

General Landscape Irrigation Guidelines

When irrigating landscape plants, the amount and frequency depends on the soil type, the weather, the plant type, and the size and age of the plant. The best time to plant ornamental trees and shrubs in the mid-to high elevations of Arizona is spring and fall. The spring can be very windy, so newly planted specimens will need extra water for the first several weeks. Even low-water use and native plants need some water to get established.

How to Perform a Drainage Test

A drainage test should be performed before planting.

1. Dig a hole the size of a 5 gallon bucket.
2. Fill the hole with water.
3. Let the soil absorb water for an hour or two.
4. Fill again with water.
5. Hole should drain within 24 hours; if it doesn't, don't plant in that location, there could be caliche or another drainage restriction that needs to be addressed.

Soil Texture Affects Irrigation

Sandy soil needs to be irrigated more frequently than clay soil. Conversely, clay soils absorb more water but at a slower rate. To test how deeply you have watered, insert a pointed metal probe into the ground; it will easily slide through wet soil and become difficult to push when it hits dry soil. The table below provides some general guidelines about the water holding capacity of various soil textural classes.

Soil Type	To irrigate to a depth of 3 feet apply:
Sandy Loam	3 inches of water
Loam	4 inches of water
Clay Loam	6 inches of water



Irrigation Methods

- **Drip** is easy to install; add emitters as the plant grows; they are not usually suitable for large trees and shrubs once they are established unless using multiple emitters or multiport heads.
- **Soaker hose** works well as informal or temporary arrangement for trees, shrubs, vegetables, and annuals.
- **Hand watering** works well for native plants that only need periodic watering during drought.
- **Oscillating sprinklers** are good for turf, but be mindful to watch for dry spots.
- **Bubblers** are great for shrubs and trees in basins; need to have level ground and a berm; do not put on same station (valve) as turf or drip system.
- **Spray heads** are excellent for turf and ground covers; not as good for trees and shrubs; need a good design; do not mix and match incompatible nozzles and head types or brands.

The "1, 2, 3 Rule" - When and How Much to Irrigate

The "1, 2, 3 Rule" is a simple but useful system to evaluate the maximum interval between irrigations for a given soil type, season, and climate. When soil is irrigated, the plant uses some water and the sun evaporates water from the soil surface. Each night, the soil has the opportunity to equilibrate and, if moisture is present deeper in the soil, capillary action can pull that water closer to the surface.

The process begins with a thorough irrigation: one foot deep for annuals and perennials, two feet deep for established shrubs, and three feet deep for established trees. You must check the depth of soil moisture each subsequent morning before the sun comes up. Established annuals and perennials will need irrigation after the soil is dry to a depth of 1 inch, established shrubs will need irrigation after the soil is dry to a depth of 2 inches, and established trees will need irrigation after the soil is dry to a depth of 3 inches. This gives you the maximum number of days between irrigations for the time of year that you conducted your test.

Plant Size	Next Irrigation when soil dries to a depth of:	Irrigate to a depth of:
Up to knee high (annual, perennial)	1 inch	1 foot
From knee high to a little above head (shrub)	2 inches	2 feet
Trees	3 inches	3 feet (most tree roots are within top 3' of soil; watering deeper will not cause roots to grow deeper)

Where to Irrigate

Initially, apply the water to the root-ball and as roots mature the water should be applied out at the drip-line. Most of a plant's water-absorbing roots spread 1 1/2 to 3 times as wide as the plant's canopy and are within one foot of the soil surface. Most of the water is absorbed near the canopy drip line or further away from the trunk.



How Fast to Apply Water

Apply water only as quickly as it can be absorbed by the soil. Water is heavy, and filling a deep basin may compact the soil, inhibiting oxygen to the roots.

Additional Irrigation Tips

1. Apply the same amount of water in summer and winter to all trees and shrubs, but less frequently during winter (includes natives and drought tolerant plants).
2. Use mulch to reduce water evaporation. Three to four inches of mulch under the plant's canopy will keep soil cool, reduce water loss, and discourage weeds.
3. Do not over-water or fertilize native and/or drought tolerant plants. It could cause them to grow to produce weak wood and be more attractive to pests.
4. Adjust your watering schedule based on: high winds, monsoon rains, winter vs. summer, newly planted vs. established plants.
5. Fast growing plants need more water than slow growing plants. Plants adapted to arid climates (e.g. may have small leaves, gray foliage, photosynthesizing trunks, leathery or fuzzy leaves) will need less water than plants with large, dark green leaves.
6. It is best to irrigate early in the morning or in the evening when temperatures are lower than midday, thus reducing evaporation. In the evening, do not wet the foliage, as that can encourage fungus or mildew.
7. If a soil has a high salt content, water can be used to leach salt below the root zone. This is not a common problem in Yavapai County.
8. Control weeds and turf grass that compete for a plant's water.
9. Expand the irrigation area as the plant grows.

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