Summer Water

Are you ready for the 4th of July? Here in southern California the weather finally figured out it is summer and the highs are predicted to climb into the triple digits. As I succumb to the dry heat, I am sorely tempted to water my native plants. After all, it is hard to believe they are not thirsty. In fact, some are wilting down a bit during the heat of the day and I can barely stop myself from "rescuing" them with a good cold drink.

Watering gardens with native plants is one of the most misunderstood horticultural practices. Although it is probably true that most gardens with established native plants suffer from too much summer water rather than too little, knowing whether and when to water can be confusing.

So let me set some ground rules and dive right in. This discussion of supplemental water for native plants is going to be restricted to plants that naturally grow in the mediterranean climate of coastal California. This climate can be succinctly described as: hot, dry summers, and cool, wet winters. The plants commonly found here include black sage, sagebrush, buckwheat, California lilac, toyon, coast live oak, among others. Plants not included in this discussion, though native to the state, may live near streams or wetlands thereby requiring water throughout the year, or they may come from desert areas, surviving on almost no water at all. We will leave these for another discussion and concentrate on coastal sage scrub, chaparral and oak woodland plants.

Second, for the time being, I will focus on those plants that have been in the garden for several years, commonly described as established plants. New garden additions need careful attention and watering. For information on caring for new garden plants, check out the powerpoint presentation, How to Keep 'em Going.

Adaptations to summer drought
Native plants survive on little water using two basic approaches: maximizing water uptake, and reducing water needs. To acquire as much water as possible, some plants develop deep root systems that can reach the water table. Other plants have far-reaching roots to capture moisture from a large area. The wide spacing of plants in deserts reflects the paucity of life-sustaining water as the roots of successful plants reach out to capture enough water, when it is available, to sustain them when it is not. Another interesting water capturing adaptation is the presence of hairs on leaves to hold water collected from fog, dew and the occasional rainstorm.

To reduce water needs some plants go dormant in the summer, either dropping their leaves (deciduous), or just slowing down their growth. Many plants, though, are not deciduous, but rather live within their water budget by reducing water loss.

Most water loss is due to transpiration – similar to sweating in humans - from the plant leaves. Some plants, like coast live oak (Quercus agrifolia), have thick leaves with waxy coatings to minimize water loss. Others, like white sage (Salvia apiana), have light colored leaves that reflect sunlight. Small hairs on the leaves of some plants capture dew and fog as mentioned above, but also reflect sunlight. Indian mallow (Abutilon palmeri) provides a nice example of this. Some plants have small leaves that produce enough energy through photosynthesis in our sunny climate, yet lose less water due to their small size. Buckwheat (Eriogonum fasciculatum) and chamise (Adenostoma fasciculatum) exemplify this adaptation.

For many of these drought-adapted plants, the stomata, the pores through which water and air exchange occur, are sparse and recessed. Some leaves are coated with aromatic oils to discourage predation and reduce transpiration, resulting in the wonderful smell of coastal sage scrub. Other plants have two kinds of leaves, larger green ones for periods when water is plentiful, and smaller ones for times of drought. And finally, some plants, like jojoba (Simmondsia chinensis), can orient their leaves parallel to the sun's rays to reduce the heat received.

With all of these wonderful adaptations one would think that the answer to how one should water native plants during the summer is, don't. And indeed, that would be the case if:

we are willing to accept the level of mortality present in wild lands,
we limit the plants we grow in our gardens to local natives,
we recognize that in nature success of individual plants is based on a natural interplay between

organisms and abiotic conditions, and
summer dormancy is aesthetically acceptable. Since most of us are not okay with these premises, a bit of summer water can be helpful.

Summer Irrigation
So what's a gardener to do? Is summer water necessary or detrimental? And how can one tell if a plant needs water or not? The best way to know whether and when to water is to get to know your plants. This means noticing them when you walk by - and you should walk by often. As you get to know them, you will learn to recognize when they need water. The answer to this vexing question then is, water them when they need it.

The most obvious indicator of drought-stress is plant wilt, or the flagging of soft stems. This means that the plant is losing more water than it can take in. If it is very hot and sunny, the plant may recover when the day cools. If it perks up later in the day, the plant may be okay. Keep an eye on it for more intense wilting, and also check the weather forecast. If extreme heat is predicted, it may be helpful to hydrate the plant. Before watering, make sure that the soil is dry – and yes, you must check the surface and dig down a bit. If it is dry near the root area, water deeply in the early morning or late in the day when the soil and air are a bit cooler. If the plant continues to wilt slightly during the hottest part of the day, but perks up at other times, additional water is probably not necessary and may even be harmful. Remember that California native scrub plants often succumb to root rot when exposed to hot, moist conditions.

Last week the soft tips of the branches of this four year old Louis Edmunds ceanothus (*Ceanothus thyrsiflorus* var. *thyrsiflorus* 'Louis Edmunds') wilted down in the heat of the day. I watered it deeply because the forecast was for several days of extreme heat. It continued to wilt down a bit but I do not think this is a problem since it recovers quickly as soon as the sun goes down. I will not water it again for at least a month.

Wilting can result from other factors, as well, so water is not always the solution. If the soil near the roots is wet, yet the plant is wilted, the roots may be diseased and unable to take up water. As noted above, heat and moisture are not well tolerated by California, mediterranean plants. Additional water only makes the problem worse. Sometimes if you prune the soft growth, where water loss is the greatest, and stop watering, the plant may pull through, though it is a long shot. Other causes of wilting are: root predation by rodents or gophers, excessive salt accumulation in the soil, or frost.

To complicate things further, some California native plants will not wilt, even if they are drought-stressed. This is because they have stiff stems. Manzanitas (*Arctostaphylos* spp.) provide an example. New growth can exhibit some flagging, but established plants do not wilt much. Plants weakened by water-deprivation are often stunted in growth and more susceptible to disease. In my garden I water the established Sentinel manzanita about once a month during the summer. I do this because Sentinel is derived from Arctostaphylos densiflora, a plant native to the outer north coast ranges of California. Its homeland is cooler and wetter than my southern California garden, so I provide supplemental irrigation, even though the shrub does not wilt. If I were growing big berry manzanita (Arctostaphylos glauca), a southern California native, I would provide less additional water. So in this case, I am not relying on the plant to tell me it needs water, but rather what I know about this native's natural environment.

Hyrdrate the summer garden

Occasional summer water can also keep a native plant garden a bit lusher without damaging the plants. My coastal sage parkway garden receives water about two or three times between June and November. Though, infrequent, I water long enough - usually several hours - to soak the parched soil. I run the sprinkler until the water has penetrated about six to eight inches deep. This prevents the sages from going dormant and looking half dead, yet does not lead to root rot.

Though most plants will accept and even enjoy infrequent periods of hydration during the summer, a few cannot tolerate any summer water. Flannel bush (Fremontodendron) and woolly blue curls (Trichostema lanatum) are two examples. Summer water spells death for them!

Infrequent, deep watering

Notice that this irrigation pattern, though ultimately low-water use, is as different as it can get from the water company recommendations and municipal regulations. Some cities, my own included, restrict the number of minutes a given zone may run. Although the ordinance encourages “deep watering” and it does not specifically restrict water duration for non-lawn areas, it specifies fifteen minutes as the maximum per zone.35.43 Water landscape.
It shall be unlawful for any person to water landscaping, including lawn area, between the hours of nine a.m. and five p.m. Lawn areas shall be deep soaked, but in no case longer than fifteen minutes per station or location or in violation of Section 35.42 of this chapter. Drip irrigation is exempt. (Ord. No. 1992, § 3; Ord. No. 1995, § 1.)

Public water-conservation campaigns encourage a reduction in the duration of watering without changing how often the sprinkler goes off. Metropolitan Water District of South California, for example, provides a watering index and watering calculator on its Bewaterwise website. Entering my zip code, soil type (loam), and vegetation (warm season turf grass), results in a recommendation to irrigate for 42 minutes per week with daily watering periods of six minutes.

For years my front yard lawn has stayed green and lush - embarrassingly so for a native plant advocate - with thirty-five minutes of irrigation once every ten to fourteen days during the summer. This averages less than 3.5 minutes of water per day, as compared with MWD's 6 minutes per day.Turf grass has relatively shallow roots, even when properly watered. Non-turf grass vegetation, and low water use native plants in particular, need deep and infrequent watering to promote the development of a healthy and extensive root system. Furthermore, frequent, shallow watering creates exactly the conditions that lead to root rot in natives. It is critical that each watering episode fully soak the root area. Watering should be done infrequently to discourage the growth of disease-causing fungi and bacteria in the soil, and only as needed by the plants.**Variables affecting water needs**
The water needs of plants are dependent on many variables. Soil type varies from location to location making it difficult to suggest a watering regime for a given plant. Well-drained, sandy soils dry out much more quickly than loamy or clay soils. Plants growing in such sandy soils must be watered more frequently and for shortly periods of time than the same ones growing in heavier conditions. Temperature is another variable that influences a plant's water needs. A plant enjoying the cooler temperatures (not to mention the additional moisture in the form of fog) of say Marina del Rey needs less water than it would if it lived in hot, dry Fontana. These conditions, though, are set within the garden. Once you know get a feel for the plant and the garden, you should be able to understand its water needs. Still, there are other conditions that vary throughout the year. Sun exposure varies with the weather, but here in California is fairly constant during the summer months, especially outside of areas that receive marine fog. During the course of the year, though, plants located on the north side of a building may be in full sun in summer and full shade in winter. Plants located near deciduous trees or shrubs will also experience seasonal changes in exposure.

The size, type, and age of a plant influence its water needs as well. Young plants are less able to withstand long periods of drought and require careful attention. The balance between giving them enough water to sustain them while they develop a mature root system that extends into the surrounding soil, yet not so much water that they succumb to root rot, can be tricky. This is one reason that it is best to plant natives during the late fall and winter so that they can start growing before the heat and stress of the summer is upon them.

Uncontrollable weather variables, such as temperature, humidity and wind make it difficult to predict a plant's day-to-day water needs. Because of this, I never use an automatic timer to water my native garden, unless of course I am going away on vacation. Still, I worry when I am away. If we have one of those periods of scorching heat and high winds, plants will do best if they have been hydrated before the desiccating winds arrive. Although I do not water my California native

plants often, I find it impossible to rely on a set schedule. They do best receiving water as needed.

Final tips

In spite of this long explanation of how to water, it really is not difficult to maintain a California native plant garden. Once mature, properly selected and placed plants require little water and care, though they cannot be treated like common horticultural selections. Home Depot-type plants, often derived from tropical or temperate climates, require year around irrigation, and can be kept going on an automatic life-support system. Given a timer, an unlimited supply of water, fertilizers, and the occasional pesticide these petunas and roses can be kept going with little personal thought or attention. Native plants, though adapted to our unique climate, require fewer inputs, but more attention and thought.

Here are a few tips to summarize summer watering for established mediterranean, California native plants.

Water infrequently but deeply and thoroughly.
Try to hydrate plants (those that need it) before the spectacular heat event or Santa Ana winds.
Water when it is cooler, either early in the day, or during cool, foggy weather.
Do not use a timer. Water as needed.
Established native plants require less water than you might guess. More die from root disease due to excessive moisture and heat than from too little summer water.
Do not water dormant plants, bulbs, or annual wildflower seeds during the summer. Some plants, notably Flannel bush and woolly blue curls, cannot tolerate any summer water.
Determine whether your plants need water by getting to know them, and by taking into account the climate of their natural habitat. Plants that naturally occur in wetter, coastal areas or higher elevations may require more summer water if grown in an inland, low elevation garden.

Too many southern California gardeners insist on having a colorful, flowering garden all year long, in total defiance of Mother Nature. With water shortages a fact of life, it is time for us to embrace our home and appreciate the ingenious adaptations of our native plants. There is beauty in the subdued colors of the hot summer. Though many plants are toned down in summer, some, like manzanita, California lilac, and toyon, remain deep green throughout the year. Remarkably, California fuchsia and a few other natives, bloom in the dry heat to take advantage of the hungry pollinators who have little else to carry them through the season. These plants provide color and interest when most everything else is taking a summer siesta. It takes more thought and better understanding of your plants to be successful with a native garden, but the payoffs are large. In the end, your native garden requires less work and fewer resources, while creating a peaceful, habitat-friendly sanctuary from our polluted, noisy urban surroundings.