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The color wheel can be used as a guide to the best color combinations.

### Penn State extension agent suggests ways to make your landscape designs distinctive, attractive and formal.

■ "There's something about flowers that affects people and they make you, as a landscape manager, look good," says Judy Schwank of the Penn State Cooperative Extension Service in Leesport, Pa.

"But you've got to think about it a little bit," she adds. Before planning annual displays, you've got to educate yourself about color combinations and a few basics of design.

"Know a little bit about color, mass and texture," Schwank advises. "Think about unity, about pulling elements in the landscape together. At first, limit yourself to two or three varieties."

She says that color can be used in many ways, for instance:

- to create a vista,
- to create borders around areas,
- to highlight signage,
- to help brighten up a dark or shady area, or
- to give the landscape a "signature."

"You need a full color wheel to plan your color scheme," she says. You can find one in an encyclopedia, use the one here, or buy one at a graphic arts supply house. Then, you can combine colors in a number of different ways:

- 1) Single color
- 2) Primary color scheme (using red, yellow, blue)
- 3) Complementary colors (opposites on the color wheel)
- 4) Split complements (at thirds of the color wheel)
- 5) Adjacent colors (next to each other on the color wheel)

"Colors give you a psychological feeling," Schwank says. "Reds and yellows project a warm feeling; blues and pastels are cooler."

Other recommendations which she made at the Northeastern Pennsylvania Turfgrass Conference earlier this year:

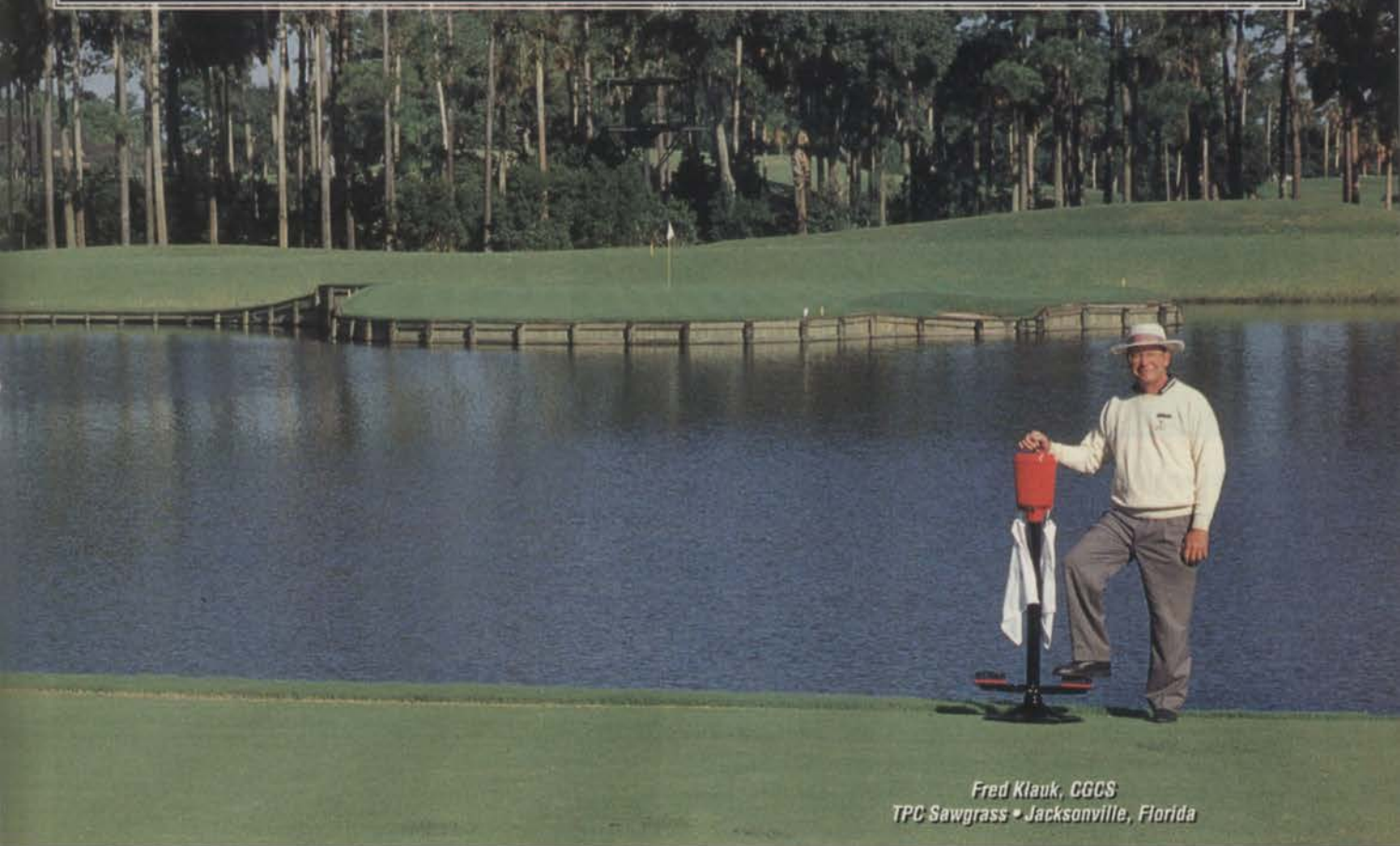
- ☞ **Know** the height of the plant you're purchasing.
- ☞ **Use one** variety of plant, if you're mixing colors, so they're all the same height.
- ☞ **Don't** line them up like soldiers. Use alternate spacing so they look less formal.
- ☞ **Remember:** the larger the plant, the faster the color.
- ☞ **Plant closer** together than label recommendations, using 20 to 30 percent more plants.
- ☞ **Tall plants** should go in the back, low ones in the front.
- ☞ **Mix** texture and shapes, or forms.

*continued on page 34*

Violet ageratum and yellow marigolds go well together.



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Zinnias lend a warm feeling to the landscape.

release fertilizer before planting and "hit them with quick-release during the season." During the growing season, you should also take off the dead flowers or you'll have botrytis problems on some plants.

She suggests this list of plants to try in your landscape: marigolds, melampodium (Gold Star Daisy), verbenas, gazania (daisy), petunias, gomphrena, dianthus, pansy, and vinca or periwinkle (but they will if planted early in cold, wet soils).

—Jerry Roche

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For instance, marigolds give a "coarse and massive feeling," cactus-type zinnias a "feathery" feeling.

Plan ahead, if possible, and make an arrangement to purchase plants with your greenhouse grower.

"You can make signs or designs out of flowers," she adds, "but be forewarned that they will be high maintenance."

**Special designs**—If you want to "paint" a special design, start by coloring

in squares on graph paper. This method can even work if you want to transpose a photo or complicated logo into flowers.

Before choosing which flowers you want to use, you should analyze your site. When planting, "organic matter helps," Schwank advises. And once the annuals have been planted, they will need some care. She suggests you apply slow-

Pastels have a calming effect on the surroundings.



## COLOR HINTS:

The Penn State Cooperative Extension Service has some interesting ideas for combining colors in the landscape, as stated by Judy Schwank. But here are some alternative ideas from the Netherlands Flowerbulb Information Center:

● **Blues and yellows**—Combine shades of blue and yellow, selecting from pale yellow to deep gold and sky blue to turquoise. These pairings are best used when one color is selected as the principal shade and the other is used for accent.

● **Pastel passions**—Luscious pinks, corals, creams, lavenders and other pastel shades can capture the imagination. Set amid the lush greens of spring, these soft hues and shades please the eye and complement many interior decors. As homeowners sometimes like to create "extended living spaces," they like the idea of tying the landscape into their overall house decorating.

● **Red and yellow**—To many, especially men, no other color combination captures the joy of springtime so well as red and yellow. Not surprisingly, red and yellow reign as one of the favorite color combinations, not only in the U.S., but worldwide.

● **Shades of white**—White on white, white with off-white and ivory and white are all combinations that have a sophisticated appeal. This look is especially suited for smaller gardens or sections of large garden beds. They also make a fabulous border against a brick or stone wall. For an elegant look, group flowers by size, planting clusters of taller flowers among the shorter plants.

● **Orange and pinks**—Once a no-no, mixing these shades has become, for many, a passion. In the garden, apricot and coral flowers shine alongside "old-rose" shades of pink and mauve.

● **Orchids and yellows**—Taxi-yellow and sun-washed orchid is a color combo that signals the onset of warmer weather. On opposite sides of the color wheel, these two shades—in endless hues—jazz up any colorless corner.

● **Purples, blues and fiery reds**—Flowers offer a wealth of choices in these color families. To avoid a spotty look, use large patches of flowers in the blue and purple family to anchor the scheme, adding smaller areas of red for dynamic accent, or vice versa. A solid dash of white here and there lightens and heightens the impact.

For more information, contact the Netherlands Flowerbulb Information Center: 162 Montague St., Brooklyn Heights, NY 11201; (718) 596-5400.

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# FAIRWAY CHAMPION.

## Weed control in cool season turfgrass

by S. Wayne Bingham  
Virginia Tech

■ Turfgrass management programs vary widely and depend, to a large extent, on the area or its use (see chart below). Weed management strategies begin with developing a total management program.

High quality turfgrass needs a greater maintenance intensity to provide a dense cover. In an established cool-season turfgrass, several agronomic practices are very important in the strategies against weeds:

- mowing height for Kentucky bluegrass may be 2½ inches to obtain the best defense against weed encroachment;

- mowing frequency is based on growth rate and is often enough so that only one-third of the turfgrass foliage is removed each time;

- irrigation to supplement natural rainfall when turfgrass begins to show signs of silt is particularly important, and may require an average of two to five times during the summer; and

- proper timing of fertilizer practices are programmed to encourage root development and foliar density. Even then, herbicides are an important part in weed management strategies.

**Pre-emergence herbicides**—These herbicides are used extensively for crabgrass control; are applied prior to weed seed germination; are relatively

insoluble in water; require some irrigation or rain to be most efficacious; are adsorbed to organic matter and clay in the soil surface; and prevent establishment of annual grasses by inhibiting the root growing out of the seed.

The commonly used pre-emergence herbicides in cool-season turfgrasses are listed in Table 1 and rated for effectiveness in crabgrass and goosegrass control as well as tolerances of bluegrass, tall fescue and perennial ryegrass.

For pre-emergence herbicides, it is important to identify the annual grassy weed growing in prior years. Check the label or tables for herbicide effectiveness and turfgrass tolerance before applications are made at least two weeks prior to expected germination.

Crabgrass germination occurs first, then goosegrass three or more weeks later. Crabgrass and goosegrass germinate in open, thin stands of turfgrass and emergence is

delayed and restricted in dense stands. Some herbicides provide less residual time than others and may require sequential applications. In cases of both crabgrass and goosegrass problems, split applications should be made to have enough herbicide present at the peak germination period of each grassy weed.

**Post-emergence herbicides**—In many cases, several different broadleaf weeds grow together and often require a combination of two or three herbicides. Commonly used formulations containing one active ingredient include 2,4-D, mecoprop, dicamba and triclopyr. (See Table 2.)

Approximately 120 weeds are important to turfgrass management programs. Each herbicide's active ingredient provides control of a portion of these weeds. For example:

2,4-D + dicamba control about 90 percent of weed species;

2,4-D + diclorprop + dicamba = 85 percent; dicamba alone = 75 percent;

2,4-D + diclorprop = 70 percent;

2,4-D + mecoprop + dicamba = 70 percent;

2,4-D + dichlorprop + mecoprop = 70 percent;

2,4-D + mecoprop = 65 percent;

2,4-D alone = 50 percent;

triclopyr alone = 40 percent; and

mecoprop alone = 25 percent.

Each label will indicate the most commonly controlled list of weed species  
*continued on page 38*

### COOL-SEASON WEED CONTROL STRATEGIES

- ❖ Follow good management practices to grow quality turfgrass.
- ❖ Prevent turfgrass from becoming thin or containing voids for weed encroachment.
- ❖ Select herbicides for turfgrass tolerance for weeds involved.
- ❖ Apply uniformly with calibrated applicator using label directions and precautions.
- ❖ Select the best time for each application.
- ❖ Employ a reliable applicator who will follow instructions and wear protective clothing.

—S.W.B.

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**A CAT WILL ALWAYS LAND ON ITS FEET.**

**IF YOU WASH YOUR CAR, IT WILL RAIN.**

**TOAST WILL ALWAYS FALL BUTTERED-SIDE DOWN.**

**USE SUBDUE AND YOU'LL ELIMINATE PYTHIUM.**

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and the turfgrasses that are tolerant for effective use. Therefore, it is imperative to identify the problem weeds and select a formulation appropriate for selective control.

**The newest**—Isoxaben (Gallery) is an

exceptional broadleaf herbicide which gives pre-emergence control. It appears quite effective for summer annual weeds such as knotweed, spotted spurge, yellow woodsorrel and purslane. With post-emergence herbicides for control of emergent weeds, isoxaben provides some control of perennial

weeds such as white clover, dandelion and plantain. It is for pre-emergence and has little post-emergence activity on weeds.

—Dr. S. Wayne Bingham is professor of weed science at Virginia Polytechnic Institute and State University in Blacksburg, Virginia.

Table 1. **TURFGRASS TOLERANCE AND WEED CONTROL RATINGS TO PRE-EMERGENCE HERBICIDES**

Herbicide	Ky. bluegrass <sup>1</sup>	Tall fescue	Perennial ryegrass	Large crabgrass <sup>2</sup>	Goosegrass
Benfenin	T	T	T	S	I
Bensulide	T	T	T	S	R
DCPA	T	T	T	S	I
Dithiopyr	T	T	T	S	I
Oxadiazon	T	T	T	S	S
Pendimethalin	T	T	I	S	I
Prodiamine	T	T	I-T	S	I
Siduron	T	T	I	S	R
Benfenin + trifluralin	T	T	I-T	S	I
Bensulide + oxadiazon	T	T	T	S	S

<sup>1</sup>Relative tolerance of turfgrass species: T=tolerant; I= intermediate, use with caution at low rates, may cause temporary injury and thinning; S= turfgrass is not sufficiently tolerant or not registered for use.

<sup>2</sup>S= weed is susceptible; I= intermediate control, good control at times with high rates, may require more than one treatment annually; R= resistant, less than 70 percent control.

Source: Dr. Bingham

Table 2. **EFFECTIVENESS OF BROADLEAF HERBICIDES; RESPONSE TO HERBICIDES AND MIXTURES**

Broadleaf	Control product ↓		2,4-D + mecoprop	2,4-D + mecoprop+ dicamba	2,4-D+ dicamba	2,4-D+ diclorprop	2,4-D + triclopyr	triclopyr+ clopyralid
	2,4-D	dicamba						
Black medic	R	S	I	S	S	S	S	S
Va. buttonweed	R	R	R	I-R	I	I	I	I
C. chickweed	R	S	S	S	S	S	S	S
M. chickweed	R	S	S-I	S	S	S	S	S-I
W. clover	I	S	S	S	S	S	S	S
C. dandelion	S	S	S	S	S	S	S	S
Dock	I	S	I	I	S	I	I	S-I
Wild garlic	I	I	I	I	S-I	I	I	I
Ground ivy	I-R	S-I	I	I	S-I	I	S	S-I
Henbit	I	S	I	S-I	S	S	S	S
Knotweed	R	S	I	I	S	I	I	I
B. plantain	S	I-R	S	S	S	S	S	S
S. spurge	I-R	S-I	S-I	S-I	S-I	S-I	S-I	S-I
Corn speedwell	R	R	R	R	R	I	I	I
Red sorrel	R	S	I	I	S	I	S-I	S-I
Violets	I-R	I	I-R	I-R	I	I	I	I
Wild carrot	S	S	S	S	S	S	S	S
Yarrow	I	S	I	I	S	I	I	I
Yellow wood-sorrel	I	R	I-R	I	I	S	I	I

R = Resistant weed, usually less than 70 percent control; I = intermediate level of control, with high ratio or repeat applications; S = susceptible weed, usually controlled at recommended rates.

Source: Dr. Bingham



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