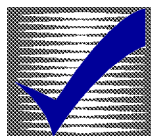




HOW-TO BOOKLET #3122

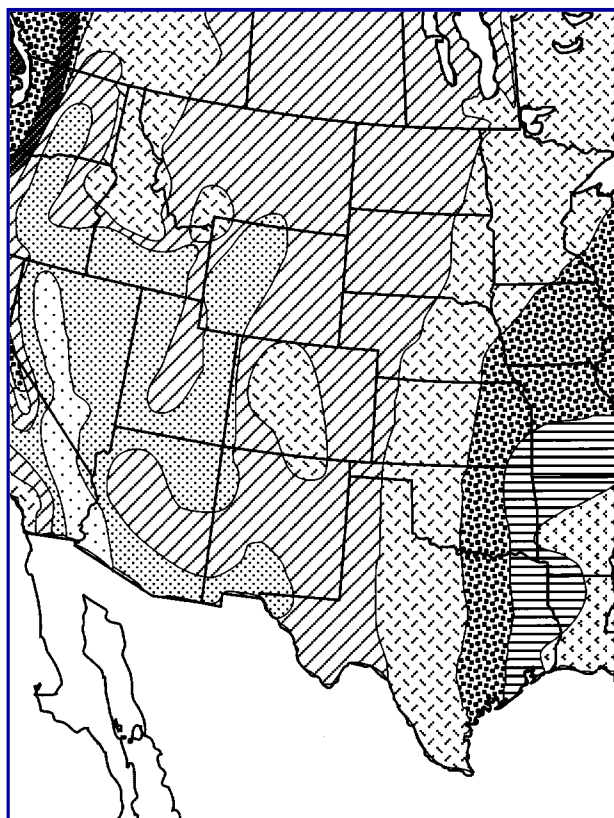
PLANTS FOR DRY CLIMATES



TOOL & MATERIAL CHECKLIST

- | | | |
|--|--|---|
| <input type="checkbox"/> Organic Mulch | <input type="checkbox"/> Coarse Organic Matter | <input type="checkbox"/> Xeroscape Plants |
| <input type="checkbox"/> Shovel | <input type="checkbox"/> Soil Test | <input type="checkbox"/> Lattice or Shade Cloth |
| <input type="checkbox"/> Irrigation System | <input type="checkbox"/> Landscape Fabric | <input type="checkbox"/> Rake |

Read This Entire How-To Booklet for Specific Tools and Materials Not Noted in the Basics Listed Above.



Arid and semiarid regions in the United States do not receive enough precipitation (rain or snow) annually to maintain plants that require frequent watering. However, with the proper soil preparation and plant selection, the use of mulches, and occasional irrigation, many plants can be grown successfully in these regions.

All plants need water; even cacti and yuccas need an occasional soaking to keep them alive and growing. Nearly 50 percent of the water consumed by the average household is used for landscape plantings and turf grass, but with the proper planning, every landscape can conserve water and still be beautiful and functional.

Although it may seem so, the object is not to turn the landscape into a sea of gravel and plastic in order to save water. This only increases the temperature around the home, which in turn increases the water needs of the existing plants. The roots of established trees and shrubs cannot get water or oxygen and they starve. An organic mulch, consisting of pine needles, bark, or even chopped straw, is preferred over the rock or gravel.

Many plants are available for dry landscapes. Referred to as xeroscape plants (xero=dry; scape=landscape), these plants are chosen for their low-water requirements (see Plant Table).

SOIL PREPARATION

The soils of the dry Southern and Southwestern areas of the United States are deficient in organic matter. They typically have an organic content of 1 percent or less. Other than cacti and a few other succulents; grasses, flowers, trees, shrubs, and other ornamentals are most successful in soils with an organic content close to 5 percent. In dry regions, where the soil is mostly clay or sand, organic matter must be worked into the soil.

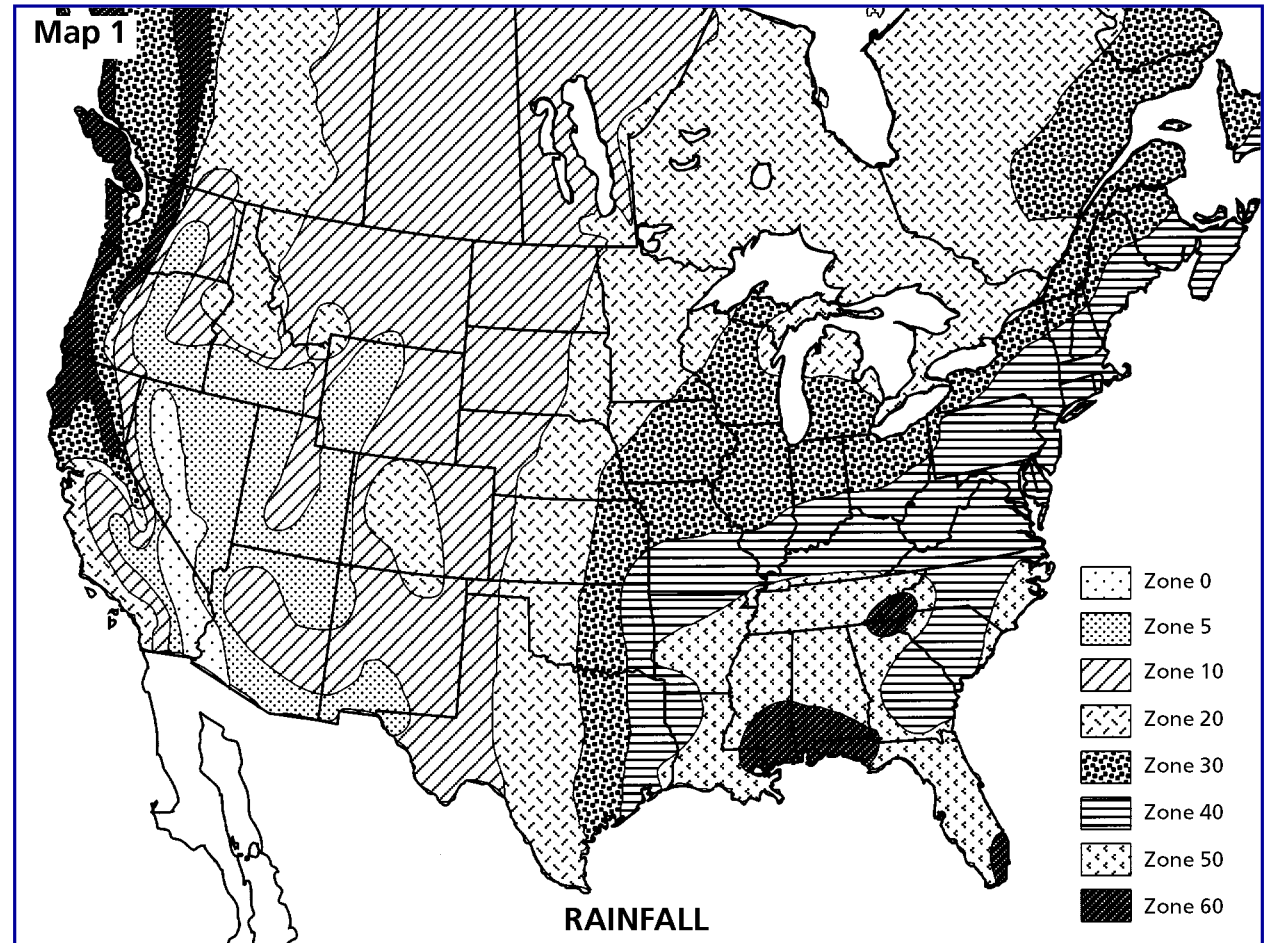
A higher organic content retains moisture more readily while preventing plant nutrients from escaping from the soil. As the added organic matter decomposes, it releases nutrients and acids into the soil. The nutrients are then absorbed by the plants. Acids help to balance the dry land soils, which are typically basic (alkaline). The released acids also help correct iron deficiency.

For every 1000 square feet, three-to-six cubic yards of organic matter should be worked into the soil at a depth of 9 inches. This results in 1-to-2 inches of added material. Compost, coarse sphagnum peat moss, shredded leaves, horse manure, or other coarse organic matter can be used. The addition of manure to saline soils can increase the salt level and reduce plant growth. Feedlot manures are especially high in salts and should be avoided if at all possible. Finely ground organic amendments should also be avoided as they block drainage, and cause problems with root rot and salt buildup.

Do not pulverize the soil. Excessive tillage destroys the granular structure necessary for air and water movement within the soil.

Organic matter should be added to garden areas each year. Those who use containers to raise flowers and shrubs should prepare the soil before planting.

In the areas where turf is being planted, work the soil deeply, adding organic matter in the process. Since these areas will only be prepared once, they must be done correctly the first time.



A soil test will provide information concerning which soil nutrients are lacking. A county agent or farm advisor can provide names and addresses of reputable soil-testing facilities. The use of gypsum, sulfur, or other chemical additives should not be applied unless specifically recommended by a reputable soil-testing laboratory.

PLANT SELECTION

A variety of plants can survive in many dry land areas (see Plant Table). To help select the plants most suited

to a specific region, determine the annual precipitation and hardiness zone (see Maps 1 & 2). If the irrigation water is limited in the region, select only those plants with very low water requirements.

Many variations in soil types, water quality and climate can occur in a relatively small area. The local nursery can provide further information on the suitability of these plants.

Select plants that are suited to the exposure they will receive. When planting on the north side of the home, or in the shadow of the trees or shrubs,

be sure to choose shade-tolerant plants. When planting in full sun, use sun-loving plants.

By replacing turf with mulch, shrub beds, or ground covers, the total water usage is reduced dramatically. Without the turf to irrigate, the water saved can be used to maintain flower beds, shrubs and trees.

PLANTING CARE

Prior to planting, the roots of bare root plants should be kept in moist sphagnum peat moss or cellulose fibers. The plants should be kept cool and in the shade. They may be carried to the field in a bucket of water, but do not leave them in the water for longer than 8 hours as root death may occur.

The soil surrounding potted, container-grown, or balled and burlapped (B&B) plants should be kept moist. Do not keep the soil saturated or the roots will die from lack of oxygen. Plants should remain in the shade.

It is best to keep seeds in their original containers and in an area that is not exposed to fluctuating temperatures or moist conditions. Otherwise, mold may grow and ruin the seeds.

Trees, shrubs, transplants of ornamental grasses, and flowers must be watered immediately upon planting. Do not wait until the end of the day to water. Root systems are especially sensitive to dehydration, and dry soil intensifies the problem.

To help these plants grow a successful root system and become established more quickly, shade must be provided for the plants. A shade cloth or lattice hung over the new plants will be sufficient. For small plants, wooden shingles punched into the ground to the south and southwest will suffice. As the plants establish new growth, they are no longer affected by hot winds and the drying sun, and the shading will no longer be necessary.

In areas where most of the natural precipitation falls during late autumn and winter, grasses and wild flowers planted in the fall may receive adequate moisture for spring germination. Even in these

areas, supplemental summer irrigation will assist in grass establishment. This is best accomplished with overhead sprinklers. Sprinkler lines can be laid temporarily on the ground and moved from area to area as needed.

IRRIGATION REQUIRED

In order to successfully establish themselves, dry land plants require a thorough irrigation at the time of planting. Then, during the first and usually the second growing season, regular supplemental irrigations are necessary. Once established, the watering frequency should be gradually reduced. Avoid frequent, shallow watering as this encourages shallow roots and causes the plant to be less tolerant of dry conditions.

Once they are established, trees and shrubs may need a monthly watering; and flowers and ornamental grasses, may need a weekly watering. A drip system (see How-To Booklet #3123; Drip Irrigation) can supply the water where it is needed, minimizing water use and restricting weed growth.

The irrigation system should be zoned in such a way that allows the different plants to be irrigated in the proper way, since different plants have different needs. Turf that requires a higher watering frequency should be zoned separately from shrub beds and flower gardens. Keep in mind that northern and eastern exposures require less frequent watering than southern and western exposures. When irrigating a slope, remember that the water should be applied more slowly than it would be applied to flat areas.

MULCH RETAINS MOISTURE

Two-to-four inches of a loose material, such as pine needles, wood chips, straw, or other non-packing organic mulch, should be used around trees, shrubs, flowers, and ornamental grasses to retain soil moisture, keep the soil cool, and increase root development and plant growth. In those areas where mice and other rodents are a problem, keep the mulch away from the base of

the plants. Mice and moles are known to nest in mulching material and will feed on the bark of trees and shrubs if the mulch is too close. Mulch the complete root zone.

The use of landscaping fabric under the mulch helps prevent weed growth while allowing water and air movement into the soil. These fabrics, made of a woven or spun material, also allow soil gases (produced by soil microbes) and plant roots to escape.

Do not use plastic sheeting as it excludes water and air, traps soil gases, and increases root-rot and plant death.

PLANNING FOR SUCCESS

Turf areas should be zoned and irrigated differently than shrub borders and flower beds.

Use drip irrigation where possible.

Work coarse but fairly well decomposed organic matter into the soil. Use 3-to-6 cubic yards per 1000 square feet of planting area.

Replace turf that requires frequent watering with shrub and flower beds.

Use organic mulches to retain soil moisture.

Select plants based on their water usage and sun or shade tolerance.

Water plants deeply and on progressively fewer occasions to establish deep, drought-tolerant roots.

PLANTS FOR DRY CLIMATES AND THEIR NEEDS

Important Notes: This watering table should be used as a guide. There are many factors which affect a plant's water needs, such as wind, soil and exposure. Monitor plants, and based upon their response, water as needed. In areas where more than 7 inches of rainfall occurs, less irrigation will be required. New plants require frequent watering during the first 1 to 3 years, until they become well established.

KEY

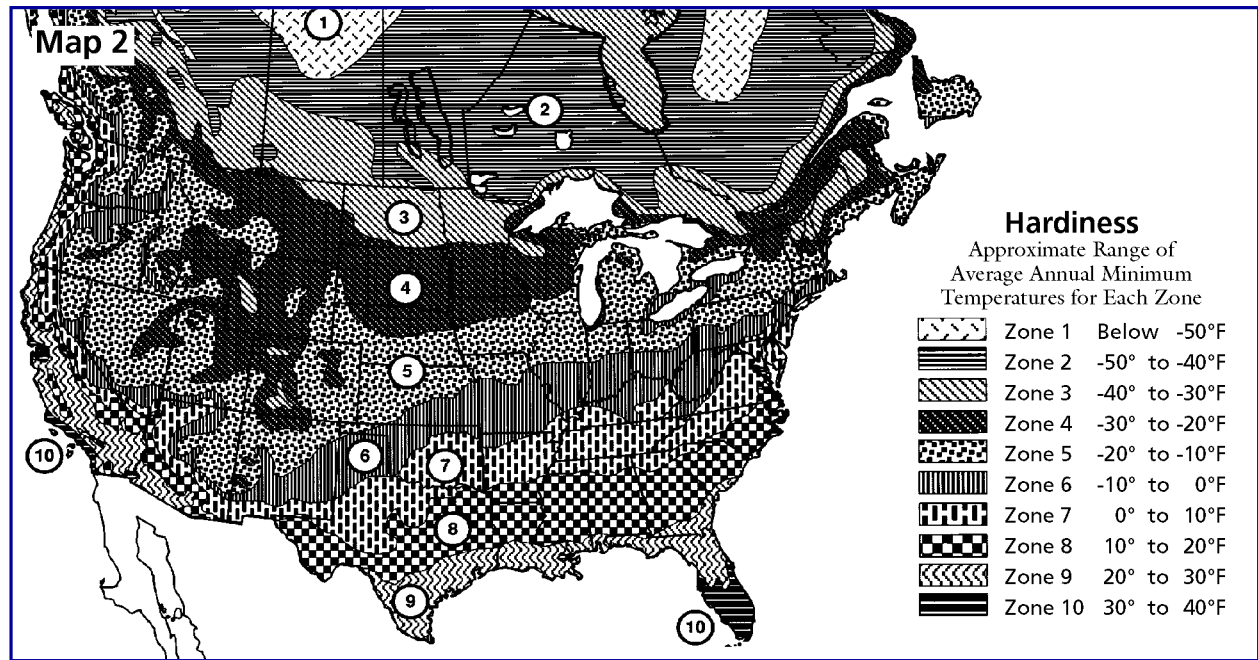
SUN REQUIREMENTS:

F-Full sun A-Adaptable F/P-Full/Partial
P-Partial sun P/S-Partial/Shade

WATER NEEDS:

Key	Water Needs	Frequency	Additional Water Needed
			Based upon 7.0" annual rainfall
0	Very Low (VL)	None After Establishment	0"
1	Low (L)	2 to 5 Times Per Year	3" to 7"
2	Moderate (M)	Weekly or Bi-Weekly	7" to 20"

*.spp. after the Genus name, i.e. Aster spp., means there are numerous species of this plant. Each species may have a different level of hardiness.



Plant Name	USDA Hardiness Zones		Water	Sun
	Water	Sun		
Tall Deciduous Shade Trees (40+ft.)				
Hackberry	0	F	2 - 9	
Northern catalpa	1	F	4 - 8	
Bur oak	1	F	2 - 8	
English oak	1	F	4 - 8	
Purple Robe locust	1	F	3 - 8(9)	
Thornless honey locust	1	F	3 - 9	
Norway maple	2	F	3 - 7(8)	
Green ash	2	F	3 - 9	
London plane tree	2	F	4 - 8(9)	
Red oak	2	F	4 - 8	
Evergreen Trees (20+ ft.)				
Pinyon	0	F	5 - 7	
Single leaf pinyon	0	F	6	
Rocky Mountain Juniper	0	F	3 - 7	
Jeffrey pine	1	F	5	
Austrian pine	1	F	4 - 7(8)	
Ponderosa pine	1	F	3 - 6(7)	
Scotch pine	1	F	2 - 8	
Bristlecone pine	1	F	4 - 7	
Giant sequoia	1	F	7	
Atlas cedar	1	F	6 - 9	
Incensecedar	2	F	5 - 8	
One-Seed Juniper	0	F	7	
Medium to small patio trees (15 to 40 ft.)				
Idaho locust	0	F	3 - 4	
Russian olive	0	F	2 - 7	
Amur maple	1	F/P	2 - 8	
Buffalo berry	1	F	3 - 8	
Golden rain tree	1	F	5 - 9	
Crab apple	1	F/P	3 - 8	
Golden chain tree	2	F	5 - 7	
Washington hawthorn	2	F	3 - 8	
European mountain ash	2	F	3 - 6(7)	
Amur Chokeberry	1	F	2 - 6	
Amur Corktree	2	F	3 - 7	
Evergreen Shrubs (5 to 20 ft.)				
Big sagebrush	0	F	4 - 9	
Four-wing saltbrush	0	F	4 - 9	
Rabbit brush	0	F	4 - 9	
Cliff rose	0	F	6 - 10	
Bitterbrush	0	F	4 - 9	
Juniper (many)	0/1	F	variable	
Curl-leaf Mtn. mahogany	1	F/P	4 - 9	
Broom	1	F	5 - 8	
Mormon tea	1	F	6	
Dwarf mugo pine	1	F/P	2 - 7	
Yew	1	P/S	4 - 7	
Greenleaf manzanita	1	P	2 - 5(6)	
Yucca	1	F	variable	
Cotoneaster	2	F/P	4 - 8	
Oregon grape	2	P/S	4 - 8	
Creeping Mahonia	2	P/S	4 - 8	
Deciduous Shrubs (4 to 15 ft.)				
Mountain Mahogany	0	F/P	4 - 9	
Fern brush	0	F	6	
Bladder senna	0	F	5 - 7	
Apache plume	0	F	4 - 7	
Oakbrush sumac	0	F	4 - 9	
Mentor barberry	1	F	5 - 8	
Butterfly bush	1	F	5 - 9	
Smoketree	1	F	5 - 8	
Rose of Sharon	1	F	5 - 8(9)	
Bush cinquefoil	1	F	2 - 7	
Sand cherry	1	F	3 - 6	
Dwarf smooth sumac	1	F	2 - 9	
Russian Sage	1	F	3 - 7	
Glossy black chokeberry	2	F	3 - 8(9)	
Dwarf Indigo bush	1	F	4 - 9	
Rock Spirea	0	F	6	
Downy Serviceberry	0	F	4 - 9	
Thimbleberry	1	P	6	
Littleleaf Mockorange	2	F/P	4 - 8	
Groundcover / Ground Cover Vines (2 to 5 ft.)				
Silver mound	0	F	4 - 9	
Mexican primrose	0	F/P	5 - 9	
Woolly yarrow	1	F	4 - 9	
Lavender	1	F	4 - 10	
Juniper (many)	1	F	4 - 10	
Calif. fuchsia	1	F	6 - 9	
Virginia Creeper	1	F/P	4 - 8	
Bearberry	2	F	6	
Herbaceous Perennials (1 to 3 ft.)				
Fernleaf yarrow	0	F	S - 10	
Common yarrow	0	F	S - 10	
Narrow leaf coreopsis	0	F	4 - 10	
Blanket flower	0	F/P	4 - 10	
Baby's breath	0	F	4 - 10	
Aster	1	F	4 - 10	
Dwarf basket of gold	1	F	4 - 10	
Purple coneflower	1	F	4 - 10	
Iris	1	F/P	4 - 10	
Gloriosa daisy	1	F	4 - 10	
Shasta daisy	2	F	4 - 10	
Sweet William	2	F	4 - 10	
Day lily	2	F/P	4 - 10	
Candytuft	2	F/P	4 - 10	
Hot pokers	2	F	variable	
Oriental poppy	2	F	4 - 9	
Lamb's Ear	2	F	5 - 10	
Missouri Evening Primrose	2	F	6 - 10	
Other Perennials				
Ajuga	2	F/P	4 - 10	
Purple leaf winter creeper	2	A	4 - 10	
Sedum	2	F	4 - 10	
Dwarf periwinkle	2	P	S - 9	
Trumpet vine	2	F	S - 8	
Jackman clematis	2	F	3 - 8(9)	
Honeysuckle	2	F/P	7 - 10	
Silver lace vine	2	F	4 - 7	
Snow-in-Summer	0	F	4 - 10	
Sunrose	0	F	4 - 10	