crabgrass may not germinate until early April and first frost is in October.



(This excludes the mountain regions where climate prevents the use of warm-season grasses).

Compare these dates to crabgrass germination and first frost for your geographical area to get an indication on whether you should consider split applications. For goosegrass control, we almost always see an advantage to splitting the application with dinitroaniline herbicides, regardless of where we are in the state. The reason for this is goosegrass is not as easily controlled by these herbicides as is crabgrass.

By splitting the application of a dinitroaniline herbicide, generally half of the full herbicide rate is applied at the recommended time prior to any crabgrass germination. The remaining half is then applied about eight weeks later. One exception is with Barricade. For this product, it is generally recommended that two-thirds of the rate be applied at

*cont. on page 64*

**Stolon rooting by 'Tifway' bermudagrass is inhibited by certain pre-emergence herbicides. Note clubbed roots of bermudagrass plant which prevent it from pegging down.**

# B E O N T H E M O L T A C C E L E R A T O R C O M P O U N D



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**GRUBS, CUTWORMS AND SOD WEBWORMS WILL.**

Good weed control during establishment can result in more rapid establishment. Note more rapid establishment of 'Tifway' bermudagrass on left side of picture as opposed to right side where there is poor weed control.

*cont. from page 61*

the initial application date and the remaining one-third be applied about eight weeks later.

When considering the use of dinitroaniline herbicides for weed control, it is generally not recommended that they be used where additional grow-in is needed. This is because these herbicides also affect root growth of the turfgrass plants. Therefore, if there are bare areas from excessive wear, or if for whatever reason the warm-season turf species is not well established (recently established, etc.), these

important during establishment because weeds slow down establishment and poor control during this time can lead to weed seed buildup in the soil which leads to weed problems in the future.

Any new planting of turf should include a carefully planned weed management program during the establishment phase. As previously mentioned, sound turf management practices will assist in the establishment phase. Proper soil preparation, optimum soil pH, and proper soil fertility are all critical

because they will allow more rapid growth of the turfgrass which shifts the competitive edge to the turf and away from weeds. If the warm-season turf species is vegetatively planted, care should be taken to keep sprigs moist after proper planting procedures. This means light watering immediately after planting and subsequent light watering at least a couple of times daily to keep sprigs from drying out.

For centipedegrass, atrazine can be used after sprigs or plugs are actively growing and stolon



herbicides can slow down the spread of the turf into these thin areas. The photograph on page 61 illustrates root injury from a dinitroaniline herbicide on 'Tifway' bermudagrass that is not well established. In these situations, it is generally recommended that weeds be controlled with the appropriate postemergence herbicide registered for use on the particular turfgrass species.

#### **Control during establishment**

During establishment, good weed control during establishment is often the most difficult to obtain. This is because sunlight is directly contacting the soil surface because the turf is not yet competitive. In addition, most turfgrass species are more sensitive to herbicides and can easily be injured during the establishment phase. Good weed control is extremely

growth has begun. There are many atrazine labels and application guidelines differ significantly depending on which product you use. Therefore, make sure you follow label directions for the particular atrazine product used. Atrazine can also be applied in November to December to provide control of many winter annual weeds. Vantage can be used to control many grassy weeds in centipede once there is a minimum of three inches of new stolon growth.

Vantage and atrazine can also be used once centipede becomes well established. On established centipede, care should be taken when using 2,4-D contained products for weed control. Centipede is sensitive to 2,4-D and should only be used at ex-

*cont. on page 66*

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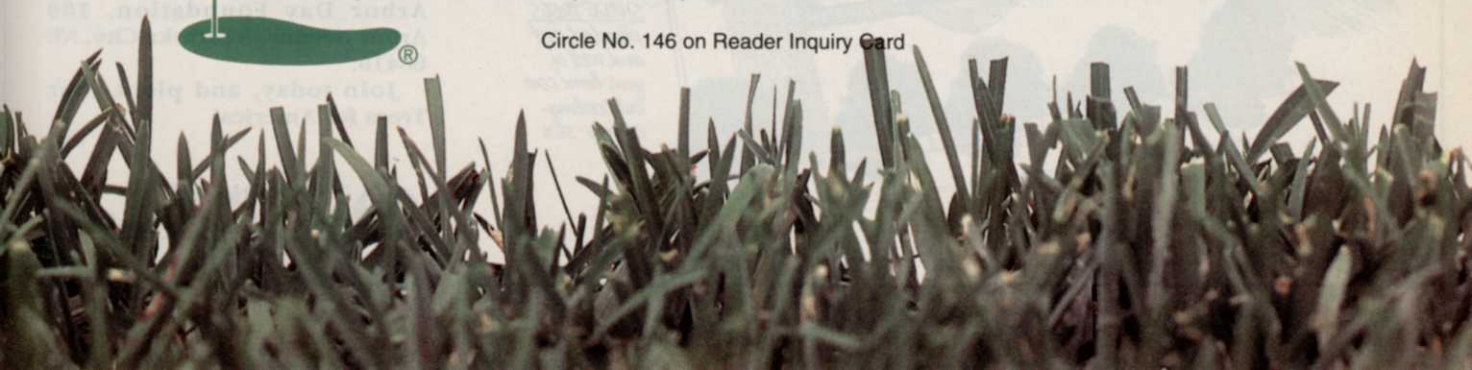
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**Think of weeds and the turfgrass as competitors for space in the landscape. Weeds are opportunistic. When the turfgrass is not healthy, weeds gain the competitive edge**

tremely low rates if at all. A better choice for control of miscellaneous broadleaf weeds in centipede is Confront. Confront offers good control of many broadleaf weed species and centipede has good tolerance to this herbicide when

used according to label directions.

As with centipedegrass, certain atrazine labels allow its use on zoysiagrass and St. Augustinegrass after plugs or sprigs are actively growing. Again, check individual labels for guidelines. Certain labels also allow its use on hybrid bermudagrass. When sprigging bermudagrass or zoysiagrass, Ronstar can be used at time of sprigging. The use of this product at sprigging has shown to be very effective in controlling many grassy weeds as well as other annual weeds and does not have a negative effect on growth

of sprigs. In fact, more rapid establishment is usually realized due to reduced competition from weeds. Unfortunately, Ronstar cannot be used in home lawns.

Good weed management in warm-season turf begins at establishment. Weed control during establishment should be planned prior to planting. Failure to plan for weeds during the establishment phase can result in failure. Remember, the best way to prevent weed problems is to properly manage the turfgrass. If herbicides are needed, make sure you check for turfgrass and weed sensitivity to the particular herbicide in question. **LM**

*The author is Assistant Professor & Extension Specialist Turfgrass Weed Management at North Carolina State University.*

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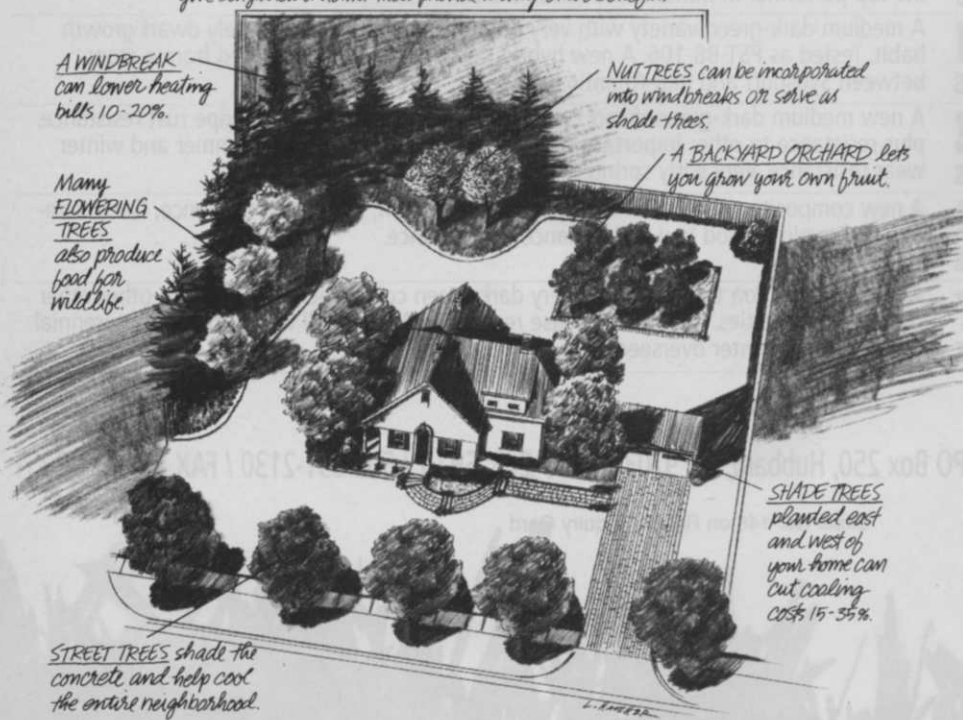
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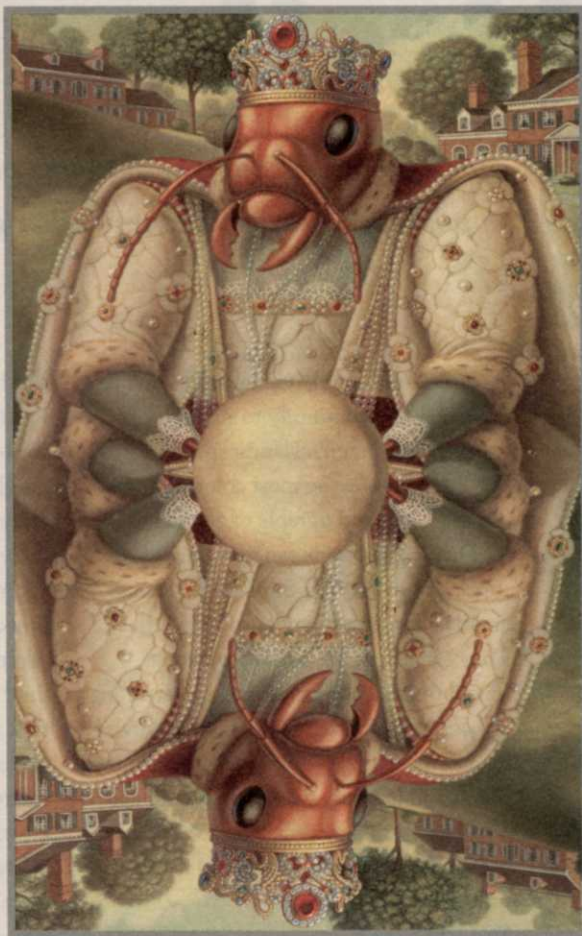
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New varieties of daylilies bloom all season.

## Sites need sun, drainage

In preparing a bed for perennials, remember that the plants can be left in place for several years. For this reason good site selection and soil preparation are extremely important.

► Select an area that provides at least morning sun and good drainage. Some species that like full sun in northern states will appreciate dappled afternoon shade when planted in the south.

► Avoid low places in the yard where water may stand after heavy rains.

► In poorly drained soils, plant on raised beds or incorporate a large amount of organic matter into the soil before planting, to improve drainage and aeration.

► A small amount of a balanced, slow-release fertilizer can be added if the soil nutrient level is poor.

H.S.S.

# Southern perennials versatile, lasting

*Throughout the south, herbaceous perennials are gaining in popularity faster than any other group of plants.*

by H.S. STEVENS

**S**outhern perennials add stability and continuity to the home or commercial landscape, and are among the most colorful, versatile and durable of all plants.

Due to their wide range of heights, textures, bloom times and colors, perennials are ideal for almost any purpose or effect. They can be used in massed plantings, mixed beds or borders or even as screening or background plants. Add in their durability and relatively low maintenance requirements and it is easy to see why perennials are playing an increasingly important role in the plans of homeowners and landscape professionals.

### Plan your work

The best perennial beds start out on paper. Measure the area to be planted and draw it to scale. On another sheet, list the plants you want to grow. Now you're ready to arrange them in their proper places on your plan.

Consider mature size, color and texture combinations, bloom time and height. By selecting varieties that bloom at different times, you can have flowers throughout the entire season.

### Ten that will thrive

When selecting specific perennials for

southern landscapes, there are many factors to consider. Between the eastern and western boundaries of what we call the South, there are wide variances in temperatures, rainfall and soil types, and each of these conditions must be taken into account when matching the plant to its proposed site. Fortunately, many of the best perennial plants are not too picky about their surroundings. With minimal care, they will thrive in any reasonable soil type, survive winter cold and summer heat, and still reward us with beautiful foliage and flowers. The ten perennials described below meet each of these criteria, and were chosen with input from Tom Brinda, vice-president of the Dallas Arboretum and Botanical Gardens, and Ruth Baumgardner, southeast regional director of the Perennial Plant Association and owner of Mouse Creek Nursery in Riceville, Tenn.

**Bearded iris (*Iris* sp.).** Irises were a mainstay in southern gardens when low maintenance gardening was a necessity instead of a philosophy. Their graceful beauty, dependability and easy care made them popular at a time when water was pumped from a well and pesticides were few in number and rarely used. These same qualities make irises popular today.





#### Hosta, 'Royal Standard'

Plant Association Plant of the Year for 1995. Silvery-gray aromatic foliage provides the background for masses of violet-blue flowers. Russian sage makes a striking specimen plant or mass display.

*Zones 5 to 9; sun; height, 4 to 5 feet.*

**Purple coneflower (*Echinacea purpurea*):** Highly adaptable, easy to grow and

free-flowering, purple coneflowers will not only brighten the garden throughout late spring and summer, but are great for cutting or drying. White cultivars are also available.

*Zones 3 to 9; sun to part sun; height, 24 to 30 inches.*

**Hostas:** A fixture in northern landscapes for many years, hostas are now enjoying increased popularity in southern gardens. For shaded areas, they are among the most attractive and care-free plants we can grow. Hundreds of varieties are now available in a wide variety of sizes, shapes and colors. Some are ideal for use as low-care, shade-loving ground covers. Others make ideal borders for semi-shaded pathways or around shrubs and flower beds. Large growing varieties can be used as accent or specimen plants. Their uses are virtually unlimited. Check with local horticulturists for the best varieties for your area.

*Zones 3 to 8; shade to semi-shade; height, 8 to 36 inches.*

**Louisiana iris:** One of the few perennials that is tolerant of wet, poorly-drained soils, Louisiana iris can turn a low but sunny wet spot into a beautiful flower bed. Also adapted to drier soils, Louisiana iris are available in shades of red, yellow, purple and white.

*Zones 4 to 9; sun to mostly sun; height, 24 inches.*

**Cannas:** With cannas, new is definitely better. Im-

proved varieties, such as the 1992 All-America Selection 'Tropical Rose', are more compact and versatile than older types. Best used in a massed planting, cannas will provide non-stop color from late spring until fall frost. Available colors include red, pink and yellow.

*Zones 7 to 11; sun to part sun; height, 2 to 6 feet, depending on variety.*

**Ornamental grasses:** These provide year-round interest in any landscape. Grown both for their attractive foliage and unique feathery plumes, clumps of these grasses make outstanding accents or focal points in the landscape. *Cortaderia selloana* 'Pumila' and *Miscanthus sinensis* 'Gracilimus' are excellent cultivars with wide adaptability, but it is good to check with local growers for your area's best varieties.

*Although hardiness of different species varies, most are hardy to zone 5; sun to part sun; height, 1 to 6 feet or more, depending on variety.*

Many other southern perennials would fit southern gardens. Some, however, such as coreopsis, columbine, salvia and phlox, are more variety sensitive. When choosing species or specific cultivars for a particular locale, it is wise to check with your nearest cooperative extension office, plant society or other authoritative source for their recommendations.

*H.S. Stevens is a former instructor for the Texas Agricultural Extension Service. He writes a weekly garden column for the Dallas Morning News. Photos by Bobbi Benson.*

Tolerant of heat, cold and drought, irises provide unexcelled beauty both in the garden and as cut flowers.

*Zones 3 to 9; sun to half-sun; height, 12 to 30 inches, depending on variety.*

**Daylily (*hemerocallis*):** One of the easiest and most rewarding of all perennials, each plant can produce 50 or more blossoms. By choosing several different varieties, you can have non-stop color all summer long. Recently-developed hybrids are far superior to older varieties, and provide more and larger flowers, a longer bloom time and a wide selection of colors. Check with a local daylily society or grower for the best cultivars for your area.

*Zones 4 to 9; full to part sun; height, 12 to 48 inches, depending on variety.*

**'Goldsturm' coneflower (*Rudbeckia fulgidaa sultantii* 'Goldsturm')**: A tough, persistent perennial whose golden yellow blossoms will light up the landscape throughout the entire summer and fall. Beautiful in the garden or as long-lasting cut flowers.

*Zones 4 to 9; full sun; height, 18 to 24 inches.*

**Yarrow (*Achillea* sp.):** Attractive, fern-like foliage and masses of yellow, red or white flowers will delight you all summer long. The flowers are excellent as cut flowers or for drying. Coronation Gold and *Achillea* 'Anthea' are outstanding cultivars.

*Zones 3 to 9; sun; height, 12 to 36 inches, depending on variety.*

**Russian sage (*Perovskia atriplicifolia*):** Called one of the great garden plants of all time, Russian sage was selected as Perennial



Mixed iris bed brightens this southern garden.



# Color schemes in flower change-outs

*The seasons point the way to the best color choices for planting beds that are changed out regularly.*

by LEAH ROTTKE

**S**pring color, when used with precision, can be the crowning touch to a landscaping project. Accurate color design and placement builds a landscape that sparkles with surprise, season after season.

#### Warm or cool colors

Red, orange and yellow fall on the warm side of the color divider. Blues, purples and greens are the cool colors. What matters most is the different effects the warm and cool colors have on people.

Cool colors appear to *recede*; warm colors *advance*. That's why "hot" colors seem to leap out at us. Use these optical tendencies to steer attention through the landscape.

Instead of trimming a winding pathway with a non-stop, strident blast of color, invite a stroll with subtle highlights at key points: the entry, the inside curves, and position a warm color planting at the end to draw the viewer along. Using cool colors is the age-old way to make a small space seem larger.

#### Customer preference counts

Customers prefer some colors more than others. If the customer dislikes yellow, that narrows your choices. If the customer dislikes yellow and loves red, that narrows your selection even further.

Many blue flowers fade in strong sunlight, and regardless of the pigment's strength, they seem to disappear altogether when viewed from a distance. Stick to good performers, and accent far-off blues with white. For commercial clients, start with "company colors," as well as colors used in the interior landscaping.

#### Seasons a guide

The seasons point the way to the best color choices for planting beds changed out regularly:

- ▶ browned reds, yellows and oranges signify autumn, an echo to falling leaves;
- ▶ spring typically calls for a show of clean, clear hues and an abundance of pastels.
- ▶ at any time, white is the essential focus sharpener and color brightener.

#### Four color schemes

The four basic color schemes can be cre-



*Nemesis strumosa*, *Nemesis*