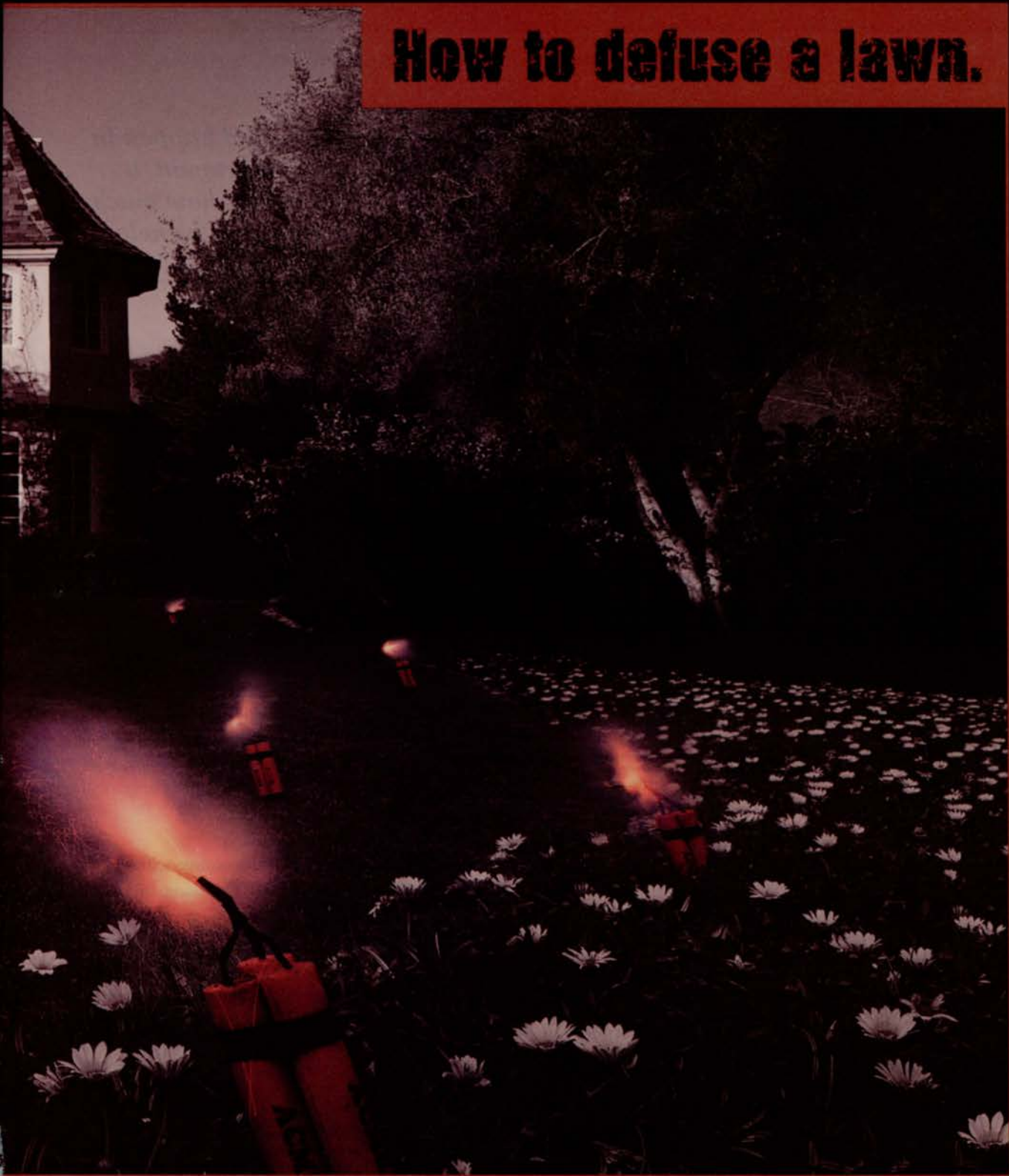


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Diazinon in Texas waste water prompts education blitz

From the 'it could happen in your town' department, a report that shows how much homeowners need the help of trained professionals.

by TERRY McIVER,
Editor-in-chief

FORT WORTH, TEXAS— Homeowners here who over-apply diazinon to combat fire ants have put this city's waste water supply in non-compliance with EPA-approved threshold levels.

The city water department and extension personnel have beefed up an education campaign to stop the abusive application and disposal practices among residents.

Focus groups, phone calls, flip-charts, and direct mail campaigns have all been used to survey the public and warn them of the contamination. The Environmental Protection Agency has held off on leveling \$25,000/day fines, thanks to the city's efforts to solve the problem.

Advocates of organic lawn and garden products are calling for a ban on the pesticide, while others want to spend \$80 million to upgrade the city's water treatment plant.

Go through it like water

Dottie Woodson, horticulturist with the Tarrant County Cooperative Extension, says homeowner focus groups and phone surveys have shown a high level of misunderstanding of proper pesticide application and disposal practices.

"They were asked, 'How often do you use diazinon?' Some said every two weeks, some said monthly," says Woodson, who adds that people admitted to using diazinon once a week to kill fire ants, a serious insect pest problem in the South and Southwest.

Mary Gugliuzza, public education specialist for the Fort Worth Water Department, says the surveys and focus groups with Fort Worth residents revealed that 16 percent of them apply pesticides at least every two weeks.

"At least 36 percent are applying it on a monthly basis," says Gugliuzza. "People read the label directions, but they don't believe them."

"One of the things learned in the focus groups

DON'T pour pesticides down the drain.

When you pour pesticides down sinks, tubs, toilets, or storm drains, they end up in Oklahoma's lakes, ponds, rivers, and streams.

- Read pesticide container labels and follow application directions to the letter.
- Buy only the amount you need.
- Use pesticides sparingly.
- Rinse containers and equipment outside and away from drains.
- Give unwanted pesticides to someone else for their use.
- And NEVER pour pesticides down sinks, tubs, toilets, or outdoor storm drains.

To learn more about environmentally friendly pesticide use and alternative methods of pest control, call your County OSU Extension office.

Oklahoma Clean! OSU

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Oklahoma's Cooperative Extension used this poster to teach the public proper pesticide disposal practices.

was a lot of people pour [diazinon] down the sewer, in their toilet or down their kitchen sink," says Woodson. "They don't understand that it goes through the sanitary sewer.

"One of the target things we've come up with is a handbook called the *Arrest/Pest Handbook*," says Woodson. "It explains the benefits of earth-kind gardening. It will be on display in a flip chart where pesticides are sold. They want to make it into a pocket guide. The salespeople can use this to answer questions."

Guidelines for residents include:

- ▶ don't apply products before rain storms;
- ▶ don't water your lawn to the point of run-off after you've applied products;
- ▶ don't get half the chemical on your driveway and street;

Diazinon's history

—first synthesized by Geigy in 1951. The product's toxicity was reduced significantly since the 1970s due to changes in the inert ingredients used in the formulation.

—Reregistration of diazinon in 1993 cost \$28 million.

—The product has been banned from use on golf courses and sod farms since 1983 due to bird kills.

—Companies making most of the diazinon prod-

ucts in the U.S.: Ciba; Makhteshim (Israel) and Nippon Kayaku (Japan).

—Advantages: a relatively low acute mammalian toxicity. Diazinon is non-carcinogenic, non-mutagenic, non-teratogenic, is not a reproductive toxin and does not cause delayed neurotoxicity.

—A broad-spectrum insecticide, diazinon is economical and effective at low rates.



The fire ant is a relentless marauder. Swarms have been known to attack newborn calves.

▶ don't used them unless necessary.

Gugliuzza says a "Clean Water Badge" campaign is being developed with the Boy Scouts, Girl Scouts and Camp Fire Girls.

Long term challenge

Public misuse of pesticides is nothing new to Fort Worth. As far back as 1989, the problem has see-sawed between various degrees of severity. In that year, pesticide levels in waste water

were too high in 10 out of 12 months. By 1994, the city's non-compliance improved to two months, but was back up to five in 1995, when there was a cutback in education programs.

Another Texas town, Greenville, solved its recent non-compliance problem with an aggressive campaign to correct abuses in chemical disposal. In all, up to 23 cities in Texas are out of compliance.

One solution: don't buy it!

Mike Merchant, extension entomology specialist with the Fort Worth Cooperative Extension, says the successful educational program in Greenville, Texas "went so far as to encourage people not to buy diazinon, to use other alternatives.

"At one point in the beginning of the campaign," says Merchant, "they required every pesticide purchase to be accompanied with a flyer explaining why

the city was having problems with that particular pesticide, and encouraging people to use alternatives. When [the campaign] started being successful, they backed off on that; they don't actually require that now. But people in that community are as aware as any community about the problems the city has with diazinon."

Merchant says the EPA is sympathetic to the city's plight.

"Nobody wants to hurt the city, and cost it lots of money," explains Merchant. "[The EPA] sees they're making a lot of progress with their public education campaign."

Government standards on pesticide levels are "very tough right now," says Merchant, and new testing methods are more rigorous.

"In 1990 they implemented a bio-monitoring standard. They put macro-invertebrates, like fish, minnows and water fleas in water

Merchant:
Government standards 'very tough.'



[that contained pesticide]. If [the invertebrates] lived, they don't have to do any further testing. But if they can't reproduce, or if they die, the

city has to go back and do further testing. The bio-monitoring was developed to quickly screen clean water and to raise a red flag if there was anything that might be harmful to macro-invertebrates or any kind of aquatic life."

According to Merchant, the EPA considers water to be contaminated at .35 parts per billion. "That's about 9 ounces of diazinon concentrate in 100 million gallons of water," says Merchant. "That's about the amount of water Fort Worth processes in a day."

LCOs: 'We told you so'

The small victory for professional applicators is evident. The professional turf care segment of the green industry has long maintained that homeowner misuse of pesticides is far worse than any misuse by a trained applicator.

"We had a focus group of lawn care professionals come in to talk to us, and they knew exactly what the problem was," recalls Woodson. "Customers come to them and say, 'you have to put down more diazinon because we still have fire ants.' Of course, the lawn care operators refuse, because they want to obey the law."

Teach your customers

Professional applicators in the state have been urged to help educate the public about IPM and proper product usage; obey the law themselves and apply products

Thirty-six percent of people surveyed said they apply diazinon monthly.

only when needed; and use Integrated Pest Management (IPM) techniques in their work.

"Every pest control operator we contacted, every land-

scaper, every nurseryman, are all willing to help educate the public," says Woodson.

"We are proceeding with our public education efforts, trying to educate the public

on the alternatives to pesticides, and that they should only use them as a last resort," says Gugliuzza. "And when you do use them, read and follow label directions." □

TG-CL to absorb Barefoot

ServiceMaster, Downers Grove, Ill., announced on Dec. 5, 1996, it had made an offer to buy Barefoot Inc., based in Worthington, Ohio.

When the transaction is complete, Barefoot operations will be merged with those of TruGreen-ChemLawn, the nation's largest lawn care company and a subsidiary of SM.

SM has offered Barefoot stockholders \$16 per share in either cash or an equivalent amount of SM shares, about \$230 million.

The boards of directors of both companies have agreed to the transaction. Still it requires approvals from the Securities and Exchange Commission, from Hart-Scott-Rodino anti-trust, and the completion of a final due diligence by SM. Few people, however, expect problems.

"We are excited about combining the nation's two largest lawn care companies with the objectives of creating expanded market opportunity, economies of scale,

and productivity improvements," said SM Chief Executive Officer Carlos H. Cantu.

"The experience we have had in successfully assimilating a number of other companies in recent years will help us accomplish these objectives."

Cantu added: "We also look forward to offering Barefoot's 500,000 customers the additional high-quality services that are currently enjoyed by the 6 million customers of the ServiceMaster Quality Service Network."

Patrick Norton, Barefoot Chief Executive Officer said, "Barefoot is joining with the nation's largest lawn care company and one of the leading service companies in the country. ServiceMaster has a reputation for outstanding customer service,

with an emphasis on training and developing people."

Barefoot is the nation's second largest lawn care

company with 500,000 customers in 103 markets. It has 53 company-owned operations, 50 franchises and had revenues of \$125 million in 1996.

TruGreen-ChemLawn is the nation's largest lawn care company, serving 2.5 million customers

through 260 locations. It reported sales of \$630 million last year.

TruGreen-ChemLawn is one of seven companies making up ServiceMaster Consumer Services, Memphis, Tenn. ServiceMaster, which does business in the U.S. and in 30 other countries, had revenues of \$4.5 billion last year. □



Barefoot CEO Patrick Norton joined Barefoot in 1979 and became president in 1985.



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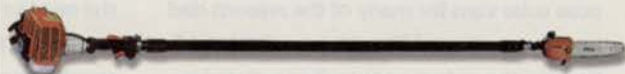
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STIHL's new 019T isn't designed for everyone. Incredible balance, a slim profile, and a unique curved handle make this saw ideal for professional arborists.

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Hispanic labor not reliable

"We have 10 Hispanics that work for us. I felt your article ("Mexican Labor Moves In," Oct. 1996) wasn't totally accurate, and that it was unfair to American workers. Our Hispanic workers are late frequently, half the crew misses about once a week, they don't call, they don't show up, and they are very hard on equipment. I'm sure there are some Hispanics out there that are hard workers, but I don't think

they are any harder workers than the Americans. There is a downside to having Hispanic workers. There are people in our industry that are dissatisfied with them."

—An assistant superintendent at an Indiana golf course who wishes to remain anonymous.

(We know there are two sides to every story. Joe Loyet, featured in our series on Hispanic labor, does not hesitate to fire anyone not willing to work. Most of the other employers interviewed for the series were satisfied with the quality of their Hispanic workers.

We certainly want to cover this issue fairly without slandering any racial group. We encourage more of you to write in with your comments on the alternative labor force. ed.)

Super workers? heck no!

After having just read the October 1996 issue, I thought the article; "Mexican Labor Moves In," was appalling. I am a white male who has been employed in landscaping, golf course and

agriculture work for over 22 years in Southern California. I have worked with quite a few Mexican and Guatemalans and I have to say they are not the "super workers" which you proclaim in the article. As a matter of fact, the non-English speaking laborers require additional supervision because they usually can't read very well—pesticide labels and other directions etc. Also, while supervising a crew of non-English speaking Hispanic gardeners, I have on occasion noticed some of them have a rather humorous, but potentially damaging method of operating machines, for example: putting a hole in the piston of a weed whacker by trying to start it with starting fluid, or running a two-stroke chainsaw with straight gas and putting the two stroke oil in the chain lube reservoir.

Frank Liebowitz, Lompoc, Calif.

Box trucks make sense

Our movement away from trailers to box trucks could have begun that day over 20 years ago when I was personally pulling a trailer, connected by a slip hitch, on our interstate. Having just dropped a piece of equipment, I was surprised to realize the pin in the hitch must have broke, the trailer I was pulling had come loose, sheared the safety chains, passed me, crossed a grassy median and was weaving through a group of motorcyclists in opposing traffic. Luckily no one was seriously hurt although ultimately the trailer did take the back axle off of a two-week old Cadillac. So certainly some of our greatest motivations were related to safety.

But, in truth, our Fleet Manager Jerry Marion and my brother Lowell were first to propose cube vans for many of the reasons dad already mentioned (Oct. 95, page 12L). Additionally, the reduction in trailers reduced insurance costs, license plate fees, and maintenance costs like tires, bearings and brakes. We also were able to reduce the number of DOT capable drivers we need to have on staff. The cube vans bring flexibility that allow us to equip some of our trucks with custom-made shelving to handle transporting

several hundred flats or pots of seasonal flowers. We also use cube vans to provide cover for skids of granular turf fertilizer during application cycles. And with fall leaf, these trucks provide a tarp-free way of transporting what cannot be mulched. On occasion, installation teams also use our cube vans to transport smaller trees, shrubs and construction items when the weather is less than desirable.

Perhaps one of the greatest single benefits though is the reduction of space under the roof. The ability to store equipment in a cube van eliminates a huge fixed expense that oftentimes only serves a purpose at night or in the off season. This approach has been vital during our growth by eliminating the need to constantly add on more building or relocate to larger sites. Still, for some there may be one major draw back to having the majority of your fleet being cube vans. Pro Care does not perform any snow removal services. Other contractors offering his service would find a 14-foot box van poorly suited to pushing snow.

Mitch Rolsky, President and CEO, Pro Care Horticultural Services, Indianapolis

Nothing wrong with hard work

Just read your editorial on labor in the October issue. What a powerful message! Unfortunately, the message is all too true. The guys and gals my age seem to think they are above hard labor—the fact is that hard labor builds character and, with that, integrity. I look forward to having any employee that has a good attitude and that is mature enough to realize that work is profitable.

Steve White, president, SecondNature Lawn Care, Antioch, Tenn.



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Annuals

glow with smart design & care

by LOIS BERG STACK, Ph.D.



An annual flowers can add exciting color to any landscape. Yet too often, annual flower gardens fail because the flower beds are improperly prepared, the plants are selected without considering the location's environment, the design just doesn't work, or maintenance falls short of the plants needs.

Whatever experience you have had with annuals, here are four great reasons why you should consider them when you develop or renovate a landscape.

Always something new

New annuals are introduced every year, and many of the recent introductions are well worth a try. For example, "Purple Wave" and other "new petunias" will change your mind forever about petunias. They branch early and remain low-growing, to produce an annual groundcover. If watered and fertilized properly, they flower all season without any deadheading.

Containers more popular

Containers have become an important part of landscapes. Large, decorative clay pots, free-form tufa containers and hanging baskets are everywhere. Many of these containers are beautiful themselves, but

when filled with high-quality, colorful annuals, they become focal points in any landscape. Containers allow places for plants to grow in difficult sites that would otherwise be barren.

Fragrance a feature

We have become much more creative in our definition of which plants we think of as "annual flowers," and the reasons for their use in the landscape have expanded beyond color. Fragrance has become much more important, with designers rediscovering old-fashioned plants like mignotte and heliotrope and asking for more varieties of plants like the scented geraniums.

Many people have expressed a desire for annuals that make good landscape specimens and can also be used as cut flowers indoors. Garden designers are adding more and more herbs to add color and texture. And no wildlife landscape would be complete without an annual garden of butterflyweed, cosmos, flowering tobacco and salvia to attract butterflies and moths.

Plentiful supply

Annuals are more available than ever before. They are produced in great numbers and variety by greenhouses throughout the country. Growers can produce an-

nuals in almost any size you want, at almost any time you want them. It is truly possible for anyone to develop a garden with instant color in the cool spring (or winter in the deep south), replace the entire planting with a mid-season garden of annuals, and finish the year with a fresh fall planting.

Season-long beauty

A professionally-designed annual garden should look good every day of the season. Avoid annuals that do not perform to this standard, and concentrate on those that do. Choose plants that produce many weeks of color with low maintenance. The annuals listed on page 19 are recommended as a starting point. They are readily available, require little or no deadheading or pruning during the season, are relatively pest-free, and provide weeks of high-quality color in the landscape.

When you select plants, remember their placement within the flower garden is as important to visual success as the placement of the garden within the landscape. Follow these ideas for effective annual flower garden design:

1. Use masses of a few types of annuals,

cont. on page 20

10 Great Annuals for the Landscape

Geranium, dusty miller, French marigold, impatiens, wax begonia...what else can you plant in the landscape? The following annuals produce maximum color, are reliable, do not need deadheading or pruning, and have few pest or cultural problems.

Brassia oleracea "Acephala Group" ("Flowering Cabbage/Kale")

Size and form: 12-18 inch open cabbage, with wavy-edged or deeply lobed leaves.
Color: foliage turns white, pink or purple in cool weather.
Environment: cool fall temperatures in the North; good winter plant in South; sun.



Best attributes: develops interest in fall/winter, after other plants decline.
Recommended types: many series available; choose for color and form.

Catharanthus roseus "Annual Vinca"

Size and form: 12-18 inch mounds
Colors: pinks, white
Environment: warm to hot temperatures; full sun; well-drained soil
Best attributes: does well in droughty conditions; self-cleaning flowers.
Recommended types: several

series available; choose for height and color.

Cleome hasslerana, ("Spider Flower")

Size and form: four feet tall, four feet wide; well-branched, upright.



Colors: pinks, lavender, white
Environment: does well in droughty conditions; full sun.
Best attributes: large plant fills big space; self-cleaning.
Recommended types: "Queen" series has good color and branching.

Gypsophila muralis, 'Gypsy' ("Gypsy Annual Baby's breath")

Size and form: eight to 10 inches tall, perfect mound all season.
Color: small pale pink flowers in profusion.
Environment: tolerates

droughty conditions after established; full sun.
Best attributes: perfect cloud of tiny pink flowers all season.

Lobularia maritima ("Sweet Alyssum")

Size and form: two to six inch spreading mound; great edging plant around garden.
Colors: white, pinks, rose, lavender.

Environment: full sun in cool northern sites; light shade in other locations; late fall and winter planting in South.

Best attributes: fragrant, profuse flowering; shear back in midsummer in hot, full sun locations.

Recommended types: many excellent types; choose for color and size.

Nierembergia hippomanica 'Mont Blanc' ("Mont Blanc Cup Flower")

Size and form: four inches tall, 16-inch spread; great edging plant.
Color: white.

Environment: full sun, average soil conditions.

Best attributes: good substitute for alyssum in hot locations; self-cleaning.

Petroselinum crispum, "Parsley"

Size and form: eight-inch vase-shaped plants, most with crinkled leaves.
Colors: green foliage.
Environment: full sun; tolerates many soils.

Best attributes: excellent quality; crisp foliage all season.
Recommended types: any of the crinkled-leaf types.

Petunia x hybrida 'Purple Wave' (Purple Wave Petunia)

Size and form: four inches tall, four feet across; very well-branched.



Color: Purple.

Environment: full sun; well-drained soil; moisture; high fertility.

Best attributes: self-cleaning; riveting color; wide spreading. Other recommended types: several series of "new petunias," all propagated from cuttings, provide similar form and other colors.

Sanvitalia procumbens ("Creeping Zinnia")

Size and form: 16 inches tall, 24 inches across; loose mound of tiny stems and leaves.
Colors: yellow or gold-orange flowers, one-inch across.

Environment: full sun; hot, dry locations.

Best attributes: self-cleaning; never spectacular, but reliably high-quality.

Recommended types: 'Mandarin Orange' has slightly more orange flowers.

Zinnia angustifolia, 'Star White' & 'Crystal White' ("Narrow-leaved Zinnia")

Size and form: 'Star White' forms 18-inch mound; 'Crystal



White' forms 10-inch mound.

Colors: white daisies with yellow center.

Environment: full sun; tolerant of many soils.

Best attributes: self-cleaning; neat habit; very resistant to powdery mildew. □



Wide bands of colorful annuals decorate this golf course. Yellow: French marigold; blue: petunia; silver: dusty miller; purple: purple-leaved basil.

rather than a few each of many different plants.

2. Space plants far enough apart to promote branching, fullness and sturdiness. Most annuals should be spaced 12-20-inches apart. Each plant is different. The "new petunias" can reach a spread of four feet, even in Maine!

3. Create lines and masses of color that mirror other lines in the landscape (the shape of the flower bed, the curve of the pathway, the line of a fence or wall).

4. Highlight pink, blue or purple flowers by planting silver-leaved plants like dusty miller around them.

5. Plant a uniform edging around the

garden to unify it.

Maintain from day one

Good maintenance starts on planting day. After you select plants for your design, buy the highest-quality specimens available. Keep them well-watered in a protected holding location. If possible, plant on a cool or overcast day. Water the plants well, and remove them from their containers. Set them into the garden, take care to lightly bury their entire root balls, and firm the soil to stabilize the plants. Irrigate newly-planted sections of the garden as you proceed, to prevent plant stress. When planting annuals valued for their first spike of flowers, like snapdragons, select young

plants and leave their flower spikes intact. When planting other flowering annuals, remove open flowers at planting time, to direct their energy into rooting. This sacrifice of early flowers will be offset later in the season with increased flower production and drought tolerance.

Mulch to reduce weed competition and maintain even soil moisture. Weed regularly. Remove weeds



Annuals grow best in deep, well-drained loam with four to five percent organic matter.

Note design potential of site

Annual gardens require a significant investment in plants and labor. They are worth every cent of that investment if they achieve their potential. To ensure high performance within the landscape design, select a site where a colorful focal point will have the greatest visual impact and fulfill a design function. A wide, low curve of color draws the viewer's attention across a distance. A brightly-colored compact garden helps the viewer focus on a smaller area within a landscape.

Keep the lines of the planting clean and simple.

Start with a soil test

Choose an area free of tree roots.

Soil should be a deep, well-drained loam with four to five percent organic matter.

Remove existing sod and till the soil to a depth of six to eight inches.

Add lime, fertilize and/or organic matter according to the results of the soil test. Do not cut corners here. In many ways, the success of soil preparation will affect the success of the planting. □

early in the season, before they drop seeds, to reduce weed populations later in the season.

Water as needed. Most annuals require one to one-and-a-half inches of water per week, including rainfall and irrigation. One thorough irrigation per week is better than several light sprinklings. Monitor flower gardens regularly and solve problems before they become serious. Pesticides are often unnecessary with proper site and plant selection, soil preparation and planting techniques, and effective monitoring and roguing. **LM**

The author is extension specialist in ornamental horticulture at the University of Maine.

Photos by Lois Berg Stack.