

News Edition

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Xeroing in on Water Waste

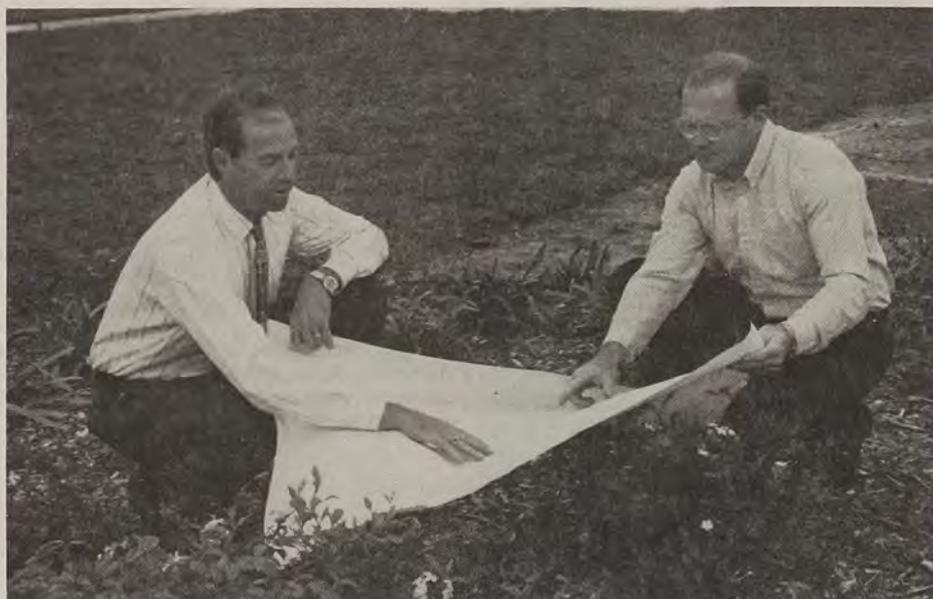
In Denver, where Xeriscaping was conceived and named eight years ago, surveys show that 65 percent of the population has heard the word.

But not everyone who has heard of Xeriscaping knows exactly what it means, let alone uses its principles. Formed from the Greek word for "dry," to many it still connotes landscapes dotted with cacti and swathed in white rock. In fact, Xeriscapes of cool-season turf, lush shrubs, and multi-hued perennials have reduced water use more than 60 percent.

"There's nothing new about Xeriscape concepts," says Donald Buma, executive director of Botanica, the Wichita Gardens, which will open its own Xeriscape garden this season. "It's really just a compilation of good horticultural practices."

The movement was started by the Denver Water Department in 1981 in an effort to popularize the idea of landscaping to conserve water. Because landscapes consume an estimated 40 to 75 percent of municipal water, they are a growing concern in all areas of dwindling water supplies. With some help from the state's landscaping industry, and some clever publicity such as "x-rated garden parties" for the local press, the idea caught on beyond its originators' wildest dreams. Some 60 cities in 27 states have formed Xeriscape councils, under the umbrella of the non profit National Xeriscape Council headquartered in Austin, Texas.

Bruce Adams, who became council president this spring, said that the South Florida Water Management District where he is assistant director of land and water planning was developing concepts similar to Xeriscape when Denver put a name to it. A three-year study in southeast Florida found



National Xeriscape Council President Bruce Adams (right) discusses plans for a Xeriscape demonstration garden with Tilford Creel, deputy executive director of the South Florida Water Management District.

that property owners were supplementing the area's 55 inches of annual rainfall with another 98 to 99 inches of irrigation, or about seven feet more than they needed.

Some water districts are beginning to give rebates to homeowners and developers who employ Xeriscape principles, or to revamp their rate structures to more greatly reward water misers. Even in areas where water quantity is no problem, contamination is reducing water quality. Although interest is strongest in the West, Adams said it is growing in New Jersey, Boston, Georgia, and Alabama. "And we finally cracked the Midwest!" said Adams. When the Wichita gardens called a meeting to organize a Kansas Xeriscape Council late last winter, 150 professionals from 26 communities filled the meeting room, and others had to be

turned away. Although professionals are the first Xeriscape enthusiasts in many communities, the public is not uninterested. Surveys at the San Antonio Garden Center show that its Xeriscape is its most popular attraction. "People leave feeling they've learned something," said Steve Stauffer, the center's horticulturist. Adams would like to see demonstration gardens in every community to help define Xeriscape for the public. The term has been trademarked by the council to make sure that its use encompasses all seven basic Xeriscape principles:

Planning and design. Xeriscape display gardens in a number of botanical gardens and other public access spaces illustrate that you don't have to replace your lawn with concrete and your roses with

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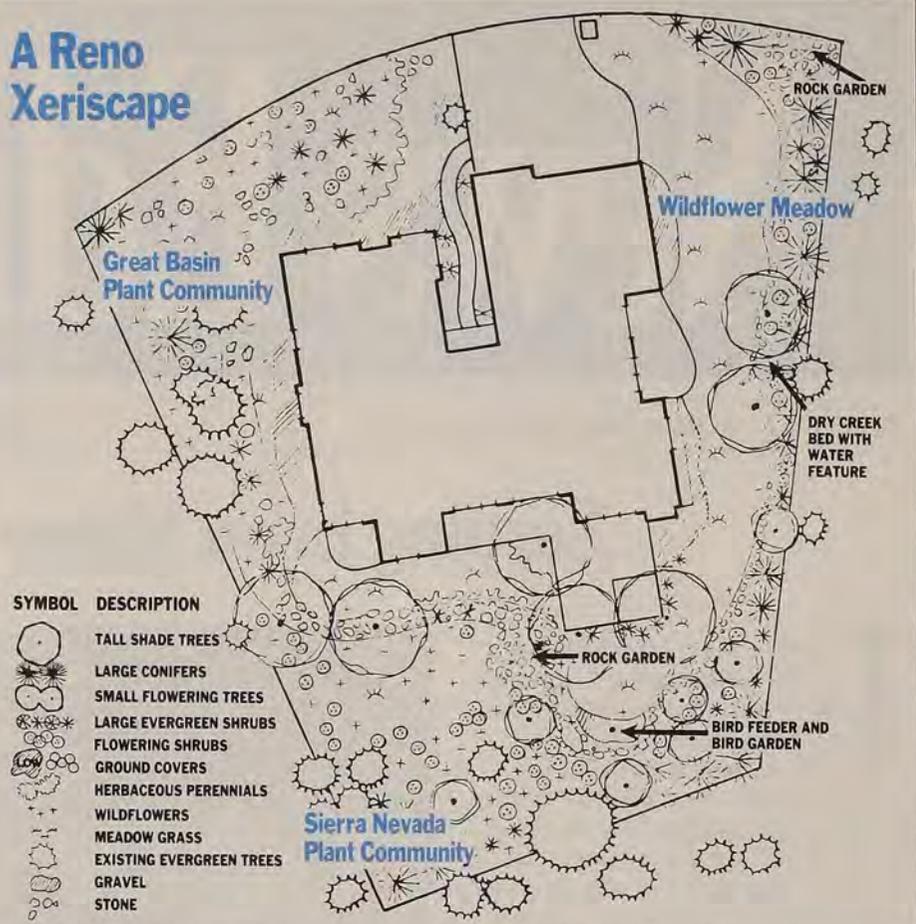
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A Reno Xeriscape



Tom Stille of Interpretive Gardens, Inc. of Reno, Nevada, designed this Xeriscape for a Reno homeowner. Stille, who has also designed Xeriscapes for the Reno airport, the Nevada Historical Society, and Botanica in Wichita, Kansas, says there are many other plants that are useful and available for Xeriscaping in the Reno area. What is appropriate in your yard depends not only on the region where you live, but also your property's micro-climate.

succulents. As in any landscape planning, you should consider how you plan to use various areas of your yard and what pleases you aesthetically. Then cluster plantings in low-, medium-, and high-water-use zones. This not only prevents overwatering of drought-tolerant natives that have been placed near thirsty exotic plants, but cuts down on hose dragging and other maintenance chores. Don't skimp when installing watering systems, says Adams. One that will allow you to deliver water only where necessary, rather than watering "wall-to-wall," will cost more initially, but save you in the long-run.

Limit turf areas. Some grasses, such as Bermuda or buffalo, are generally more drought tolerant than others, such as bluegrass or St. Augustine grass. But any grass should be considered a high-water-use plant, requiring two to four times as much water a year as drought-tolerant ornamentals or ground covers. Restrict grass to where it serves a function, and choose a grass according to that use. In a children's play area, you may get by with a low-water, warm-season grass. If you want a

sward of eye-pleasing green to set off the front yard, go ahead and use a cool-season grass; if you place it where it will have the most visual impact, there's no need to make your lawn huge.

Efficient irrigation. Once drought-efficient plantings are in place, many are killed because homeowners don't change their watering habits. Learn signs of thirst and overwatering for various plants; dry turf, for instance, tends to retain footprints. In general, infrequent deep waterings are more effective than frequent shallow irrigation. This promotes deep roots, which allow plants to reach deeper into the water table between rains. With a tool as simple as a screwdriver, you can check to see if soil is dry, and whether water is penetrating deeply enough to enhance deep root formation. Limit sprinkler use to turf. Employ drip irrigation for ornamental beds and rows of shrubs; bubblers are recommended for trees. Attempt to control runoff, for instance, by mulching to prevent erosion or creating a water retention system that will let rain soak down to the subsoil. Store rainwater in metal drums to use on

Plants for the Plan

Genus/Species	Common Name	Soil*	Water*	Sun*
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GREAT BASIN PLANTS

(Desert plants require no irrigation)

Elaeagnus umbellata	Autumn olive	A	L	F/P
Pinus edulis	Pinyon pine	W	VL	F
Artemisia tridentata	Big sagebrush	A	VL	F
Cactus	Prickly pear	S	L	F
Atriplex canescens	Four-wing saltbush	A	VL	F
Ephedra viridis	Mormon tea	A	VL	F
Yucca filamentosa	Adam's needle	AW	L	F
Celtis occidentalis	Hackberry	A	VL	F
Chamaebatiaria millefolium	Fern bush	A	L	F
Fallugia paradoxa	Apache plume	W	VL	F
Prunus andersonii	Desert peach	W	VL	F
Genista lydia	Broom	WA	L	F

SIERRA NEVADA PLANTS

(Mountain plants require four or five deep waterings a year)

Sorbus aucuparia	European mt. ash	W	L	F
Viburnum prunifolium	Black haw	A	M	F
Pinus sylvestris	Scotch pine	WA	L	F
Pinus jeffreyi	Jeffrey pine	A	L	F
Calocedrus decurrens	Incense cedar	A	L	F/P
Cercocarpus	Mountain mahogany	W	L	F/P
Arctostaphylos patula	Greenleaf manzanita	A	L	F
Pinus mugo var. mugo	Dwarf mugo pine	A	L	P
Mahonia aquifolium 'Compacta'	Compact Oregon grape	MW	M	A
Acer platanoides	Summershade maple	A	M	F
Aronia arbutifolia	Red chokecherry	A	M	F
Ribes aureum	Golden currant	A	L	F/P
Prunus tomentosa	Nanking cherry	A	L	F
Cotoneaster horizontalis	Rock cotoneaster	WA	M	F
Viburnum trilobum 'Wentworth'	Wentworth cranberry bush	AW	M	F
Amelanchier alnifolia	Serviceberry	WM	L	F

WILDFLOWERS

Achillea filipendulina	Fern leaf yarrow	A	VL	F
Achillea millefolium	White yarrow	A	VL	F
Coreopsis lanceolata	Lance-leaved coreopsis	A	VL	F/P
Eschscholzia californica	California poppy	A	L	F
Festuca ovina	Sheep fescue	A	L	F
Gaillardia aristata	Blanket flower	A	VL/L	F/P
Linum lewisii	Blue flax	S	VL	F
Papaver rhoeas	Corn poppy	A	L/M	F/P
Rudbeckia hirta	Black-eyed Susan	A	L/M	F/P
Viguiera multiflora	Showy goldeneye	A	L	F/P

*Soil: A—Adaptable, M—Moist, W—Well-drained. *Water: VL—8-10", L—10-14", M—14-28".

*Sun: F—Full, P—Partial, F/P—Full to partial.

high-water-use oases or on container plants.

Soil improvement. In addition to all its other benefits, loamy soil enriched with organic matter holds moisture and readily gives it up to plants. At least four inches of organic material should be added to the soil of shrubbery and flower beds and mixed well. Paul Rogers, a turfgrass and landscape consultant who addressed a recent Xeriscape meeting in San Diego, noted that soils that have become compacted or layered can also hamper water percolation. Compaction is caused by foot traffic or working soil when it is wet; layers can result from grading, erosion, poor mixing of soil additions or amendments, or silting from rain or poor irrigation. Water may form ponds above such layers, interfering with both drainage and root movement. Roots may form vertically instead of horizontally, so that they do not reach water tables; shrubs and trees become unstable.

Use of mulches. In addition to holding down weeds, mulches conserve water by holding down soil temperature and reducing evaporation. Tom Ham, a landscape architect with the California Department of Transportation, cautioned those attending the San Diego meeting that mulch acts as a sponge and may need to be heavily watered before it becomes effective at moisture retention. Gardeners should be sure moisture is getting through by taking a soil plug with a coring tool. Xeriscape plants need to dry out between waterings, he added, so don't mulch heavily in areas that tend to collect water. An unmulched area around the base of a plant will help prevent root rot.

Use of low-water demanding plants. Council officials say this aspect of Xeriscaping has been overemphasized and greatly misunderstood. "Every plant is a Xeriscape plant where it originated," says Martha Latta, an Austin landscape architect and immediate past president of the Xeriscape Council. But she notes that a plant native to east Texas, which receives 60 inches of rainfall a year, would not be a good Xeriscape plant in west Texas, which averages eight inches. It's a matter of having respect for a given plant's needs, she says. "It would be easier to put out a list of plants that shouldn't be used anywhere than a list of plants that would be drought-tolerant anywhere." Adams offers another example: "The cypress tree is native to Florida, but I wouldn't plant it in a sand dune. It's a swamp plant." Although not a xeric, or drought-resistant plant, in a swamp it would be a Xeriscape plant. Plants in a homelike environment not only

use less irrigation but need less fertilizer and pesticides than exotic plants.

Other possibilities are imports from areas with similar climates. San Antonio's Stauffer said that while their Xeriscape garden contains primarily plants familiar to Texans, not all of them are natives. Some are plants from as far away as Siberia and Southeast Asia that have adapted well. One example is oleander, whose origins are the Mediterranean and Japan. A calendar produced by the Denver Water Department highlights some plants that are new to or rarely seen in that area, such as purple ice plant, 'Pink Princess' weigela, and Russian olive, which all require little or moderate watering.

Appropriate maintenance. Plants will need less water if they are properly fertilized and pruned, and if pests and diseases are checked early. Don't scalp your lawn; grass mowed at a three-inch setting will need less water because it grows slower and reduces evaporation by shading the ground. Morning watering will reduce evaporation. Adams notes that maintenance is one aspect of Xeriscape that can be done immediately, doesn't need to cost a cent, and pays off quickly. "My neighbor waters his lawn every day. Last year, I had watered mine five times from January to August 1. Yet his was chlorotic. He had cut it too short, and his frequent watering had leached out the fertilizer." When rich organic matter is concentrated in the top few inches of soil and roots can always find water there, they can become almost addicted, Adams said. Less water will force them to grow deeper; in his case, he estimated 15 to 20 inches.

Thus, while Xeriscape requires thoughtful maintenance, it can also require less maintenance. Once in place, it should also be less expensive. Xeriscape literature estimates that home gardeners can save 30 to 60 percent on their watering bills, depending on how many of the seven principles they embrace and to what extent, and still not have a yard that screams "desert!" Savings up to 80 percent can be achieved by leaning toward succulents and replacing turf with patios and decks. A Tucson, Arizona, bank that installed a Xeriscape last fall estimates that it will use only about 25 percent as much water, and save almost \$20,000 annually in water and maintenance costs. And the Denver Botanic Garden has a mini-mesa that requires no irrigation after establishment.

More information on Xeriscape activities in your area can be obtained from the Xeriscape Council, Inc., 940 East 51st St., Austin, TX 78751-2241, (512) 454-8626.

Annual Meeting To Address Drought

Three speakers will tackle the subject of drought and water conservation at the American Horticultural Society's Annual Meeting this summer in Minneapolis-St. Paul, Minnesota.

"Water, Water Everywhere, Nor Any Drop to Drink" is the title of the session to be held the first full morning of the convention, July 27. The participants will be John Greenlee, owner of Greenlee Nursery in Pomona, California; Richard Gray, founder of Gray's Freshwater Biological Institute at the University of Minnesota and the Freshwater Foundation in nearby Minnetonka; and Roy Klehm, a partner in Charles Klehm and Son Nursery of South Barrington, Ill.

Greenlee will talk about the value of ornamental grasses as ornamental plants in various regions of the United States. Although they are becoming extremely popular in New York and Mid-Atlantic gardens, they are just beginning to catch on elsewhere and are still relatively new to both gardeners and to the trade, he says.

"Variegated varieties are very popular in the East. But in the West, where there is not normally much green, green varieties may play a bigger part."

Gray's concern is the quality and quantity of water we use today. He notes that concerns about quantity are not the same

for all regions of the country. "Arizona will be terribly short by 2025 no matter what they do," he noted. In the East, the bigger problem is contamination of ground water. Gray is careful to differentiate between pollution and contamination, which is any change in the original water quality. Definitions of quality vary according to the user: the fishing enthusiast's opinion will differ from that of the swimmer, for instance.

Yet our sophisticated society has not grappled with these issues and continues to increase its pollution and use of its most priceless resource, says Gray, who plans to give a "macro-overview" of the use and misuse of water with a focus on agriculture and horticulture.

Roy Klehm will talk about how the Klehm Nursery prepares for drought, and how their approach might be used within the home garden. Klehm said one inspiration for him has been "The Dry Garden" by British gardener Beth Chatto, who embraces such Xeriscape tenets as soil preparation, mulching, and the grouping together of drought-tolerant plants. In their preparation for continued drought, Klehm said the nursery takes into consideration that the prognosticators could be wrong, or that the aberrant rainy season may still occur from time to time.

'Water Me!'

Gardeners have long known that plants under stress from one cause are vulnerable to additional problems, just as a human who hasn't been eating properly or getting enough sleep is more likely to catch a cold. And previous research has shown that drought causes plant starches to change to sugars that insects may find tastier.

More recently, entomologist Robert Haack, of the U.S. Forest Service in East Lansing, Michigan, is investigating the possibility that insects are drawn to drought-stricken plants because the plants emit "cries" of distress indicating that their chemical defenses are down. Haack explained that when the soil water supply decreases, the internal tension that pulls water from the roots to the leaves increases, and eventually causes the capillary water column within the stem to break. That produces a burst of sound in the 50 to 300 kilohertz range—too high-pitched for humans, who can hear sounds only below 20 kilohertz—but well within the range of many insects. Haack

said insects probably don't hear these signals from great distances; instead, it may be a case of their feeling bad vibrations when they land on a drought-stressed plant.

Corrections

Dr. John L. Creech, the winner of AHS's 1989 Liberty Hyde Bailey Medal, received his degrees from the universities of Rhode Island, Massachusetts, and Maryland. For a year and a half, he was an instructor at the University of Massachusetts; he was never on faculty at the other universities.

The lake home where Poetker Award-winner Ralph Bachman maintains an extensive garden is in northern Minnesota.

In our Seed Program catalog, plant #91, *Thermopsis caroliniana*, should have been listed as hardy in Zone 4.

Gardener's Bookshelf

The Garden Primer

Here's a great gift for beginning gardener friends. The bulk and breadth of this paperback might daunt readers who aren't sure yet just how serious they are about gardening. But the home gardener who is determined to absorb all the basics will want this volume at hand for ideas, answers, and explanations. Chapters deal with planning, what plants need, what equipment you might need, and the culture and selection of popular plants in every category. As a bonus, it's replete with humor and delivered in a conversational style that makes this Connecticut landscape designer seem like a neighbor. By Barbara Damrosch. Illustrated by Ray Maher and Carol Bolt. Workman Publishing, New York. 1988. 673 pages. Publisher's prices: hardcover, \$24.95; softcover, \$16.95. AHS member prices: hardcover, \$19.95; softcover, \$13.60.



Other regional wildflower books offered by AHS:

Wildflowers of Iowa Woodlands

Designed to help the casual observer become more familiar with flowers of the state's woodlands, this little guide includes full-page, full-color photos of each of the more than 120 species described; various common names; typical locations where species can be found; and historic uses. By Sylvan T. Runkel and Alvin F. Bull. Iowa State University Press. 264 pages. Publisher's price, softcover: \$15.95. AHS member price: \$13.55.

Wildflowers of the Tallgrass Prairie

In the same format as the above book and with one of the same authors, this guide also includes some 120 wildflowers. Some are still quite common to much of the tallgrass prairie country of the North American heartland and the roadsides, pastures, and urban patches that have replaced it; others are "decreasers" that are not expected to survive the heavy grazing and mowing to which they are constantly subjected. By Sylvan T. Runkel and Dean M. Roosa. Iowa State University Press. 279 pages. Publisher's price, softcover: \$19.95. AHS member price: \$16.95.

Roadside Trees and Shrubs of Oklahoma

This pocket guide contains 156 sharp, four-color photos, brief descriptions, and typical locations of woody plants growing in Oklahoma's highly diverse terrain. By Doyle McCoy. University of Oklahoma Press. 116 pages. Publisher's price, softcover: \$10.95. AHS member price: \$9.60.

Another attractive wildflower book that we were not able to offer members at a discount is Wildflowers of the Llano Estacado, brought to our attention by B.D. Scott, a biologist at Northwest Missouri State University, who observed that the book should appeal to readers outside Texas because many of the listed plants occur throughout the Midwest, and because of its 141 outstanding color photos and interesting text. The Llano Estacado, 37,000 square miles in northwest Texas, is the largest isolated, non-mountainous area in North America. By Francis L. Rose and Russell W. Standtman. Taylor Publishing Co., Dallas, Texas. 100 pages. Hardback is \$15.95 plus \$2.40 shipping and handling. Write to Wildflowers, 3403 Canyon Road, Lubbock, TX 79403.

Garden Blueprints

We were totally smitten with this colorful little book, which, for those disinclined to make decisions, does almost everything but dig the planting holes for 35 gardens designed around special needs (hillsides, drought, shade) or themes (Chinese, Italian, succulents, fruit, ornamental grasses, birds and butterflies). For each, a chart lists up to 40 plant possibilities, and a four-color aerial drawing shows the finished project. Those on the more rebellious end of the gardening spectrum will find individual ideas worth incorporating in their eclectic landscapes. By Maggie Oster. Simon & Schuster, New York. 96 pages. Publisher's price, hardcover: \$14.95. AHS member price: \$11.95

Southern Wildflowers

In this new effort, the author of the 1986 *The Wildflower Meadow Book: A Gardener's Guide* places the beloved wildflowers of her native southeastern United States in the context of Indian legend, ancient mythology, and personal reminiscence, plus fact and fiction about medicinal uses. In addition to description, habitat, and culture, readers will reap such bonuses as recipes for dandelion wine, violet jelly, and milkweed pods with black walnuts. By Laura Martin. Illustrated by Mauro Magellan. Longstreet Press, Inc., Marietta, Georgia. 272 pages. Publisher's price, hardcover: \$29.95. AHS member price: \$27.70.

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AHS Bulletin Board

Don't forget to plan ahead for the AHS Annual Meeting in Minneapolis/St. Paul July 26-29.

A New Old Library

The American Horticultural Society's collection of 3,500 books, which have been scattered throughout several rooms in its main headquarters building, have been moved to their own separate building. The library, which had its grand opening March 15, can be used by members who want to research their own gardening questions. About a third of the volumes represent the personal collection of Dr. George L. Slate, Cornell University pomologist who died in 1976. The collection includes some very rare antique books dating back to the 17th century, which could be used for research by special arrangement. Other books in the library are very recent publications about landscape design, plant selection, culture of various genera, or general advice that would be useful to the home gardener. The library is not yet staffed full-time; those who wish

to use the facility should call AHS in advance of their visit. Because the library is not a lending library, books must be used on the premises.

Spring Seed

It's time for everyone who intends to donate seed for the 1990 AHS Seed Program to begin thinking about collecting seed. The seed of some plants is already ripening, and the ripening process will continue for one plant or another throughout the growing season and into winter. Gardeners must be observant if they want to collect seed at the right time. Although the seed of a specific plant ripens about the same time every year, the actual date of ripening may vary widely because of climatic factors. The collector must allow seed to ripen sufficiently before it is collected; seed harvested while still immature is a frequent cause of germination failure. There are various signs to look for. Sometimes it is a color change: green to dark brown in a pod or capsule; green to red or black in berries. Other times, it is a softening of the fruit or the shriveling of the seed pod. Once the seed is mature it must be collected quickly, lest it fall prey to birds or other animals, be

dispersed by the wind, or fall to the ground.

Seed should be collected from pure stands of a particular genus. When several species of the same genus are planted in close proximity, cross pollination may occur. Therefore, when collecting seed in the wild, it is best to collect the seed from single, isolated plants.

NOTE: If you are mailing seed to the AHS program, be sure to clean it first. Remove all chaff, and do not send seed still encased in fruit or pods. We lack the staff to clean all the seed that we receive. Send to: Seeds 1990, American Horticultural Society, P. O. Box 0105, Mount Vernon, VA 22121.

Milky Spore Treatment

Reuter Laboratories, Inc., of nearby Manassas Park, Virginia, has donated material to treat most of AHS's 25-acre property with milky spore (*Bacillus popilliae*) to control Japanese beetles.

This is a biological control for the pests, which are found in the eastern half of the United States. In their grub stage they seriously damage lawns and when they emerge as flying beetles in mid-summer, they often decimate roses and other ornamentals.

Applied to the soil as a dust, milky spore is harmless to all other organisms. But within the body of a Japanese beetle grub, it becomes activated as a virulent bacterial disease. Millions of its spores are released into the soil when a grub dies, so the disease continues to spread throughout the beetle grub population. It usually takes about three years for it to achieve effective control, but the milky spore will then remain active for 20 years or more.

Floral Arrangement American Style

AHS is proud to announce that Leonard Tharp, innovative flower arranger for Houston's elite and author of *An American Style of Flower Arrangement*, has recently moved to Washington and is offering a series of classes at AHS's River Farm headquarters. The three-hour sessions will cover the use of a wide variety of floral and unusual arranging materials. Thus far, classes have been scheduled for two or three days each week through Aug. 24.



C.A. Case

During the AHS-sponsored trip to the Leeward Islands of the Caribbean in January, the Society presented Saba Governor Wycliff Smith with several plants for the new botanical garden on the volcanic island of 1,100 persons. From left are Mrs. Benjamin P. Bole Jr. and Roy Thomas, both AHS board members; Mrs. Donald P. Ross; Gov. Smith; AHS Board Member Mrs. John Maury; and AHS President Carolyn Marsh Lindsay. Trip participants were surprised at the wide horticultural and agricultural differences in the islands, brought about not only by variation in climate and soils, but also differing histories, traditions, and government.

This Beauty Is a Beast

Purple loosestrife (*Lythrum salicaria*), a marsh plant that immigrated to the United States from Europe around 1860, is the Lorelei of flora. With its siren song of magenta bloom and easy care, it lured naturalists into admiring it and gardeners into planting it until about 30 years ago, when its destructive nature became apparent.

Its danger lies in its prodigious ability to reproduce: One plant may spew out 300,000 seeds, many of which sink into the mud of its marsh habitat before being dispersed through the waterways as tiny seedlings. Once established, plants become difficult to pull up by their roots, which form a tough, dense mat. A fallen stem will sprout new shoots and roots; any portion of the loosestrife rootstock will sprout. At the Montezuma National Wildlife Refuge in central New York, only a few loosestrife plants were noticed in 1951. By 1967, 200 acres were purple; by 1979, there was a 1,000-acre *Lythrum* monoculture.

In the wake of this relentless spread, natural diversity is lost. Marsh grasses and other wildflowers are choked out. Marshes become scentless, except for the dank smell of mud, and silent: loosestrife offers cover for wildlife, but no food, and replaces other food sources.

So far, Ohio, Wisconsin, Minnesota, and Illinois have enacted laws making it illegal to grow, sell, or import *Lythrum salicaria*. Minnesota also outlaws a relative, *Lythrum virgatum*, and all cultivars of both species; Wisconsin has outlawed all non-native forms of the plant. (While *L. salicaria* averages five feet tall and can grow up to 10 feet, native loosestrife, or *Lythrum alatum*, averages only two feet and is a paler purple.) Illinois outlaws those cultivars whose parentage includes *salicaria*.

It is in the issue of parentage that the matter becomes confusing for residents of those states and others who want to avoid adding to the ecological chaos created by this plant, but who want to retain its red-purple color and tall spiky form in their gardens. The verdict is not yet in on whether those who have been growing a cultivar such as 'Morden Pink' seedling-free for years would do best to evict it before it runs amok.

Noel Cutright of the Purple Loosestrife Task Force in Saukville, Wisconsin, has tried to sort out the cultivars' family trees with limited success. "If you look at three different books they will tell you three different things. Some are crosses between *salicaria* and *virgatum*. We are hoping that

people will decide not to grow them as a show of support in combating this significant problem."

Steven Shimek of the Minnesota Department of Agriculture's nursery inspection section said his state outlawed cultivars of the two species because it is impossible to tell the difference between species and cultivars in their vegetative states and they could be mislabeled by unscrupulous dealers, and because a cultivar could mutate into an invasive form, especially if grown near a wild plant.

Both the Ohio and Illinois laws bow to nursery owners by containing provisions for sale of cultivars proven sterile by research. In Ohio, a number have been exempted,

including 'Robert', 'Happy', 'Dropmore Purple', 'Morden Pink', 'Rose Queen', 'The Rocket', 'Columbia Pink', 'Morden Gleam', and 'Morden Rose'.

Alan Summers of Carroll Gardens nursery in Westminster, Maryland, whose catalog lists eight different *Lythrum* cultivars, said that the cultivar 'Pink Spires' is reported to be completely sterile. While other cultivars set few seeds or empty seed pods, he said, 'Pink Spires' doesn't even set seed pods.

The American Horticultural Society would like to thank readers and members who drew the *Lythrum* problem to our attention after we listed *L. salicaria* seeds in our Seed Program catalog. We did not fill any orders for that seed.

A Strangler in the Parlor?

Plant physiologists at the University of California-Riverside (UCR) are developing propagation techniques that will add to the available species of two tropical plant genera—the popular *Ficus* and the less well-known *Clusia*. All appear to remain hardy with minimal maintenance and withstand over- or underwatering for long periods.

The two genera are unrelated except for the fact that all of their species are tropical or subtropical and many are "stranglers." In their native environment, they begin life as epiphytes, growing on the branches of trees, but as they mature, they send down roots that eventually encircle and throttle their host. As houseplants, however, they are considerably more docile.

Several species of *Ficus* are already familiar houseplants: the common *F. benjamina* or weeping fig, the fiddle leaf fig, and the rubber tree. Outdoors in Florida, the banyan tree is a common sight. But those that are commercially available represent only a small percentage of at least 800 species that grow in the wild.

UCR plant physiologist Irwin P. Ting said that the late Ira Condit, an emeritus professor of horticultural science at UCR who studied edible and ornamental figs throughout his career, left a collection of some 150 *Ficus* species on the campus and at California botanical gardens. "We are systematically going through the entire collection and making tissue cultures," Ting said. The new species, depending on pot size, range from a few inches to more than 10 feet tall.

Clusia is not as well-known, but Ting thinks it has great ornamental potential because of its unusual physiology: when



Clusia in propagation at UCR.

Janet Hann

water is restricted, it adapts by shifting its metabolism to mimic that of a typical succulent. The stomates, or pores on the undersurface of plant leaves, open only at night rather than during the hotter hours of the day, which minimizes water loss. The UCR work is focusing on five *Clusia* species, which were collected in the arid tropics.

One *Clusia* that has been propagated in the United States up to now, *C. rosea*, is commonly called copey, pitch-apple, or Scotch attorney. The latter name has been explained by the fact that the leaves are easily marked by scratching, and have been used for playing cards or substitutes for writing paper. An alternate explanation reflects, according to *The New York Botanical Garden Illustrated Encyclopedia of Gardening*, "unkindly and undoubtedly slanderously, similarities between the treatment of a host tree by *Clusia* and a client by a Scottish lawyer."

Several of the species are ready for evaluation by nurseries and interior designers, who will decide if they have commercial potential.



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Love Me, Love My Larvae



A Malasian lacewing takes a sip from a lantana in the conservatory of the Day Butterfly Center.

Photo courtesy of Callaway Gardens

Some gardeners who have invested heavily in *Buddleia* and *Asclepias tuberosa* to attract the ethereal butterfly have been surprised to find themselves besieged with representatives of its creeping, voracious life stage. That's the idea, say butterfly gardening experts: if you want a lot of butterflies to stick around, you've got to feed and house caterpillars, too.

In Mathew Tekulsky's 1985 *The Butterfly Garden*, he notes that the preferred food of many caterpillars is human food from the vegetable and herb gardens. There is really nothing to do, he says, but plant copious quantities of parsley and dill that people and 'pillars can share.

LuAnn Craighton, interpretative naturalist in the education department of Callaway Gardens at Pine Mountain, Georgia, agreed with that advice. "You could cover your crops, but then you will have broken the life cycle." The opening of Callaway's Day Butterfly Center last fall, along with the growing interest in natural environments, has made butterfly gardening a popular class at their garden, she says, and the Callaway staff encourages their students to include appropriate host plants for the caterpillar as well as its more attractive adult counterpart.

Craighton noted that not all caterpillars dine on cabbages and carrot tops; many prefer morsels less choice to humans. The swallowtail caterpillar prefers the tulip poplar and the wild cherry, and the skipper grazes on grasses. Other caterpillars prefer clover, nettles, or hackberry; none are partial to roses.

A few trips to the market to replace mangled herbs is a small sacrifice, say veteran butterfly gardeners. The Day Butterfly Center's five-acre outdoor area has attracted some 70 species by simply planting the favorite foods of both life stages, then leaving things to Mother Nature. "People in our classes seem not to know that butterflies have another life stage," says Craighton. "By the time they get through, they have more respect for the caterpillar. It's fun to watch their opinions turn around."

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The Xerces Society

Those who want to know more about butterfly gardening may wish to contact the Xerces Society, a nonprofit group established in 1971 to prevent human-caused extinctions of invertebrates and their habitats. A book, *Butterfly Gardening Illustrated*, to be published by the society in cooperation with the Smithsonian Institution, is due out this summer. The organization was named for the xerces blue butterfly, or *Glaucopteryx xerces*, a former resident of the dunes in and around San Francisco. It was the first butterfly species in North America to become extinct because of human interference.

The society's address is 10 Southwest Ash Street, Portland, OR 97204, or call (503) 222-2788.

Regional Notes

► May and June mark the beginning of the “hunting season,” especially in the hot and humid Southeast, says Cathy Hills, horticulturist at Hodges Gardens in Many, Louisiana. Gardeners need to wander into the garden each day, perhaps with their morning cup of coffee, to hunt for pests and problems such as aphids, spider mites, and black spot on roses. Hills recommends replacing disease-susceptible roses with more tolerant cultivars, including old roses, especially those that are repeat bloomers. “If it can’t make it through three years without a lot of blackspot, I’d pull it up.” Hodges fertilizes its roses weekly with 13-13-13, and on each fourth week, a dose of ammonium nitrate.

Mildew is a problem on old varieties of crape myrtle; Hodges is gradually replacing theirs with new, resistant cultivars developed by the Department of Agriculture. Water lilies—both the big and hardy *Victorias* and colorful tropical varieties—are coming into their own and need feeding. Hills said many gardeners with limited space are enjoying water lilies in old whiskey barrels and similar containers. Although the tropicals don’t winter over in her area, she feels their beauty makes them worth buying every year.

The perennial garden at Hodges is not limited to perennials but incorporates shrubs and small trees, herbs, and annuals. Hills said gardeners can have more variety and color by seeding annuals directly into the beds all year. Wildflowers are good for this, but can look weedy and should be interplanted with more domestic garden plants. Hills said last year she was directly seeding annuals such as zinnia, four o’clock, cleome, and cosmos in August and September for fall cut flowers. Peters 20-20-20 is a good fertilizer for annuals, she said. “But be sure to wear rubber gloves or you’ll end up with blue hands.”

► Jim Sjulín, public garden supervisor for Portland (Oregon) Parks, said that record cold weather last winter dealt severe damage to shrubs, and not all of it may yet be apparent. Don’t give up on damaged roses; the root may still be alive and new growth may begin from the bud union if the plant is severely pruned. Warming in January followed by a freeze in February zapped the buds from many rhododendrons. Marginally hardy species have been killed;



others will recover but need to have all damaged wood pruned out.

Trough gardens are increasingly popular in the Northwest, says Sjulín. Antique concrete sinks, or porcelain sinks covered with a mixture of peat, sand, and cement, provide a fast-draining container for alpine plants, which are adverse to wet feet, especially in winter. In filling the troughs, growers attempt to duplicate the dry, screelike soil of mountainsides. Although heavy, the troughs can be moved to control exposure for the fussy plants, and can be covered in winter to simulate their usual blanket of snow.

► In New Mexico, the pine tip moths’ peak flight occurs in late April and early May, after which they begin laying their eggs at the end of pine branches. The larvae will feed on the trees’ needles and buds. If you wait until you see damage, it will be too late, says Lynn Daxon, extension urban horticultural specialist in Albuquerque. A full-grown ponderosa pine can be wiped out by two years of pine-tip infestation. Gardeners should spray their trees every two weeks beginning in early May for a total of six sprayings. In the high altitudes, short-season, warm-season vegetables need to be in the ground this month. Among chilis, which are the state’s number one vegetable crop, some good choices are ‘Ancho’ (‘Poblana’) or ‘Zippy’. Bush beans: ‘Buttergreen’, ‘Topcrop’, ‘Tendercrop’, ‘Provider’, ‘Blue Lake’. Cantaloupe: ‘Sweet N’ Early’. Cucumber: ‘Early Pride’ or ‘Early American’ hybrids, Burpee Hybrid II or Park’s Burpless Bush. In tomatoes and sweet corn, as in many of these other vegetables, you’re usually safe if the word “early” is in the name, says Daxon.

Perennial gardeners should time them to be in the ground by late June or early July,

before the heavy rains of July and August begin.

► May 15 is the usual last frost date in the Zone 6 New England states. Annuals can be put in a week or two earlier, but gardeners should be prepared to protect them, says Karen Bidus, horticulturist for Wilmington Garden Center, a nonprofit civic garden center in Wilmington, Delaware.

Unfortunately, notes Bidus, for the past three to four years May 15 also has been the area’s last rain date for many weeks. Therefore, good Xeriscape practices are as much in order here as in the desert Southwest: be sure to mulch, choose drought-resistant plants, and minimize your workload by keeping thirsty plants within one hose-length of a spigot. Remember that newly transplanted shrubs and trees are especially vulnerable while their root systems are being established. They need about an inch of water per week during their first season.

How to Name Cultivars

The American Association of Nurserymen (AAN) has published a revised edition of *How to Use, Select, and Register Cultivar Names*. Topics include guidelines for selecting names, publication requirements to legitimize names, cultivar registration, and plant patents. Also listed are obsolete, misapplied, misspelled, and otherwise incorrect plant names, accompanied by the correct names. Copies can be obtained for \$8 each (\$6 to AAN members) by writing American Association of Nurserymen, 1250 Eye St. NW, Suite 500, Washington, DC 20005.

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Gardener's Q&A

Late spring is a good time to move many plants. And if blackspot spoiled the joy of rose-growing for you last year, try some of the more resistant cultivars.

Q: Two years ago I created a small nursery bed for plants that I intended to move the following year. Unfortunately, I was unable to transplant them and they have since grown into large plants, but I would still like to move them into the garden. What can be transplanted and what should I propagate? I have a Scotch broom, climbing 'Peace' rose, pyracantha, pfitzer's juniper, Carolina allspice, pieris, and a dwarf Alberta spruce.

—S.C., Laurel, Maryland

A: The choice between transplanting or propagating depends on both the plant's ability to withstand transplanting and one's physical ability to move large plants. If you choose to propagate, you must find out if the plant is a species or a cultivar. Cultivars have been bred for particular characteristics and, assuming that you would like to retain these characteristics, you should take cuttings. Seed-propagated plants will not retain the special characteristics of a cultivar; this is not a problem with a species.

The pyracantha is very difficult to transplant. It would be best to establish a new plant by using softwood cuttings taken in the spring. Use a rooting hormone (these are very inexpensive to buy at a nursery) and follow instructions on the package.

Transplanting the pfitzer's juniper would be worth a try if you can dig it out, but if not, then try stem cuttings. Take cuttings in late summer or early fall (again, use a rooting hormone) and place in an outdoor cold frame.

The Carolina allspice transplants easily and you could obtain more plants by digging it up and dividing it. Propagation can be done by stem cuttings in July or with seeds (there are no cultivars as yet). Stratify the seeds by keeping them in a cold place such as your refrigerator.

Assuming that the pieris is a cultivar, because most people choose them for special flowers or foliage, propagate by taking stem cuttings in June or winter. They root very easily.

Some gardening manuals state that Scotch broom does not transplant well. It does seed itself very easily. If it is a species, you could try collecting seed, soaking it in hot water or acid for about 30 minutes to break seed coat dormancy, and then germinating it at 68° F at night and 86° F during the day for over a month. If the Scotch broom is a cultivar, you should take three-inch stem cuttings that include a heel (part of the stem). Take them in August or September and place in sand in a cold frame until they have developed roots in the spring.

The dwarf Alberta spruce can be propagated by cuttings taken in late July.

The climbing 'Peace' rose can be transplanted when the plant is dormant in late winter or early spring. If the rose is too big for you, try stem cuttings, but don't try propagating with seed as you will not end up with a true 'Peace' rose.

Q: A few years ago I bought *Rosa* 'Carefree Beauty' and it resists blackspot well; I give it no spraying for that. Do you know of any other rose cultivars that resist blackspot so I don't have to spray?

—G.B., Eastchester, New York

A: Blackspot is an exasperating fungal disease that strikes in areas with warm, humid summers. Small black spots surrounded by yellow areas appear on the tops of the leaves and spread until the entire leaf turns yellow and falls off. Bushes can become defoliated within a matter of weeks. To avoid using fungicides, plant the following resistant roses and check your plants periodically for the first signs of infection. Resistant hybrid teas include: 'Tropicana', 'First Prize', 'Miss All-American Beauty', 'Mister Lincoln', 'Tiffany', 'Portrait', 'Pristine', 'Pink Peach', 'Proud Land', 'Duet', 'Peace', and 'Electron'. Resistant grandifloras and floribundas include: 'Queen Elizabeth', 'Prominent', 'Rose Parade', 'Razzle Dazzle', 'Gene Boerner', 'Europeana', 'Montezuma', 'First Edition', 'Ivory Fashion', 'Sonia', 'Carrousel', and 'Angel Face'.

—Peggy Lytton
Assistant Editor, *Horticulture*

Plants Wanted

Members who have access to the plants or seeds listed below are invited to share them with fellow members.

► *Calopogon tuberosus*. A tuberous member of the orchid family. Leaves are linear, grasslike, and up to 10 inches long. Racemes with many flowers, about 1½ inches across, pink to rose-purple. Lip is bearded with golden-yellow hairs. Native to North America, Cuba and the Bahamas. William A. Schwab, 12770 Coveney Rd., Buchanan, MI 49107.

► *Clivia miniata* 'Citrina' (kaffir lily). Often grown as a houseplant or in the greenhouse, this plant has thick, glossy, strap-shaped leaves up to 1½ feet long and 2 inches wide. It produces erect umbels with creamy white flowers about 2 inches wide. Native to South Africa. Mrs. Thomas C. Harvey, 2025 Gratiot Ave., Saginaw, MI 48602.

► *Cypripedium candidum* (small white lady's-slipper). A lady's slipper orchid with greenish sepals and petals, brown-purple veins, and a white lip with purple spots around the mouth and inside. Stems are leafy, up to 1 foot high with about 3 or 4 leaves, 5¼ inches long, 1½ inches wide. Native to North America. William A. Schwab, 12770 Coveney Rd., Buchanan, MI 49107.

► *Nardostachys jatamansi* (spikenard or

nard). A perennial herb of the valerian family. Leaves up to 4 inches long, elliptic-lanceolate to spatulate. Flowers are rose-purple, ¼ inches across in a cluster. Leaves and short aerial stems are very hairy. All parts of the plant contain an aromatic essential oil. Judith A. Sandberg, 6347 S. Richmond St., Chicago, IL 60629.

► *Solanum wendlandii* (potato vine or paradise flower). A shrubby, tropical climber with large pinnately compound leaves. The 2½-inch lilac-blue flowers are in branched clusters. Fruit is globose to ovoid, 3 to 4 inches in diameter. A member of the potato family. Lawrence A. Walker, 57 Laurens St., Charleston, SC 29401.



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Good news from down under for those forever chasing true blue flowers: Calgene Pacific, an Australian biotechnology company that specializes in applying recombinant DNA technology to plants, says it is close to developing blue roses, gerberas, carnations, and chrysanthemums. The bad news is that it will be a "few years" until the novel flowers from Calgene's so-called Blue Gene research project are available in American markets, according to Austrade, a publication of the Australian Trade Commission.

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The Crabapple: Malus Toward Some

The ornamental crabapple, says Dr. Thomas Green, is a good plant with a bad reputation. Green may be slightly prejudiced, as the executive director of the International Ornamental Crabapple Society (IOCS), but there's no argument that crab trees—a member of the *Malus* genus that also includes apple trees—have a lot going for them. Unlike cherry trees, most are cold hardy enough to be planted anywhere in the country. Unlike hawthorns, they don't prick their pruners. Unlike purely ornamental flowering trees, they offer interesting color in the fall as well as when they burst into bloom in mid-spring. Surveys by the National Landscape Association show that for almost 30 years, it has been America's most ubiquitous flowering tree.

But it also has a bad reputation that isn't wholly undeserved. The most widely available cultivars tend to drop messy fruits in late summer or fall, and many are susceptible to the same diseases as other members of the rose family: scab, fireblight, cedar apple rust, and powdery mildew. Scab can leave a tree with sparse, discolored foliage by mid-summer; fireblight can kill major branches or an entire tree. Yet there are many cultivars that retain attractive fruits throughout the winter or until they

are eaten by birds, and that are resistant to or at least tolerant of these diseases. (Being tolerant of scab means that the tree will retain its leaves even though infected, and therefore will not be an eyesore in the landscape.) But consumers aren't aware of these alternative choices and most suppliers don't offer them. One of the reasons they don't, ironically, may be the overwhelming variety of crabapples.

"There are more than 500 different taxa—species and cultivars," Dr. Green says. "It's hard to know them all, so the landscape architects just ask for what they do know."

One landscape architect who is knowledgeable about the vast array of crabapples is John Sabuco, IOCS president. He says that depending on the color of a tree's background, he may select cultivars with either white or pink blooms, and either red or yellow fruits; based on the site, he may choose a spreading, weeping, or columnar shape, a three-foot-tall shrub or a 60-foot giant. He and his client can seek crabapples with fragrance or edible fruit.

But he and other IOCS members agree that appearance should not be the sole criterion for selecting a crabapple. In 1983, to help determine which crabapples are both attractive and likely to remain healthy, a National Crabapple Evaluation Program

was established by Dr. Green, who is research plant pathologist at the Morton Arboretum in Lisle, Ill.; Dr. Lester Nichols of Pennsylvania State University; and Dr. Edward Hasselkus of the University of Wisconsin. Green said that this year, the program will have 25 evaluation sites throughout the nation. That's important: a crab that performs like a champ in one state may succumb to fireblight, mildew, or Japanese beetles in others.

Dr. Green feels that the national program data are just now reaching the point of being meaningful. However, Nichols—who died in 1986—had been conducting a survey in the Northeast since 1961, and there is general agreement among IOCS members about some cultivars that are highly desirable in terms of both appearance and health.

Cultivars consistently mentioned as favorites include 'Donald Wyman', 'Red Jewel', *M. × zumi* 'Calocarpa' (white flowers, red fruit); 'Bob White', 'Harvest Gold', and 'Ormiston Roy' (white flowers, yellow fruit); 'Profusion' and 'Centurion' (rose-red flowers, red fruit); 'Red Barron' (columnar); 'White Cascade' and 'Candied Apple' (weeping); and *M. sargentii* 'Jewelberry' and 'Tina' (shrub).

There are also several cultivars that they believe should be eliminated from the trade on the basis of such severe susceptibility to scab that the trees are often defoliated following bloom each year. These include 'Hopa', 'Radiant', and 'Almey'.

'Donald Wyman' and 'Jewelberry' were among six plants that won the prestigious Styer Award from the Pennsylvania Horticultural Society this year. Yet a survey of major nurseries serving the Washington, D.C., area found only two offering either of these crabapples. This failure of growers to offer the better cultivars is a primary reason that the IOCS was established four years ago, Dr. Green said. He blames the situation less on the growers who don't have the supply than on the bulk buyers who don't create a demand. "The grower may have a field of 10,000 'Radiants' and 'Hopas' that he needs to sell. Contractors and landscape architects don't know the different cultivars and many have so far been unwilling to learn."

Dr. Green said local extension agents should be able to provide more specific advice about which cultivars do well in a given region. More information about the IOCS is available from Thomas L. Green, PhD, Morton Arboretum, Lisle, IL 60532.

This'll Take Care Of Those Li'l Suckers

A problem common to ornamental crabs that breeders have had little luck in eliminating is the tendency of their rootstocks to put forth a forest of suckers. This is because most have been grown by grafting them onto vigorous apple rootstocks. Efforts to grow trees from cuttings or tissue culture often results in new problems, with root rot or transplant shock. For those not averse to chemicals, research indicates that the suckers can be controlled with naphthaleneacetic acid (NAA), which is sold commercially as TRE-Hold by Union Carbide.

In the winter 1988 issue of IOCS's quarterly publication *Malus*, John Pair of Kansas State University reported that when sprouts were pruned and sprayed while still dormant, new suckers were greatly reduced in number and somewhat shorter. When he pruned the suckers and let them grow back before spraying, they multiplied. In an earlier study, Fir Butler of the Rhody Ridge Arboretum Park in Bothell, Washington, found that NAA controlled the suckers, and the effect was more aesthetic, when suckers were pruned to a half-inch and then sprayed. Both researchers used a solution of about one percent (10 ounces of TRE-Hold to a gallon of water). No phytotoxic effects have yet been noted from this treatment, although Butler recommends using a shield to keep the chemical from reaching the tree trunk if the suckers are sprayed. TRE-Hold also comes in a paint-on form.

Those who prefer to avoid chemicals may want to follow the advice of Bob Bickelhaupt of the Bickelhaupt Arboretum in Clinton, Iowa, who has reduced suckering of crabapples in their collection by placing polypropylene fabric around the tree near the trunk, and covering it with woodchip mulch.

Gardener's Dateline

► **Through May 3. American Iris Society National Convention.** Peabody Hotel, Memphis, Tennessee. Information: 750 Cherry Road, Memphis, TN 38117, (901) 685-1566.

► **May 5-7. Hydroponic Society of America Annual Conference and Trade Show.** Airport Holiday Inn, Tucson, Arizona. Information: Gene Brisbon, P. O. Box 6067, Concord, CA 94524, (415) 682-4193.

► **May 6, 13, 20, 27; June 17, 24. Ikenobo Gardens Public Tours.** Redmond, Washington. Information: Ikenobo Gardens, 23025 N.E. Eighth Street, Redmond, WA 98053, (206) 868-0589.

► **May 11-June 15. Up the Walls and Over Our Heads: Vines for the Garden.** Six classes at Strybing Arboretum of Golden Gate Park. Information: Ninth Ave. at Lincoln Way, San Francisco, CA 94122, (415) 661-1316.

► **May 12-14. Spring Wildflower Symposium.** Blue Ridge Mountains, Wintergreen, Virginia. Information: Andy Dow, Wintergreen, Wintergreen, VA 22958, (804) 325-2200, ext. 281.

► **May 13-14. Gardens for Connoisseurs Tour.** Seven private gardens in the Atlanta area. Information: Atlanta Botanical Garden, Piedmont Park at the Prado, Box 77246, Atlanta, GA 30357, (404) 876-5859.

► **May 14. Scott Associates' Garden Day.** Tour of five private gardens in the Wallingford-Swarthmore area. Information: Scott Arboretum, Swarthmore College, Swarthmore, PA 19081, (215) 328-8025.

► **Beginning May 16. Garden Sculpture, Wall Drawings Exhibits.** Wave Hill. Information: 675 W. 252 Street, Bronx, NY 10471, (212) 549-3200.

► **May 18-20. The Well-Furnished Garden . . . From Floor to Ceiling.** Raleigh, North Carolina. Information: Mordecai Square Historical Society, 1 Mimosa St., Raleigh, NC 27604, (919) 834-4844.

► **May 19-22. Marin Garden Show.** Meadowlands, Dominican College, San Rafael, California. Information: P. O. Box 887, Ross, CA 94957, (415) 456-0184.

► **May 20. Horticultural Perspectives: Past and Present—An Historic Landscape Symposium.** Green Spring Farm Park, Annandale, Virginia. Information: Division of Historic Preservation, Office of Museum Programs, Fairfax County Park Authority, 3701 Pender Dr., Fairfax, VA 22030, (703) 759-5241.

► **May 20-24. International Flower Show and Diamond Jubilee Convention of the National Council of State Garden Clubs.** Rochester (New York) Convention Center. Information: Mrs. Harry Baden, 205 Curtice Park, Webster, NY 14580, (716) 265-3752.



The Ketchum Memorial Iris Garden of the Memphis Botanic Garden is a highlight of the American Iris Society Convention this spring. The main attraction will be 915 plant cultivars representing the newest iris introductions in the United States and abroad.

► **May 21-Aug. 1. Gertrude Jekyll: A Vision of Garden and Wood.** College of the Atlantic, Kaelber Hall, Bar Harbor, Maine. Information: (207) 288-5015.

► **May 25. Festival of Roses and Mayflowers.** Annapolis, Maryland. Information: William Paca Garden, 1 Martin Street, Annapolis, MD 21401, (301) 267-6656.

► **May 25-26. Chelsea Flower Show.** London, England, public view days. Information: Royal Horticultural Society, Vincent Square, London SW1 2PE, or call 01-834-4333.

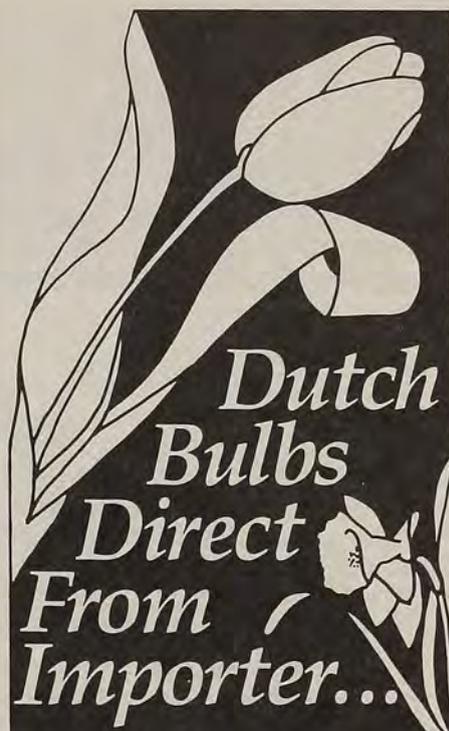
► **May 25-29. Chicago International Festival of Flowers and Gardens.** Lincoln Park. Information: 600 N. McClurg Court, Suite 1302A, Chicago, IL 60611, (312) 787-6858.

► **June 2-4. Ikebana Symposium** with Sen'ei Ikenobo, 45th Headmaster of the Ikenobo Ikebana Society. Information: 17818 N. E. 26th Street, Redmond, WA 98052, (206) 868-0589.

► **June 3-4. Fashions in Flowers.** Albuquerque Garden Center. Information: Council of Albuquerque Garden Clubs, P. O. Box 3065, Albuquerque, NM 87190, (505) 296-6020.

► **June 3-4. Bonsai Society Show.** Morton Arboretum. Information: Morton Arboretum, Thornhill Building, Route 53, Lisle, IL, (312) 968-0074.

► **June 4. Philadelphia Garden Tour.** Sponsored by University of Pennsylvania's Arthritis Research Program and Morris Arboretum. Information: Pam Rorer, (215) 247-5777, or Dr. H. Ralph Schumacher, (215) 662-2454.



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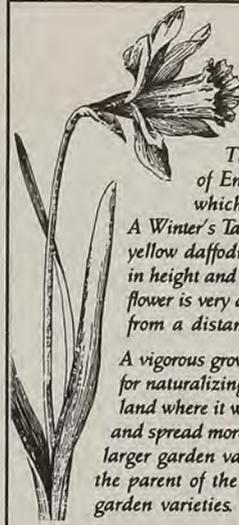
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How Cities Can Spell Releaf

The American Forestry Association (AFA) has launched a nationwide campaign called Global ReLeaf aimed at encouraging Americans to plant 100 million trees in the next three years to help reverse the greenhouse effect.

About half of this global warming phenomenon, which many scientists say threatens to turn the earth into a hothouse in coming decades, is blamed on carbon dioxide in the atmosphere trapping heat that would otherwise radiate into space. This atmospheric carbon dioxide is on the increase because of the burning of fossil fuels for energy.

Cleaning the Air

Because trees use carbon dioxide as they grow, they are seen as one means of helping to cool the globe: according to the forestry association, an acre of trees takes up enough carbon dioxide to offset the amount produced by driving a car 26,000 miles. Trees in urban areas can have an even greater impact: the shade and cooling they provide can reduce the need for air conditioning from 10 to 50 percent, and indirectly reduce CO₂ emissions by an amount 15 times as great as the tree itself actually absorbs.

By looking at miles of public roads in U.S.

cities and towns, the association has estimated that there are some 100 million sites where tree planting would help conserve energy in this manner, offsetting America's CO₂ emissions by 18 million tons a year and saving consumers \$4 billion in energy costs.

AFA officials said that while reducing deforestation of tropical forests is part of their agenda, they want to begin at home, where millions of acres of trees are being cleared each year for the expansion of cities and towns. In addition, they note that the United States, with only one-twentieth of the world's population, produces nearly a quarter of the carbon dioxide that comes from fossil fuels.

Urban Jungles

A primary thrust of the ReLeaf campaign is to plant trees in our urban "concrete jungles," whose designs are often inhospitable to trees, particularly their root systems. Concrete expanses can create "heat islands" 5° to 9° F hotter than surrounding areas. But this heating-up trend can be reversed, a recent study indicates. Climatologists at Arizona State University found that average temperatures in Palm Springs, California, which until the early 1970s had been on the rise, have dropped two to three degrees below that of the

surrounding desert. The only apparent explanation, the researchers said, was the many golf courses that had been built in the area beginning about the same time as the cooling trend.

But most cities are not taking care of their trees, according to the forestry association. A tree that would live more than 200 years in a forest lives only 32 years in a city, or as few as 10 if planted in a downtown "planting pit," which gives roots no room to grow. Only one tree is replaced for every four that die.

How to Help

Because of this urban focus, Deborah Gangloff of the American Forestry Association said that individuals who wish to become involved with Global ReLeaf will be put in touch with urban forestry and environmental organizations in their community, or will be helped in starting such groups where they don't exist. They will be encouraged to push for local ordinances that protect trees and encourage their planting, and will be updated on national legislation through a special Global ReLeaf newsletter, brochures, and fact sheets.

For more information, write Global ReLeaf, P.O. Box 2000, Washington, DC 20013, or call (202) 667-3300.



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