Water Crisis - 1977 clarke

Water-short gardening...here are

Some whole new questions will perplex home gardeners this year in northern California, Nevada, Utah, and Colorado: How do you keep valued plants alive when water is scarce? And should you plant summer annuals and vegetables at all this spring?

We have answers to those questions—and the many lesser questions that they breed—on these four pages.

But, as you read, keep several things in mind. A second year of drought in northern California with a population of 8 million is unprecedented. There are no built-in experts on the subject. Our advice represents the best thinking of 49 horticulturists—nurserymen, landscape architects, public garden keepers, and home gardeners. But there may be mistakes in their estimates. Some plants for which we suggest withholding water may actually succumb, but our best hunch is that they should survive.

Also, remember that your plants may respond in a different way from what we say. Some reasons:

—Your plants could be too young. Just about any plant needs water through its first summer.

—Your topsoil could be a shallow veneer over rock or could be unusually sandy, clayey, or weird in some other way. Generally speaking, plants in shallow soils and sandy soils must be watered more often than those in other soils. Plants in very clayey soils can go a little longer between waterings.

—Roots of nearby trees or big shrubs may have spread around the roots of other plants and be stealing water from them. In that case, your plants will dry out faster than we state. Many gardeners will face some tough decisions about water-greedy trees and shrubs: whether to eliminate the greedy ones or eliminate those that might suffer from greedy neighbors.

—In unusually windy spots, the moisture loss from plants is greater than it is elsewhere.

—It may rain this summer, throwing out some of this article's prognostications. Last year in the San Francisco Bay Area it rained hard *four times* during the usual dry season. That's at least two more times than the usual maximum. Maybe with our new rainless winters come rainy summers.

Various devices and materials may help many gardens get through this coming dry season:

Mulches. At last the mulch comes into its own! Bulk materials, gravel, sand, ground bark, leaves, or any such material will work. Put it on over the rooting area of plants that must have water—at least 2 inches deep.

A sheet of plastic film over soil also reduces water loss by evaporation. It's good for mulching vegetables and other row crops, but be careful around trees and shrubs: plastic-covered roots can die from suffocation or from inadequate irrigation. Ask your nurseryman for specific advice about plastic mulching around trees and shrubs.

Sprinkler systems. It's difficult to be frugal with water when it goes onto plants through a sprinkler system. Much gets lost by wind, evaporation, runoff, and by soaking into ground that has no important roots. Of course there are circumstances (large areas, limited time) where a sprinkler system is essential. But if you can avoid it and put water on by hand you will probably save water. Some emergency ordinances written in the past year have prohibited all use of sprinklers.

If you are allowed to use sprinklers and if you are going to budget your water, you'll probably find that you could make your greatest water saving by cutting off the lawn circuits. Water the lawns by hand (time-consuming) or not at all. Generally, lawns are cheaper and easier to replace than shrubs and trees.

At *Sunset's* home grounds in Menlo Park, we are reducing our lawn sprinkling sharply this year. We're considering replacing some of the lawn area with drought-tolerant ground covers.

Drip systems. You can water with a drip-irrigating system and use approximately half the water you'd use with aboveground sprinklers, furrows, or flooding. If you have enough fresh water, consider a drip system for such uniform plantings as vegetable gardens, beds of annuals, perennials, ground cover areas, rose gardens, hedges and screens, camellia collections, or young orchards (see pages 292 and 293).

In a landscape of mixed plantings, total drip irrigation has some problems. Emitters soak only tiny root portions; established root systems already range deep and wide. You can, of course, add more emitters. But the system can't think for you; it can't tell that the *Arbutus unedo* doesn't need any water, thanks, but the *Asarum caudatum* is wilting. In some systems you can gradually overcome this handicap by regulating the outflow from each emitter.

Clever, homemade systems. In the past two months, you've probably seen newspaper pictures of clever gray-water collecting and distributing systems that home owners have put together. In various ways, the systems take water from bathtubs, showers, sinks, and washing machines and deliver it to big plastic garbage cans for storage. The water may be siphoned to the cans or pumped through tubes by submersible electric pumps that cost about $20 to $30. It can flow into the garden through valves and fittings at the bottoms of the cans.

Subsurface irrigators. They have been on the market for years but became very popular suddenly this year. They are rigid pipe and tube devices that you attach to the end of a hose, push into the soil with your foot, and turn a valve to let water out underground. Most people favor the type that's meant to be an underground feeder. For this year, we recommend that you leave the fertilizer chamber empty and use the device just to deliver water to the roots.

Antitranspirants. These products put a temporary moisture seal on the surface of leaves to prevent moisture loss. They are good for protecting broad-leafed plants from frost and for minimizing wilt during transplanting jobs. The verdict of our panelists was that they aren't effective in reducing irrigation during the summer.

The hoe. Don't forget this wonder implement. With it you can regularly chop off the tops of emerging weeds which, if left to grow, could cause a major loss of your valuable soil moisture.

Prune to reduce water loss?

Should you prune a plant in order to reduce the total leaf surface and thereby reduce water loss? (Moisture exits from

some guidelines

49 horticulturists join Sunset in making educated guesses for northern California

plants through their leaves.) Or, on the other hand, might the pruning cause new growth, which in itself would lead to the use of more water?

Except for thinning citrus (see below) and removing basal sprouts from almost any plant, the general question never was resolved.

The happy ending

When this drought concludes, Western gardeners will be much wiser about the amount of water that plants *really* need in order to perform. Many of us may find that for all these years we've been pouring water needlessly on certain woody plants and even some annuals because we thought they needed it.

Which plants should get the water you have? No water for the plants marked*, some for the others

Listed below are what we consider northern California's most widely grown plants that normally demand some water. (Some plants need no water once established—see page 78 of the October 1976 *Sunset* for the 92 most widely grown drought-resistant plants.) The plants on this list marked with * —55 altogether—are the take-a-chance plants; they stand a good chance of surviving the drought without any watering. They may suffer and look bad but should recover next winter. The other plants will need some water, along with other special attention as described.

Abelia*

Japanese maple (*Acer palmatum*). Large unnamed seedling types can make it through a drought—in fact, many of them never really get irrigated. Unfortunately, the expensive, smaller, grafted ones (named varieties, usually with finely cut leaves) are drought-susceptible.

In England's drought last year, the grafted forms died regardless of emergency ministrations—shade, protection from sun and wind, mulch. But in Marin County last year, grafted ones hung in; they even survived with gray-water irrigating, although there was some burning of leaf edges.

Gray water is not good as a steady diet for fine-leafed Japanese maples in containers. Water them with fresh water whenever you can get it.

Agapanthus*

Silk tree (*Albizia julibrissin*)*

Alder (*Alnus*)*

Apple*

*Arctostaphylos uva-ursi**

Asparagus*

Aucuba*

Azaleas, evergreen. They're more sensitive to drought than rhododendrons.

Little azalea plants, only recently out of the florist or nursery container, probably aren't worth saving—they are replaceable. Direct your noble effort to old plants several feet high and wide. Use a soil penetrant or wetting agent to help water go straight down to the roots.

As much as possible, use clear water on azaleas. A drooping of new foliage indicates that the plant needs water and can't hang on much longer without it.

Japanese barberry (*Berberis thunbergii*)*

Birch (*Betula*). Some are more dependent on water than others. Those that have grown up in lawns have probably become dependent on lawn sprinklings.

If you're cutting off lawn water and want to save lawn birches, continue to water the grass beneath the branches. Give it—or any birch root area—one good soaking with gray or clear water in July or August and continue monthly until rains come.

Boxwood (*Buxus*)*

Camellia. If yours are roof-high and haven't been watered for years, continue not watering them as long as you can. For smaller and younger camellias, water once a month with clear water if possible, with gray water if it's all you have. Also mulch young plants with leaf mold, peat moss, or similar material.

Watch for wilting of new growth. It will come back quickly with a watering.

Contrary to the pattern with other plants, big camellias seem to do better without water inland (Sacramento, Walnut Creek, San Jose) than they do in the fog belt.

Atlas cedar (*Cedrus atlantica*)*

Flowering quince (*Chaenomeles*)*

Chamaecyparis. The fancy dwarf types are as water dependent as the fancier Japanese maples. Save fresh water for them. They don't need much because they have restricted root systems, but they do need some moisture all the time.

Camphor (*Cinnamomum camphora*)*

Citrus. Their responses to this second year of drought will vary. Reactions will be determined by: the kind of citrus, soil type, exposure, local climate, and one big surprise. The surprise is that the aboveground parts of a citrus may be growing on any of about half a dozen different rootstocks and each rootstock has its own water requirement—some are better at seeking out water than others.

Watch for wilting, discoloration, leaf drop, and foliage sprouting from the rootstock—in that order. Water when you see the first signs and more frequently if you can. If you can't get enough water, prune to reduce citrus to ⅓ its present size (reducing leaf surface reduces transpiration of water). If the pruning induces new growth, cut it back.

Pink diosma (*Coleonema pulchrum*)*

Coprosma*

Dracaena palm (*Cordyline australis*)*

Jade plant (*Crassula argentea*)*

Italian cypress (*Cupressus sempervirens*)*

Daphne odora. It gets sick or dies from overwatering more than anything else. The drought may be the best thing that

ever happened to daphnes whose owners water too much or too often.

Water a small daphne (knee-high or smaller) heavily with clear water once a month. Bigger ones can probably go longer—two months to the entire dry season. Some splendid daphne bushes never get watered.

Fatsia japonica. Only a small portion of these plants go onto the water-dependent list: those that get lots of sun, especially afternoon sun. Water with any kind of water when you see their new stems and leaves wilting. (Fatsias in shade are on the withhold-water list—they can take it.)

Pineapple guava (*Feijoa sellowiana*)*

Ferns—low. Most respond to drought by turning fronds brown and going dormant. And within the next six months they will probably respond to rains or irrigation by growing new green fronds. Let the old brown fronds stay in place to serve as a mulch.

If it's a valuable fern, save what fresh water you can and pour it directly into the heart of the plant.

Ferns—tree type. You may be able to get one through by watering its crown with about 2 quarts of fresh (not gray) water every week or two, depending on the weather. (The water that runs down the sides of the trunk gets into the plant's system because the trunk is actually an aerial root system.) When you have water available, wet the ground as far out as the tips of the fronds.

Forsythia*

Fuchsia. Surprisingly, the experiences in Marin County last summer showed that it's not such a water baby as we all thought—if it's old enough to have a woody trunk. Such plants can go a very long time without wilting, and when they do begin to wilt, they can be sustained with gray water—another 1976 Marin County finding.

Even if an established, woody-trunk fuchsia loses all its leaves from lack of water it can probably go through an extended dormancy and come back.

Young fuchsias with stems still soft and succulent need more water—gray water is okay. Even hanging-basket fuchsias can be sustained with gray water.

Gardenia. Routinely, *Gardenia jasminoides* 'Mystery,' the popular big-flowered one, is hard to grow in most of northern California. It always needs lots of heat, water, and fertilizer.

If you are one of the few people with large gardenia plants that produce many flowers, save up fresh water as you can and put it on as close as possible to your normal watering frequency. Don't use gray water.

Fertilize only if you can water as often as in other summers.

Ginkgo*

Grevillea*

Hebe. Small-leafed kinds take drought better than larger-leafed kinds. If you withhold water too long, any kind may dry up but might come back if next winter is rainy.

Since the typical hebe doesn't represent a big investment you could let plants go and replace them later—with less concern than with more expensive or more rewarding plants.

Ivy (*Hedera*)*

Hydrangea. In Marin County last summer many survived on gray water, and very little of that, but they lost their leaves. Stem tissue remained alive.

English holly (*Ilex aquifolium*). It and its varieties are sensitive. Put a mulch over the roots and water monthly from now until November—with gray or clear water. (Many other kinds of *Ilex* can probably get through the dry season with little or no water.)

Crape myrtle (*Lagerstroemia indica*)*

Leptospermum scoparium hybrids*

Privet (*Ligustrum*)*

*Liquidambar styraciflua**

Tulip tree (*Liriodendron tulipifera*). It suffered from drought in Marin County last summer and probably will elsewhere this year. All its roots are big and succulent, and it's always known as a tree that's fond of summer water. If possible, give it a watering once a month with clear or gray water.

Liriope and Ophiopogon*

Japanese honeysuckle (*Lonicera japonica*)*

Magnolia. Evergreen and deciduous have surprisingly shallow root systems considering the size of the tops. Very large trees might make it through a second summer of drought with no irrigation, but small to medium-sized trees should get some water. If possible, give them a heavy watering once a month. Use clear water if it's available, gray water otherwise. Put a mulch over the roots beneath the branches.

Mahonia*

Moraea*

White mulberry (*Morus alba*)*

Myoporum*

Nandina*

Virginia creeper, Boston ivy (*Parthenocissus*)*

Passion vine (*Passiflora*). Water once a month with clear or gray water. If the vine covers a big area, cut it way back to reduce the leaf area.

Pear*

New Zealand flax (*Phormium tenax*)*

*Photinia fraseri**

Dwarf spruce (*Picea*). If you have some of great value, run a drip irrigation line to them, or put an individual dripper (can or plastic jug with a hole in the bottom) by each plant, and water once a month with the clearest water you can find.

*Pittosporum tobira, P. tenuifolium, P. eugenioides**

Podocarpus. Young plants and plants in the sun are more likely to suffer than older ones and ones in the shade. A drought-suffering podocarpus first loses leaves, then twiglets, and finally branches. Try not watering at all until signs of stress come, then water just enough to keep the stress from getting worse. Use clear or gray water.

Potentilla verna. This attractive ground cover is comparatively inexpensive. If water is limited, let it go.

English laurel (*Prunus laurocerasus*)*

Pyracantha*

Evergreen pear (*Pyrus kawakamii*)*

Raphiolepis*

Rhododendrons. They seem to tolerate drought slightly better than evergreen azaleas. But they can't be called tough or drought tolerant. When a rhododendron needs water the leaves hang; any new growth will wilt. Foliage will perk up if you give the roots adequate water soon enough.

Use fresh water as infrequently as possible (watch for the wilting signs). Gray water with soap or detergent is not recommended, but may save a valuable rhododendron if that's all you can get.

In hotter sections of northern California expect some sunscald on drought-suffering plants and, as salt content in water rises, burned leaf edges.

Rose. The old and (often irreplaceable) plants can probably pull through a summer without watering.

To maintain a young plant through summer, apply a mulch of gravel or other material that doesn't absorb water. Water the plant when you can—with gray or clear water.

All roses will probably bloom this month or next. But, with little or no water, they will probably not bloom much the rest of the year. Let the first crop of flowers form seed heads—it makes the plants all the lazier about putting on new growth and that's what you want this year.

Cut off any suckers that appear at or near the base of the stem, then don't do any other pruning until winter.

Weeping willow (*Salix babylonica*). It takes all the water it can get. And this year that may be much more than you can supply.

The hard-hearted recommendation: let it go. It may not die—it may eke its way

through the waterless summer, becoming twiggy and sparse before winter. Or it may surprise you—its notorious water-finding roots may find a sustaining source you don't know about. If it does die, a replacement will grow quickly when water becomes available again.

*Sarcococca ruscifolia**

California pepper, Brazilian pepper (*Schinus molle, S. terebinthifolius*)*

Redwood (*Sequoia sempervirens*). In the fogbelt (if fogs come in this summer), there's no reason to worry. They sustain themselves with fog drip. Inland, if you can spare fresh water, sprinkle it on the ground beneath the trees like a fog drip. If a redwood tree is forming suckers from roots or trunk base, cut them off.

Stone fruits, fruiting, and flowering*

Syzygium paniculatum (Eugenia myrtifolia)*

Star jasmine (*Trachelospermum jasminoides*). As a ground cover, it's expendable and easy to replace. But if you grow it in your garden as a big vine or espalier, star jasmine is worth working on. Prune it some to reduce leaf surface, water when you can, and mulch. Star jasmine tells you when it's under stress: It begins to drop foliage and turn red.

Brisbane box (*Tristania conferta*). It's not completely drought tolerant. But one good summer watering (gray or fresh) should pull it through. Do it in July if spring and summer are hot and windy, or in August if the summer is cool.

Chinese elm (*Ulmus parvifolia*)*

Viburnum. Deciduous kinds take drought. But not some evergreen kinds: *V. cinnamomifolium, V. davidii, V. japonicum,* and *V. odoratissimum.* Strangely, they don't transpire much but they need water around the roots. Two big waterings during the summer would probably be enough. Of all the water-needers, *V. davidii* is the one most likely to suffer from gray water.

*Vinca major, V. minor**

Mexican fan palm (*Washingtonia robusta*)*

*Yucca gloriosa**

What about water-thirsty annuals? Some are less thirsty than others. California nurserymen name a dozen

If you happen to have as much water this year as you did in past springs, you can grow whatever bedding plants your nurseries offer. But if you have limited water, you'll want to be rather careful how you choose annuals for summer flowers.

Following is a list of the dozen bedding plants that can go the longest time without water. The panel of northern California nurserymen who selected the plants figure that most established annuals can go 10 days between watering. All the ones on this list can go that long or longer once they're established.

The drought advice for woody plants (page 126) also applies to annuals: especially the sections on mulches, drip systems, clever homemade systems, and the hoe. A drip system would be the ideal way to water annuals this year; it can put adequate water just where it's needed to sustain plants.

Celosia—feathers and cockscombs

Plants started from seed seem to be quite drought tolerant. But most people now buy big plants in bloom—many people water these too much. Just water them in, let them take hold, and water again when they show signs of needing it.

Coreopsis—yellow to maroon daisies

This American native is drought resistant by nature—it grows wild along highways in Texas and Oklahoma. Generally scorned in the past as being too weedy, it has become more popular in the last couple years in Marin and Sonoma counties. Give it a good drench at planting time, and then forget it—or drench it again if it happens to wilt.

Cosmos—daisies on big, airy plants

It's not offered much as a bedding plant these days, but easy to grow from seed (broadcast seeds rather than planting in rows—rows waste water). Seedlings up to 3 or 4 inches high transplant well. Water young seedlings often enough to keep them growing fast, but slacken up when they begin to mature.

Hollyhock—narrow spires of flowers

The old-fashioned kinds are ideal for a limited-water garden: They send roots down deep, fast. 'Summer Carnival' is characteristic of this type. But the dwarf hollyhock has a fibrous (shallow) root system. 'Majorette' is intermediate between the two types.

Petunias—broad trumpets in any color

Petunias are really quite drought resistant—most gardeners overwater them. Overwatered petunias bloom less than underwatered ones. Give a good soaking at planting time and then hold off watering as long as you can. It's all right for plants to wilt in the day and recover at night, but if they wilt one day and are still wilted early the next morning, they need water.

Portulaca—tiny roses, succulent leaves

This is easy to grow from seed. During its initial growing stage, a lack of water will stop vegetative growth but not flower production. Full-size plants will coast for weeks, flowering all the while, from each heavy watering.

Rudbeckia—big, rough daisies

This tough, deep-rooting plant needs deep initial watering. After it's growing well, water only when foliage wilts or looks bad.

Sweet alyssum—white to purple puffs

Grow it from seed or from nursery plants—it will give a grand performance on very little water. It has the mustard family's survival secret: a heavy, long taproot.

Verbena—mats with flat flower clusters

The hybrid verbenas that come in a variety of colors are very drought tough. Give nursery plants their big soak at planting time.

Vinca rosea—white to rose flowers

This one looks like a sissy (shiny leaves, bright flowers), but it isn't. It thrives on minimum water; if you water it too much, it will rot off.

The shade lovers

There aren't as many annuals for shade as for sun—but at least there are two drought-tolerant ones.

Begonias—shiny leaves, many flowers

Fibrous begonias grown in the shade (especially afternoon shade) will go a long time without water. But they need water if grown in the sun. F_1 hybrids tend to withstand adversity better.

Impatiens—white to scarlet flowers

After taking hold, it can go a long time without water. Try watering no more than every 10 days. Before wilting, the foliage gets a gray cast, a loss of glossiness. Impatiens plants don't grow much until the days and nights get warm—May or June planting may be preferable to April. □