

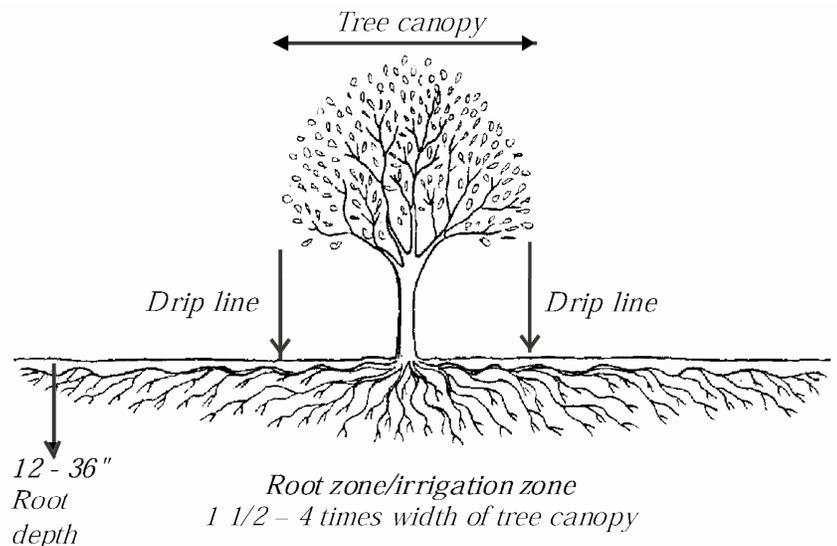
## How Often and How Long to Water

It's not easy to determine a plant's exact water needs because many factors influence the amount of water a plant requires—plant type, maturity, soils, weather, location and root depth. Although many desert-adapted plants can survive on rainfall (e.g. plants labeled with one drop), supplemental irrigation will be required for at least one to two growing seasons to promote establishment. Once established (in approximately 2-3 years) it is recommended that some irrigation be provided in hot summer months to maintain acceptable appearance and plant health, also during periods with less than normal rainfall.

You will need to consider the type of soil in your landscape. Soil can range from coarse sand to fine clay. Sand is easy to dig, but does not hold water well. In sand water penetrates deeply and infiltrates quickly, but the wetted area is very localized. Clay soils are difficult to dig, especially when dry, but hold water very well. Water infiltrates very slowly in clay soils. Soaker hoses and drip emitters need to be spaced more closely on sand than on clay. Most soils are loams, a mixture of sand, clay, and silt.

Compacted soils or shallow soils over hardpans such as caliche or bedrock can also cause problems. Water, air and roots cannot penetrate compacted soils very well and should be tilled to encourage root growth. Shallow soils, of less than a foot deep, cannot hold very much water, so water runs off quickly. You will have to water a shallow soil more frequently, but for a shorter duration than a deep soil.

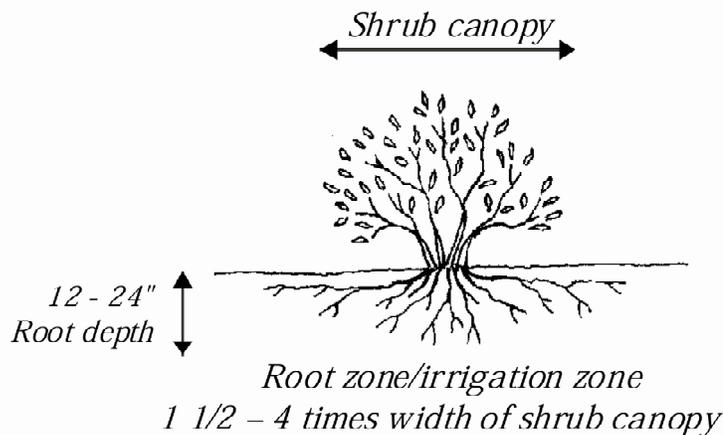
Plants absorb water from the soil through roots. In a natural setting, most of the plant's roots spread one- and-a-half to four times the width of the canopy and are within the top two to three feet of soil. This is called the **root zone**. Most of the water used by a plant comes from outside the canopy drip line. Shallow or compacted soils can affect the depth and spread of the root zone, as can improper watering. Often it is not feasible to apply water to the entire root zone, but you should duplicate the natural conditions as much as possible.



At a minimum, you should water at least half of the root zone, ensuring that much of the water is applied outside the canopy drip line. To maintain a healthy, well-distributed root system, it is important to wet the same area of soil to the same depth every time you water, varying only the seasonal frequency (days between waterings).

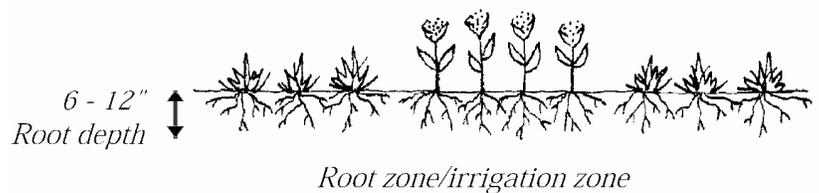
Light, frequent watering creates shallow, weak root systems and an unstable plant. Water applied faster than the soil can absorb it leads to puddling on the soil surface and runoff. Over time, this can result in surface compaction of clay soil that reduces air and water penetration, and root growth. Most plants will use whatever water is available,

although it may not be needed. Therefore, watering beyond the root zone and frequent waterings can waste water. The soil should be allowed to dry between waterings. How often you need to water is dependent on how quickly the soil dries out. Soil texture and plant rooting depth will determine the length of time you need to water. Deep, less frequent watering encourages deep strong root systems that can tolerate longer periods of drought.



Use a soil probe, a long screwdriver, or a piece of rebar to determine how deeply and widely the water has moved. Its best to wait 18 to 24 hours to test the soil. If your soil has rocks or gravel that makes using a soil probe difficult, you can dig a hole to see how far the water penetrated.

During the warmer months, irrigate at night or early mornings (between 3 a.m. - 8:00 a.m.) to reduce water loss due to evaporation and wind. Observe plants regularly for signs of water stress such as wilted, curled or drooping leaves; yellowing or drop-off of older leaves; or dead stems or branches. Signs of excess water include brittle leaves remaining on the plant; wilted shoot tips; soft, smelly tissue; and the presence of algae or mushrooms.



**The information provided in this handout was used with permission and derived from the following publications:**

Care of Desert-Adapted Plants; Della C. Fletcher, Patricia H. Waterfall; AZ 1048; Cooperative Extension, College of Agriculture, University of Arizona. Root zone drawings by Linda Lucz-Hatfield.

Watering Trees and Shrubs in the Home Landscape, Jimmy Tipton, produced by the Arizona Department of Water Resources, Phoenix Active Management Area and the University of Arizona Cooperative Extension.



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