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# Selecting and Maintaining Water-efficient Landscape Plants

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Much of Oregon experiences water shortages. Irrigation restrictions are common, and there is great concern about the quantity of our water.

This publication will help you save time, effort, and money by using gardening methods and plant materials that conserve our precious water resources and remain attractive during drought periods.

You will learn how to determine how much water a plant needs, when it needs it, and how to apply it efficiently. Finally, a list of plants that need less than average amounts of water will give you ideas for water-efficient landscapes.

## Proper planning

The plants listed in this publication can tolerate hot, dry weather, but will not do well under zero water conditions. Proper planning involves grouping plants according to their water needs, making it easier to water efficiently. Blend the principles and plant materials outlined in this publication into your own personalized landscape.

## Use turf wisely

Buffer relatively limited turf areas with bark dust or drought tolerant grasses. Avoid "wall-to-wall" turf from driveway to sidewalk.

Establish or renovate turf in the spring or fall to avoid excessive water loss. Aerate or dethatch lawns in the spring or fall.

## Mulches and cover crops

Mulching can reduce water consumption by up to 30 percent. Use fast-decomposing materials like grass clippings for temporary plantings such as vegetable gardens and slow-decomposing materials like bark dust for permanent plantings such as trees and shrubs.

The larger the particle, the deeper the mulch must be to conserve water and suppress weeds. Fir bark mulch, for example, is composed of fine particles and is effective if applied to a depth of 3 inches. Larger particles need to be applied to a depth of about 5 inches. One

yard of bark mulch will cover 100 square feet to a depth of 3 inches.

Plant cover crops of winter rye or winter peas over vegetable gardens when not in use. These fast-germinating crops not only hold the soil in place, but they also add valuable organic matter, which helps hold moisture in the soil and releases nutrients slowly.

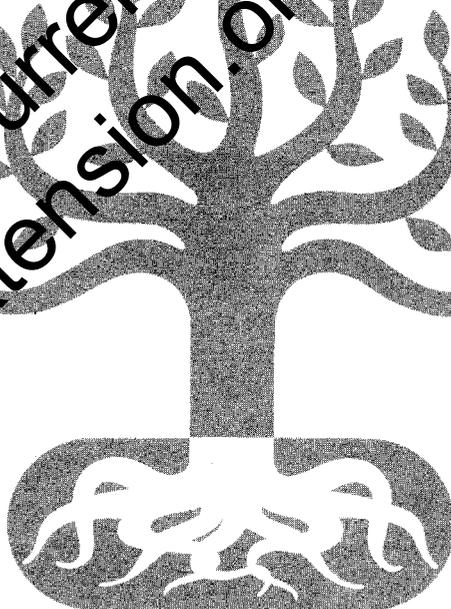
## Maintain soil health

Organic matter can be added to increase water-holding capacity of soil. Spread up to 3 inches of organic matter on top of the soil and till it into the top 6-8 inches of soil. The best time to do this is in the fall, giving time for materials to decompose before planting. Be aware that adding manures may increase the number of weeds.

Fertilize sparingly or not at all if a drought is imminent. Use mulch to conserve soil moisture, add organic matter, and control weeds. Utilize cover crops in vegetable gardens during the winter.

## When to water

The best way to know when to water is by a quick, simple check of the soil. Collect soil from just under the soil surface. Squeeze the soil into a ball with your fist, then open your hand. If the ball of soil falls apart, it is time to water. If the ball of soil stays together, soil moisture is adequate.



Deep water all trees and shrubs at least once a month during the growing season.

Lawns have root systems that are only 8–10" deep. For this reason, lawns need to be watered more frequently, once a week in the spring and fall and twice a week in the summer.

In extreme cases, plants often exhibit wilted, curled, or scorched leaves. If you notice these symptoms, water as soon as possible.

## How much to water

How much water a plant needs and how often depends on the nature of the root system, the soil type, and the depth of the soil.

Sand soils hold approximately 0.75 gallons of water per cubic foot, while clay soils hold about 1.5 gallons. A sand, silt, clay mix holds about 1 gallon per cubic foot.

**Grass.** Apply 1 inch of water at a time. To find out how much water you are applying, place several straight-sided containers under different areas of your sprinkler system for an hour. Measure the depths in the containers and take an average to get your application rate in inches per hour. Divide this value into 1 to get the number of hours you need to water in order to apply 1 inch of water. For example,  $1 \div 0.75 = 1.33$  hours (1 hour, 20 minutes).

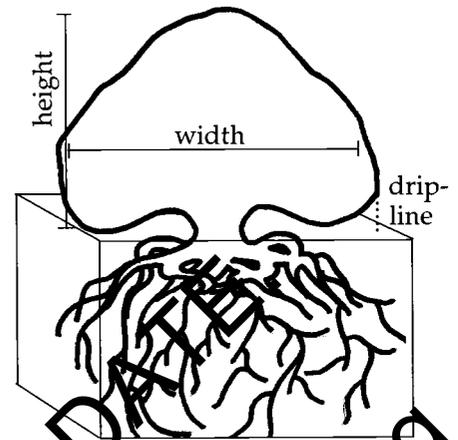


Figure 1.—A tree or shrub's roots penetrate deeply into the soil. The roots that absorb the most water and nutrients are found within the edge of the drip-line. Be sure to water within this entire area.

## How long should I water my shrubs?

1. Choose the correct table for your soil type.
2. Estimate the height of your shrub. Locate the height in the left-hand column of the table.
3. Estimate the width of your shrub. Locate the width in the top row of the table.
4. Read across from the height and down from the width until the row and column meet. This tells you how many gallons of water you need to apply. Fill this number in the first box below.
5. Check the application rate of your watering system. For slow trickling hoses, see how many gallons are in a container after 1 minute (usually 1–3 gallons). For drip irrigation systems, see how many gallons are in a container after 1 hour. Fill this number (gpm or gph) in the second box below.
6. Divide the first box by the second box. This tells you how long to run your watering system.

gallons (step 4)

$\div$   gpm or gph (step 5)

$=$   minutes to water (if trickling hose)

hours to water (if drip system)

Shrub height	Sand					
	Shrub width					
1'-2'	1 gal	3	7	12	19	27
3'-4'	2	6	14	24	38	54
5'+	3	9	20	36	56	81

Shrub height	Sand, silt, clay mix					
	Shrub width					
1'-2'	1 gal	4	9	16	25	36
3'-4'	2	8	18	32	50	72
5'+	3	12	27	48	75	108

Shrub height	Clay					
	Shrub width					
1'-2'	2 gal	6	14	24	38	54
3'-4'	3	12	27	48	75	108
5'+	5	18	41	72	113	162

### Example (Clay)

Shrub height	Shrub width					
	1'	2'	3'	4'	5'	6'
1'-2'	2 gal	6	14	24	38	54
3'-4'	3	12	27	48	75	108
5'+	5	18	41	72	113	162

108 gal (step 4)

$+$   3 gpm (step 5)

$=$   36 minutes

**Example:** A shrub planted in clay soil is 4' tall and 6' wide. You need 108 gallons of water. A trickling hose applies 3 gallons per minute. Total watering time is 36 minutes.

**Shrubs.** See the box on page 2 to figure out how long to water.

**Trees.** Water until the ground is saturated and no longer absorbs additional water.

### Apply water efficiently

Sprinkler irrigation is the least efficient way to water. Use methods that apply water more slowly and directly to the root system. Water

slowly enough so that water penetrates deeply into the soil and does not run off.

It is not necessary to purchase an expensive trickle or drip system. Many bubblers and "leaky hoses" are available that can be attached to the end of an ordinary garden hose.

**Grass.** With turf, sprinkler irrigation often is necessary, so water in the early morning hours,

when wind speed is minimal, if possible. If watering in the morning isn't feasible, water in the evening after the wind has died down.

**Shrubs and trees.** The roots that absorb the most water and nutrients (feeder roots) are found within the edge of the dripline of the shrub (Figure 1). Concentrate on watering within this dripline area.

## Water-efficient Plant Materials

Note: All plant materials are resistant to insects and disease unless noted.



### Perennial Grasses as Ornamentals

Name	Height	Remarks
Blue fescue <i>Festuca ovina glauca</i>	6-8"	Tufts of grayish grassy foliage; bunchgrass
Idaho fescue <i>Festuca idahoensis</i>	1-3'	Bunchgrass; densely tufted
Sheep fescue <i>Festuca ovina</i>	8-16"	Tillering bunchgrass
Hard fescue <i>Festuca longifolia</i>	2-4"	Adapts to shade; bunchgrass; needs some supplemental irrigation; needs mowing



### Ground Covers for Sunny Areas

Name	Height	Remarks
Creeping broom <i>Cytisus decurvens</i>	4-8"	Green stems with tiny leaves; yellow pealike flowers early May
Cushion spurge <i>Euphorbia emithimoides</i> (polychroma)	12-18"	Mounds of foliage change reddish to green in spring; then scarlet by fall
Blue fescue <i>Festuca ovina glauca</i>	6-8"	Tufts of grayish, grassy foliage
Hens and chicks <i>Sempervivum</i> sp.	2-4"	Forms dense, evergreen mats; grows in very poor soils



### Ground Covers for Shady Areas

Name	Height	Remarks
Bishop's weed <i>Aegopodium podagrari 'variegatum'</i>	10-12"	Variegated green and white foliage; aggressive
Carpathian harebell <i>Campanula carpatica</i>	6-14"	Can be aggressive; has blue or white flowers

Hall's honeysuckle <i>Lonicera japonica 'Halliana'</i>	6-12"	Will grow in full sun, but forms denser mats in the shade
Kinnickinnick <i>Arctostaphylos uva-ursi</i>	4-6"	Evergreen; red edible berries; use beneath established evergreens
Lily-of-the-Valley <i>Convallaria majalis</i>	6-10"	Fragrant white flowers in May-June; inedible red berries; aggressive
Mahonia (creeping grape holly) <i>Mahonia repens</i>	6-12"	Evergreen; yellow flowers in spring; holly-like foliage; susceptible to rust
Periwinkle <i>Vinca minor</i>	4-6"	Semievergreen; flowers white or purple in spring
Penstemon (creeping) <i>Penstemon caespitosus</i>	1-2"	Very prostrate mat of tiny narrow leaves; purplish flowers in May-June
Penstemon (Rocky Mountain) <i>Penstemon strictus</i>	1-2"	Blue flowers in June-July
Sweet woodruff <i>Galium odoratum</i>	6-8"	Very aggressive; one of the best covers under shrubs; fragrant flowers May



### Perennials for Sunny Areas

Name	Height	Remarks
Alyssum (golden) <i>Alyssum saxatile</i>	1½'	Reseeds readily
Aster (New England) <i>Aster novae-angliae</i>	3-5'	Showy for fall
Baby's breath <i>Gypsophila paniculata</i>	2'	Lacy, bush-like
Beebalm <i>Monarda didyma</i>	2-3'	Best in mass plantings
Black-eyed susan <i>Rudbeckia hirta pulcherrima</i>	2-3'	Needs space
Blanket flower <i>Gaillardia aristata</i>	2'	One of the best for xeriscapes
Coneflower <i>Echinacea purpurea</i>	2-6'	For tall background
Coreopsis <i>Coreopsis lanceolata</i>	3'	Easy to grow in most soils
Daisy (painted) <i>Chrysanthemum coccineum</i>	2-3'	Showy, good cut flower
Daisy (shasta) <i>Chrysanthemum maximum</i>	2-2½'	Useful with shrubs
Daylily <i>Hemerocallis spp.</i>	2-2½'	Spreads to large clumps
Delphinium <i>Delphinium elatum</i>	4-6'	Tall accent; may need staking
Flax <i>Linum perenne</i>	1½'	Almost shrub-like

Gayfeather <i>Liatris scariosa</i>	1-2'	Showy in late summer
Hollyhock <i>Alcea rosea</i>	4-8'	Tall accent; grows almost anywhere; susceptible to rust
Iris (bearded) <i>Iris germanica</i>	6"-3'	Easy to grow
Lupine <i>Lupinus polyphyllus</i>	2½-3'	Good accent with shrubs; susceptible to mildew
Penstemon <i>Penstemon spp.</i>	2-3'	Many varieties
Phlox <i>Phlox paniculata</i>	1-1½'	Easy to grow
Poppy (iceland) <i>Papaver nudicaule</i>	1'	Good edging plant
Poppy (oriental) <i>P. orientale</i>	1½-2'	Aggressive creeper; susceptible to powdery mildew
Sedum (stonecrop) <i>Sedum spp.</i>	6"-1'	Many varieties, succulent foliage
Spurge (euphorbia) <i>Euphorbia spp.</i>	1-2'	Grows in poor soils
Sweet William <i>Dianthus barbatus</i>	2'	Aggressive perennial
Thrift <i>Armeria maritima</i>	1'	Grasslike foliage
Veronica <i>Veronica spicata</i>	2-4'	Aggressive creeper
Yarrow <i>Achillea spp.</i>	1-3'	Adapts to very poor soils; fernlike, aromatic foliage



#### Perennials for Shady Areas

Name	Height	Remarks
Bleeding heart <i>Dicentra spectabilis</i>	1½'	Use with shrubs, north side
Candytuft <i>Viola sempervirens</i>	1'	Foliage evergreen
Canterbury bells <i>Campanula medium</i>	3'	Tall accent
Colubchine <i>Aquilegia spp.</i>	1-2'	Use with shrubs
Harebell <i>Campanula spp.</i>	1'	Useful edging
Pansy (tufted) <i>Viola cornuta</i>	6"	Shade or sun
Violet <i>Viola odorata</i>	6"	Aggressive creeper



## Shrubs for Water-efficient Landscapes

Name	Height/ spread	Remarks
Barberry (Japanese) <i>Berberis thunbergii</i>	3-6' 3-5'	Purple-leaved and dwarf forms available; shade tolerant
Ceanothus (fendler) <i>Ceanothus findleri</i>	1-2' 3-5'	Gray-green foliage; spiny, low-growing; well-drained soils only
Cotoneaster <i>Cotoneaster sp.</i>	6"-10'	A highly variable group; most have shiny, small leaves; berries are red or black; <i>C. aucubifolia</i> is common
Peashrub <i>Caragana sp.</i>	3-15' 5-10'	Several forms available; dwarf— <i>C. microphyllus</i> and <i>C. pygmaea</i> ; tall— <i>C. arborescens</i>
Siberian peashrub <i>Caragana arborescens</i>	to 20' 15'	Bright yellow flowers; nearly indestructible
Pygmy peashrub <i>Caragana pygmaea</i>	4' 5'	Hanging flowers
Rabbitbrush <i>Chrysothamnus sp.</i>	2-5' 3-4'	Greenish to white stems; yellow flowers in summer; tolerates sandy soils
Sand cherry <i>Prunus besseyi</i>	3-4' 4-5'	Fragrant, white flowers; edible black fruit; well-drained soils only
Sumac (smooth) <i>Rhus glabra cismontana</i>	4-6'	Spreads by root suckers; red velvety fruit; scarlet fall color
Yucca <i>Yucca sp.</i>	1-3' -3'	Swordlike foliage; showy spikes of creamy-white tinged pink flowers <i>Y. baccata</i> has large broad, green leaves <i>Y. glauca</i> has bluish leaves <i>Y. horridula</i> is dwarf
Flowering quince* <i>Chaenomeles speciosa</i>	6-10'	Many cultivars; early blooms; practically indestructible
Creeping cotoneaster <i>Cotoneaster adpressus</i>	1'	Bank or ground cover; tolerates part shade
Cranberry Cotoneaster <i>Cotoneaster spicatus</i>	4'	Hedge, background; berries color early, hold long
Rock cotoneaster <i>Cotoneaster horizontalis</i>	3-4'	Give plenty of room; low traffic barrier
Scotch broom* <i>Cytisus scoparius</i>	6-10'	Try low-growing, more colorful forms
Russian-olive <i>Elaeagnus angustifolia</i>	15-20'	Shrub or small tree; practically indestructible
Winged euonymus <i>Euonymus alata</i>	3-4'	Brilliant red in fall; also called burning bush
Burning bush <i>Euonymus alata 'Compacta'</i>	4-6'	Taller than <i>E. alata</i> , less prominent "wings"
Common juniper* <i>Juniperus communis</i>	5-10'	Practically indestructible in dry areas; susceptible to twig blight and root rot

\*Numerous cultivars of these species are available from nurseries.

Horizontal juniper* <i>Juniperus horizontalis</i>	1- 1½'	Practically indestructible in dry areas; susceptible to twig blight and root rot
Oregon grape* <i>Mahonia aquifolium</i>	3- 6'	Bronzy young growth; susceptible to rust
Creeping mahonia <i>Mahonia repens</i>	1- 3'	Dull, bluish green leaves; susceptible to rust
Virginia creeper <i>Parthenocissus quinquefolia</i>	vine	Big, vigorous vine
Boston ivy <i>Parthenocissus tricuspidata</i>	vine	Fast growing, clings tightly
Lemoine mockorange* <i>Philadelphus lemoinei</i>	5- 6'	Very fragrant flowers
Mugo pine* <i>Pinus mugo</i>	3'+	A twisted, somewhat open pine; susceptible to pine needle scale and needle casts
Bush cinquefoil* (Potentilla) <i>Potentilla fruticosa</i>	1- 3'	Small, mostly single roselike flowers, ranging from cream to bright yellow, white, pink, or red
Dwarf flowering almond* <i>Prunus glandulosa</i>	4- 6'	Many early pink flowers
Nanking cherry <i>Prunus tomentosa</i>	6- 8'	Extremely tough, hardy fruiting shrub
Pyracantha firethorn* <i>Pyracantha coccinea</i>	10-15'	Evergreen shrub grown for bright fruit, glossy foliage
Smooth sumac <i>Rhus glabra</i>	15-25'	Grows in clumps of plants; bears clumps of scarlet fruit through the winter
Alpine currant <i>Ribes alpinum</i>	3- 5'	Good hedge and wildlife plant
Common lilac* <i>Syringa vulgaris</i>	10-15'	Very fragrant flowers
Japanese yew* <i>Taxus cuspidata</i>	6- 50'	Dark green evergreen foliage; susceptible to root rots
Hybrid yew* <i>Taxus x media</i>	4-15'	Cross between Japanese and English yew
Fragrant snowball <i>Viburnum x carcephalum</i>	8-10'	Long-lasting white fragrant flowers
Common snowball <i>Viburnum opulus 'Roseum'</i>	10-15'	Large, showy red fruit
Yucca <i>Yucca flaccida</i>	4-7'	Lightly fragrant white flowers in tall clusters
Trumpet vine <i>Campsis radicans</i>	vine	Large, orange-red, tubular flowers; hardy

\*Numerous cultivars of these species are available from nurseries.



## Trees for Water-efficient Landscapes

Name	Height/ spread	Remarks
Gambel oak <i>Quercus gambelii</i>	5-15' 10-15'	Spreads by root sprouts; often shrubby; not officially proven in Central Oregon
Ponderosa pine <i>Pinus ponderosa</i>	45-50' 35-40'	Must have good drainage
Russian-olive <i>Elaeagnus angustifolia</i>	15-20' 15-20'	Silvery foliage; red-fruited form available at some nurseries
Thornless honeylocust <i>Gleditsia triacanthos inermis</i>	30-60' 25-50'	Several varieties available; avoid "Sunburst" variety in nonirrigated sites. May die back to shrub in colder areas

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*The State of Water in Oregon*, EC 1426, by M.A. Sward and M. Coulter (Oregon State University, Corvallis, 1993). 50¢.

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