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Assessing Plant Water Needs

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When assessing plant water requirements several things need to be taken into account. In a desert environment the most obvious factor is weather. Additionally, the plant, soil, and microclimate must all be taken into account. The microclimate is the area immediately around the plant and may be influenced by the amount of sunlight, shade, wind, and slope of the soil. Even objects in the vicinity such as rocks or block walls, which hold heat, will affect the microclimate. These factors are quite real but also difficult to measure.

For many years the most widely accepted methods of determining plant water needs is through evapotranspiration. In other words, evaporation (water loss from objects such as soil) coupled with transpiration, (water loss from living plants). Evapotranspiration (ET) is determined with sensitive weather monitoring equipment, which monitors temperature, humidity, and wind. The benchmark for ET has been set with bluegrass turf at 100 percent. This gives rise to the notion that if we know how theoretically much water a plant has lost we can replenish it through irrigation. Although ET rates are very useful in understanding how much water to apply for turf maintenance, it is a bit more difficult to use ET to assist in watering woody shrubs, trees and perennials.

The following chart may assist you in understanding plant water needs. It can also be helpful to someone who is planting a new landscape or renovating an old one. Plant selection is particularly important in trying to develop a landscape that is water efficient.

Lawn water use is the highest of any plants in the landscape. This is due to both the application method as well as the plant's make up. Turf usually covers an entire area, is clipped frequently, and is most often planted in sunny locations. Although, attempts have been made to increase water application efficiency by using sub-surface or drip irrigation, the concept has not been widely accepted for a number of reasons. Consequently, the amount of turf used in a particular landscape should be reduced to areas where its primary functions are wear and aesthetics such as a play areas, picnic grounds, and parks. Although, cooling is important, the use of shade trees provides more cooling than turf area when taking into account the amount of water used to maintain each.

The most important rule to remember concerning irrigation is "deep and infrequent". In other words we want to apply enough to water to fill the soil profile where the roots reside each time we irrigate. Then allow enough time in between watering for the top inch or so of soil to dry out. From this you can see that efficient irrigation is achieved when it is tailored to the specific plants watering requirements.