

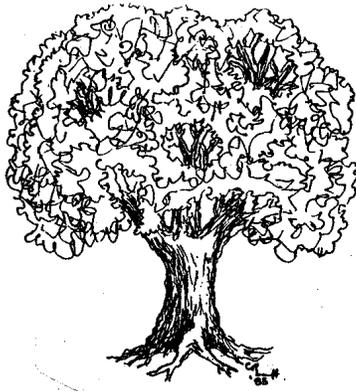


Environmental Horticulture Notes

EHN 6

THE USE OF CALIFORNIA NATIVE PLANT MATERIAL AS A MEANS OF CONSERVING WATER IN THE LANDSCAPE

California native plants can be successfully used to create attractive landscapes with little or no irrigation. Although not all native plants are tolerant of drought, many are well adapted to arid climatic conditions.



Some of the characteristics which help these plants perform well under low moisture conditions are:

- California native plants are often very deep rooted and capable of obtaining water from a large volume of soil.
- Many California native plants have leaves adapted to use less water in summer. Some of these adaptations to reduce the transpiration rate are fewer stomata, thick cuticle, curled leaves, many plant hairs, reflective color, and leaves turned to face the leaf edge to the sun.
- Some native plants become dormant in summer, and are deciduous or semi-deciduous during periods of low rainfall.

Most successful unirrigated landscapes which utilize California plants are in coastal or foothill and mountain areas where moister climates prevail, or in habitats with a high water table. This success reflects the fact that most of our native plants which we use in landscaping come from these areas.

Difficulties often result when native plant materials are used in interior valley or in desert areas. The major reason for this is that the quantity of really useful plant species adaptable to no irrigation in these areas is quite limited. These drier regions tend to have very hot summers and cold winters, short spring seasons, and hot, dry air and wind. Soils vary tremendously from coarse sands to heavy clays, and alkaline and saline conditions are common.

At Davis, California, where the climate is representative of the California interior valleys, we have had good success growing some native plant material. By success, for the purposes of this report, we mean the use of plant material that needs no supplemental irrigation and yet remains attractive and vigorous all year with no maintenance. A list of this plant material follows.

FULL SUN (low water table, no irrigation after first year)

- Trees: California buckeye, *Aesculus californica*
 Big cone Douglas fir, *Pseudotsuga macrocarpa*
 Foot-hill pine or gray pine, *Pinus sabiniana*
 Torrey pine, *Pinus torreyana*
 California fan palm, *Washingtonia filifera*
 Blue oak, *Quercus douglasii*
 Palo verde, *Cercidium floridum*

Shrubs: Foot-hill tasselbush, Garrya congdonii
 Desert Olive, Forestiera neo-mexicana
 Chaparral pea, Pickeringia montana
 Island bush poppy, Dendromecon rigida subsp. harfordii
 Buckbrush, Ceanothus cuneatus
 Greenback ceanothus, Ceanothus spinosus
 Bigpod buckbrush, Ceanothus megocarpus
 Manzanita, Arcotostaphylos manzanita
 Creosote bush, Larrea divaricata
 Jojoba, Simmondsia chinensis
 Nolina, Nolina species
 Sugarbush, Rhus ovata
 Yucca, Yucca whipplei
 Maguey, Agave deserti
 San Fernando barberry, Mahonia nevinii
 Leather oak, Quercus durata
 Bladder pod, Isomeris arborea
 Rabbit bush, Chrysanthamnus nauseosus
 Encelia, Encelia californica
 Chamise, Adenostoma species
 Mormon tea, Ephedra species
 Chuparrosa, Beloperone californica

PROTECT FROM AFTERNOON SUN (low water table, no irrigation after first year)

Trees: Coast live oak, Quercus agrifolia
 Mesa oak, Quercus engelmannii
 Santa Catalina cherry, Prunus lyonii
 Hybrid holly-leaf cherry, Prunus lyonii X P. ilicifolia
 Santa Cruz Island ironwood, Lyonothamnus floribundus var. asplenifolius
 Coulter pine, Pinus coulteri
 Jeffrey pine, Pinus jeffreyi
 Yellow pine, Pinus ponderosa
 Pinyon pine, Pinus species
 Sargent cypress, Cupressus sargentii

Shrubs: Manzanita, Arcotostaphylosrudis, A. pajaroensis
 Redberry, Rhamnus crocea
 Coffeeberry, Rhamnus californica
 Fremont barberry, Mahonia fremontii
 Tassel bush, Garrya fremontii, G. elliptica
 Toyon, Heteromeles arbutifolia
 Redbud, Cercis occidentalis
 Holly-leaf cherry, Prunus ilicifolia
 Fuschia gooseberry, Ribes speciosum
 Chaparral current, Ribes malvaceum
 Apache plume, Fallugia paradoxa
 Summer-holly, Comarostaphylis diversifolia
 Palo blanco, Ornithostaphylis oppositifolia
 Island mountain mahogany, Cercocarpus betuloides subsp. blancheae
 Fremontia, Fremontodendron species
 Wild rose, Rosa californica
 Wild buckwheat, Eriogonum species

Ground Covers:

- California fuchsia, Zauschneria species (mow down each winter)
- Catalina currant, Ribes viburnifolium
- Maritime ceanothus, Ceanothus maritimus
- Dwarf coyote bush, Baccharis pilularis subsp. pilularis

To help guarantee the success of California native plants used on very dry sites the following should be done.

- **Keep the soil free of other competing plants.** This includes weeds and the exclusion of other ornamentals within an area equal to twice the drip line area of the native plant.
- **Mulch.** This practice buffers the soil from temperature extremes, traps moisture, and discourages weeds. Mulching materials include wood chips, fir bark, pine needles, fine gravel or coarse sand, or even dust mulch, which should be renewed yearly. Asphalt, sometimes known as "Detroit Mulch", has also been used successfully.
- **Improve soil conditions.** This may include lowering the pH, improving physical properties through the use of organic materials and gypsum, leaching of salts, and breaking of hardpan (if present).
- **Make provisions for shade.** Many natives succeed on dry sites if they are protected from full sun, especially in the afternoon, or if the plant's active root zone is shaded, especially important for shallow-rooted plants.
- **Planting.** This is best performed just before or during the rainy season. This reduces transplant shock and allows the plant's roots to establish at greater depths so that summer drought is not as damaging. When planting, soil should be prepared so that water penetrates and is retained at greater depths. Irrigation basins and mulching will help in establishment of the plant, and care should be taken so that soil will never accumulate above the root crown.

California native plants, although relatively pest free, are not without problems. Since some plant material is quite inflammable it is best to use low growing plants or to avoid planting near buildings in high fire danger areas. The reduction of irrigation on these flammable plants will also result in reduced growth and less accumulation of potential fire fuel.

Diseases such as root and crown rots are often aggravated by summer irrigation or poor planting practices. Pruning can increase the danger of cankers on some natives such as ceanothus, manzanita, or fremontia and should be avoided as much as possible. Tip prune only, and perform pruning just after the rainy season.

The general aesthetic appearance of natives should be considered. Many plants become rather unattractive towards the end of summer unless they are watered occasionally during the dry season. Generally, one to five deep waterings during this period will improve the plant's appearance considerably. The public acceptance of the appearance of drought tolerant plantings is of concern and is presently being studied at U.C. Davis.

Before choosing drought tolerant California native plants it is quite important to question the plant list being used. Often plants which are listed as performing well in dry situations for one area will be unacceptable in other locations. The use of California natives in the landscape for drought conditions is increasing, but more observations and more controlled research are definitely needed to produce dependable information on their landscape use in our water-scarce environment.