



Daylilies show how well-placed, colorful flowers can beautify golf courses.

FLOWER POWER ON THE GOLF COURSE

More golf courses are coming alive with colorful trees, shrubs, perennials and bulbs.

by Lois Berg Stack, Ph.D., University of Maine

A golf course is more than a broad swath of turf with plantings of trees and shrubs between fairways. More and more, today's modern golf course is being embellished with splashes of color—flowering trees and shrubs, and striking beds of flowering annuals, perennials and bulbs.

Annual flowers like geraniums and impatiens, perennials like Siberian irises and daylilies, and spring bulbs like daffodils and crocuses, have much to offer the golf course landscape.

The most obvious attribute is color. Flowers offer an endless array of shades, hues and tints from the crocuses of early spring through the



Some golf courses, like the Sentry Insurance course in Steven's Point, Wisc., are known for their flower plantings.

chrysanthemums of late fall.

A second attribute is variety. Flowers vary tremendously in texture, color, size, shape, habit, season of flowering and foliage interest.

A third and perhaps more subtle attribute of flowers is the effect of their variety on the landscape. Flowers change dramatically from one season to the next. A landscape of trees and shrubs can be quite constant, particularly if they are evergreen. But a landscape that contains flowers changes constantly.

Each season has its own look: a touch of color brightens the spring landscape; full color develops in summer; textures emerge in autumn; and the color of

flowers gives way to the architecture of trees and shrubs in winter. This change can be a great asset on a golf course, relieving the monotony of looking at the same view from one

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Annual vinca is an ideal flower for the golf course because it produces flowers all season yet requires almost no maintenance.

PLAN BEFORE YOU PLANT

Hardiness is the first consideration when choosing flowers for the golf course.

This is not a factor in choosing annuals, but it is the single most important factor in selecting perennials and bulbs. Visit perennial nurseries and observe public and residential plantings to see what plants are reliably hardy in your area. Check with a landscaper, garden designer, or long-time local gardener.

Catalogs can be quite misleading, since they classify plants by generalized hardiness zones. Be aware that some "hardy" plants require mulching over the winter to survive, while others are reliably hardy with no protection at all.

Match the flowers to the environment. There is a flower for every location, from dry shade to wet sun, but there is no single flower that is adaptable to all environments.

Consider soil factors such as pH, soil temperature, nutrient levels, moisture levels and drainage; temperature factors such as frost dates, reflection of heat off buildings, and diurnal fluctuation; light factors such as intensity and duration of sunlight; wind; precipitation; and problems such as insects, weeds and diseases. Remember the old rule: choose the right plant for the location, because it's hard to change a location for a plant.

Select plants that are rated "low-maintenance." Remember that low maintenance does not mean no maintenance. Most flowers require more work than trees and shrubs. Still, with all the annuals, perennials and bulbs that are available, you can easily avoid those that require almost constant care.

Aim for full-season annuals that will provide maximum color all season, and long-lived perennials and bulbs that will perform well for many years.

Also, consider how long and at what time of year flowers are effective. Some annuals, like impatiens, flower the whole season with very little if any maintenance. Most perennials, on the other hand, flower for less than a month, but may have excellent foliage all season. Match your needs with what the plant offers.

Finally, always consider function before beauty. Remember that a golf course exists above all for the game of golf. Flowers should not interfere with the game. Flower beds and borders should be placed near the clubhouse where the public can observe their beauty, or between holes and out of play. You might want to concentrate your flowerbeds in one or two areas of the course, to maximize your crew's efficiency.

On the other hand, the course can be beautified through the judicious placement of low-maintenance bulbs and perennials among shrub and tree borders, along fences and near benches.

—Dr. Stack

week to the next.

Perennials or bulbs?

Perennials need less labor, but they are generally more expensive per plant, and each perennial provides color for a limited number of weeks each season.

Flowering bulbs extend the season of color by flowering before most other plants, but they offer a limited period of effect, and many do not perform well after the first season.

The challenge facing golf course superintendents is selecting plants that give the greatest impact for the least amount of money and labor. Choose plants of good quality and plant them correctly to insure success. Design flower beds that are effective and yet do not interfere with the game. With the variety of plants available, this can be quite a challenge.

The accompanying chart of annuals, perennials and bulbs lists reliable flowers for golf courses. These plants were selected for their outstanding color for extended periods, durability throughout the season, lack of disease and insect problems, general low maintenance and availability. The suggested cultivars are not an exhaustive list, but they have proved to be successful in open landscape settings like golf courses.

Find a reliable source

After you have selected individual flowers for golf course gardens, select a source of plants. Whenever possible, buy locally to insure that the plants will be adaptable to your general location, and visit the production site before placing an order.

Inspect the plants. They should be compact, well-branched and vigorous. The plants should also be uniform. If looking at a flat of annuals, for example, they should be of the same height, vigor, color, general size and stage of development. A flat of variable-sized plants is hard to interpret. Are some of the plants just not as vigorous as others? Or did some plants get more fertilizer than others? Whatever the reason, if the plants are not uniform in the flat, they will probably not be uniform in the landscape.

One last factor to look at is plant health. Good foliage color is a sign of a good fertilizer regime. Pale green leaves may be a sign of low nitrogen. Yellowish, weak foliage can indicate overwatering. Check the plants' roots to make sure they are vigorous and white. Look for new growth and vigor.

Prepare to plant!

Prepare garden areas well by testing the soil and amending it as needed. If

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Annuals, Perennials and Bulbs for the Golf Course

Botanical name ¹	Common name	Cultivars — height, color
Tall annuals (over 30" tall):		
<i>Canna x generalis</i>	"Canna"	Many cvs — 36-48", various colors
<i>Cleome hasslerana</i>	"Spider Flower"	"Helen Campbell" — 48", white
<i>Tagetes erecta</i>	"African Marigold"	"Gold Coin" series — 36", golds, yellows
Medium-height annuals (12-24" tall):		
<i>Achillea millefolium</i>	"Yarrow"	?Summer Pasties' — 24", pastels
<i>Coreopsis hybrid</i>	"Coreopsis"	?Early Sunrise' — 18", gold
<i>Impatiens wallerana</i>	"Impatiens"	"Super Elfin" series — 10", various
<i>Nicotiana glauca</i>	"Flowering Tobacco"	"Nicki" series — 24", red, pink, white
<i>Ocimum basilicum</i>	"Sweet Basil"	"Purple Ruffles" — 20", dark purple lvs
<i>Pelargonium x hortorum</i>	"Seed Geranium"	"Orbit" series — 18", various
		"Ringo" series — 18", various
<i>Tagetes erecta</i>	"African Marigold"	"Inca" series — 18", golds, yellows
Low-growing annuals (under 12" tall):		
<i>Begonia x semperflorens-cultorum</i>	"Wax Begonia"	Many cvs — 8-12", pinks, white
<i>Catharanthus roseus</i>	"Annual Vinca"	"Little" series — 10", pinks, white
<i>Chrysanthemum x superbum</i>	"Shasta Daisy"	?Snow Lady' — 10", white
<i>Lobularia maritima</i>	"Sweet Alyssum"	"Wonderland" series — 4", pinks, white
<i>Sanvitalia procumbens</i>	"Creeping Zinnia"	"Mandarin Orange" — 10" orange
<i>Senecio cineraria</i>	"Dusty Miller"	"Silver Lace" — 8", lacy silver lvs
<i>Tagetes patula</i>	"French Marigold"	"Boy" series — 8", golds, yellows
Perennials:		
<i>Astilbe x arendsii</i>	"Astilbe"	"Deutschland" — 24", white (July)
		"Red Sentinel" — 24", red (July)
<i>Baptisia australis</i>	"Blue False Indigo"	none — 48", blue flowers (May-June)
<i>Dicentra eximia</i>	"Fringed Bleedingheart"	"Luxuriant" — 16", red (all summer)
		"Zestful" — 12", pink (all summer)
<i>Iris sibirica</i>	"Siberian Iris"	Many cvs — 24-48", blues, violets, white (June)
<i>Helenium autumnale</i>	"Helen's-flower"	"Butterpat" — 36", yellow (Sept.-frost.)
<i>Hemerocallis hybrids</i>	"Daylily"	Many cvs — 12-48", white, blue (June-Sept.)
<i>Hosta hybrids</i>	"Daylily"	Many cvs — 12-48", yellows, oranges (June-Aug.)
<i>Rudbeckia hybrid</i>	"Coneflower"	"Goldsturm" — 24-30", gold (July-frost)
<i>Sedum hybrid</i>	"Showy Stonecrop"	"Autumn Joy" — 24", pink (Sept.-frost)
Bulbs		
<i>Crocus hybrids</i>	"Crocus"	Many cvs — 6", blue, white, yellow (Mar.-Apr.)
<i>Narcissus hybrid</i>	"Daffodil"	"King Alfred" — 18", yellow (Apr.-May)
<i>Scilla sibirica</i>	"Siberian Squill"	Few cvs — 8", good blue (Apr.)
<i>Tulipa hybrids</i>	"Tulip"	Many cvs — 6-24", many colors (Apr.-May)
<i>Lycoris squamigera</i>	"Suprise Lily"	No cvs — 30", pinkish lavender (Aug.)

¹ All plants listed perform best in full sun unless otherwise noted.

² These specific cultivars of these perennials flower well their first season, and are excellent when treated as annuals. They may overwinter, depending on location. Most other cultivars of these are perennials, and do not flower well their first season in the garden.

³ These plants do well in full sun or partial shade.

⁴ These plants perform best in partial shade.

you are using a pre-emergence herbicide, rototill and rake out the bed, then apply the herbicide and rake it in lightly. Plant through the layer of soil containing herbicide granules, making sure the root balls penetrate at least slightly below the herbicide layer.

Many transplants suffer root damage when new roots grow into the soil layer containing herbicide granules. It is important that plants get off to a good start if they are to perform to their potential. Keep plants well-watered until planting time. Try to plant in the morning or late afternoon, to avoid the stress of midday sun.

Remove the plants from their containers, even if the containers are made of peat or papier-mache. These materials restrict root systems severely and can prevent them from developing properly.

Do not crowd plants. Put the entire root balls into the ground, and water

immediately with a gentle soaking irrigation. Watch the plants for several days, watering as needed. Allow young plants to become established for a few weeks before mulching. This practice promotes better root system development.

The easiest style of flower bed, and one which lends great impact to the landscape, is a free-standing garden of one annual, such as geraniums or cannas, surrounded by a lower-growing annual such as sweet alyssum or dusty miller. The design might be round, oval, star-shaped or free-form. The plant material list is almost endless.

A second style of annual flower garden is just as simple, but perhaps more elegant. Use annuals to accentuate a line in the landscape. For example, plant ribbons of annuals along golf cart paths. Or plant a broad bed of annuals in front of a shrub border.

Remember to keep the design simple. Use only a few species of annuals. If you make the garden too compli-

cated, it will be harder to plant and maintain, and people will have to study it to appreciate it (it's not always appropriate to have people stopping along the paths on a golf course).

A more sophisticated style of garden uses both annuals and perennials. The annuals in such a garden insure good color all season, while the use of perennials reduces the planting labor each year. Also, the use of a perennial that flowers either early or late in the season increases the length of time the garden produces color.

Whenever possible, buy locally to insure that the plants will be adaptable to your general location.

One effective combination is a garden with Siberian iris in the back-round, daffodils planted in front of the iris and annuals planted in the front. Another combination, to be planted at the edge of a wooded area, is shade-tolerant daffodils, with hostas behind them and impatiens in front.

Remember that there are no limits, except for your imagination. Visit public gardens and read gardening and landscape books for inspiration. Develop a list of reliable plants, and add a few "experimental" items each year.

LM



Dr. Stack is an extension specialist in ornamental horticulture and associate professor of landscape horticulture at the University of Maine.



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Of course you know that herbicidal activity is influenced by temperature, weed species, state of growth, and type of turfgrass. So a herbicide that would be effective in taking hardened-off spurge out of bluegrass would be totally out of place for treating dollarweed in bermudagrass.

Indeed, in light of today's complex weed control problems, the one-size-

fits-all approach to herbicide selection has become totally obsolete.

As a matter of fact, in order to maximize the efficiency of weed control throughout the U.S.A., we have developed seven different Trimec Turf Herbicide formulations.

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For a comprehensive explanation of how a Complex differs from a formulator tank mix — and why this difference is vital to you in coping with weed control problems today — we invite you to take a close look at the schematic diagrams on the opposite page, which were drawn up for us by one of the most prestigious university professors ever involved in ornamental turf.

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condition of your turf, you may or may not need another application of Classic to treat summer annuals.

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Why only a Complex is right for weed control in ornamental turf:

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And while Trimec was specifically developed for ornamental turf, it was originally formulated by tank-mixing ag-grade 2,4-D; ag-grade MCP; and ag-grade Banvel® (dicamba).

Although the original Trimec immediately and dramatically improved weed control over that of any other herbicide, the tank-mixing procedure of ag-grade chemicals resulted in minute inconsistencies in the chemical composition of individual droplets, with consequent inconsistencies in weed control.

To eliminate these inconsistencies, we developed a technique of reacting the acid components of Trimec together to form a unified salt Complex in which every droplet of every production run would always be an exact mirror image of the total.

The manufacturing process involved in making a Trimec Complex is a trade secret, but the basic building block is known to all chemists. It is technical

dicamba (the active ingredient of Banvel) that triggers the synergistic activity and makes it chemically possible to react the acids into a Complex.

Of course, it is this same Banvel synergism that enables Trimec Complexes to be so effective with such a small amount of active ingredients . . . which in turn contributes to Trimec's unparalleled safety record, as demonstrated by the fact that more than 30 million acres of turfgrass have been treated with Trimec, and there has never been an instance in which damage to trees and ornamentals was proven to be the result of root absorption traced to Trimec when applied according to label directions.

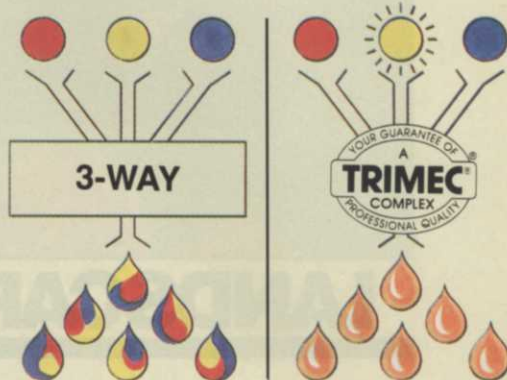
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Color code: Red, 2,4-D; Yellow, Banvel; Blue, MCP; Amber, Complex acid. Note: Colors are for code only and do not in any way indicate the color of the product they are intended to identify.

Schematic drawings show the differences between a tank-mix and a Complex

These drawings indicate that, in a formulator's tank-mix (left), the molecules of 2,4-D, MCP, and dicamba do not combine to form a new molecule. Accordingly, each droplet will contain its own unique amount of one or more of the ag chemicals, and control may vary from droplet to droplet.

In a Complex (right), the three acids are reacted together to form a salt Complex. When this is formulated with the other important ingredients, wetting agents, dispersants and sequestrants, as well as with continuous analytical monitoring that includes the use of a high-pressure liquid chromatograph, the unique product that is Trimec becomes a reality. Every droplet is an exact mirror image of the total, and thus precisely optimizes the intended synergistic activity.

The differences between a tank-mix and a Complex become major when the goal is cosmetic excellence.

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LANDSCAPE *Guide* MANAGEMENT

CHOOSING AN IRRIGATION SYSTEM

A quality irrigation system requires a lot of work, even before the first piece of pipe is ever buried.

by Scott D. Knowles, Wolf Creek Company

Having an irrigation system designed and installed can be a rewarding experience. But you must focus on needed criteria like site surveys, water source determination, applied design principals and formulas, selection of qualified consultants and contractors and service.

An irrigation system is a mechanical system that efficiently takes water from one place and delivers it to the rootzone of plant material in another place, at the right time and in the right amount. This simple objective can often become a disaster, if the criteria set forth are not followed.

1. Initial factors

Logically, the first step is to create a design. Whether the turf manager, irrigation consultant or contractor is going to do the design work, all system designs should follow several steps.

Before any actual design work can begin, the designer must fully understand where the system is to be installed and what it is expected to do. This is the purpose of the site review.

Many factors must be considered, but the first step is to create a scaled drawing of the area that accurately

depicts the shape, size and location of all structures and planting areas.

Notes about elevation changes and wind direction will prove very helpful if either is present in an appreciable amount. Also, investigate utility rights-of-way and other areas that may preclude the installation of irrigation equipment.

2. Soil type

Soil type considerations must be made. Though not crucial for some systems, ignoring soil variations may be deadly on others.

Consider that a large system, such as a golf course, may encompass several soil types—each with its own rate of absorption and water retention ability. To apply water equally to each area would cause over-watering in some areas and under-watering in others. The result would be unhealthy turfgrass from too much or too little water, wasted money in water and power costs, and even ero-

This article is divided into 16 different considerations for designing an irrigation system. Here they are, for easy reference:

- | | | |
|--------------------|-------------------------|---------------------|
| 1. Initial factors | 7. Water amount | 12. Pipe materials |
| 2. Soil type | 8. Coverage patterns | 13. 'Accessorizing' |
| 3. Analyzing water | 9. Money considerations | 14. Final design |
| 4. Water sources | 10. Zoning | 15. Specifications |
| 5. Pump system | 11. Valves | 16. The contractor |
| 6. System prelims | | |