



Principles for Successful Gardening in Southern Nevada

Plant Water Needs, Water Zones, and Mulch

There are 3 basic plant types in terms of water needs:

1. Moderate water users (also known as “traditional” plants)
2. Low water users (also known as desert plants)
3. Low water users (Desert plants) that can take more water

Moderate water users should have amended soils and organic mulch. My ideal soil amendment for these plants includes:

- a. 15 to 20% well-decomposed organic matter by volume
- b. Soil sulfur to reduce soil pH
- c. Bone meal for a long-term phosphorous source
- d. A slow-release, organic fertilizer with micro-nutrients (Gro-Power 3-12-12)
- e. A small quantity of worm castings to promote soil microbial activity

Additionally, these plants should have organic mulch placed at their base. Wood chip products make the best mulch. Over time (usually 2 to 3 years) the mulch will decompose and *greatly* enhance soil fertility and structure. Since it does break down, it should be replaced on an as-needs basis.

Desert plants should not have soils amended, merely loosened. They perform fine in inorganic mulch such as rock, and actually prefer it.

Desert plants that can take more water can exist in either state, but it is better if their soils are only lightly amended, if at all. They can exist in either type of mulch.

Plants should be segregated into 2 basic zones, desert and non-desert. The segregation should have some clear area of barrier, either by space or object (wall) to separate them. This way, moderate water users can get the water they need without the desert plants being over watered. This is especially true for desert trees, and they should always be kept well-away from moderate water use areas, including lawns.

Plants should have a wetting area that corresponds to their eventual size. With a drip system, small plants (up to 2-3 feet diameter) can exist with just one emitter each, but larger plants should have more. Plants with a canopy of 5-6 feet should have access to at least 3 emitters, plants with a canopy of 8-10 feet should have access to around 7-9 emitters, etc. As such, trees (based on size) should have access to the water from many emitters. To truly give good area coverage in a wetting pattern, emitters should be spaced around 3 to 4 feet apart. Also, small plants beneath or near larger plants add their water from their emitters to that needed for the larger plants, so they can be considered part of the larger plants wetting pattern, *as long as they are spaced no more than 3 to 4 feet apart in a contiguous wetting pattern* from the base of the plant in question.

All plants should be watered deep and wide (in relation to their size). The difference between desert plants and non-desert plants is in how often they should be watered. For instance, a Mesquite (desert tree) and a Mimosa (non-desert) should both be watered deep and wide, but the Mimosa should get it much more frequently (2-4 times/week in summer) than the Mesquite (once every 1 to 4 weeks).

Sandy soils should be watered more often than clayey soils, but for shorter times.

Clayey soils should be watered less often than sandy soils, but for longer times.

Right Plant, Right Place

Plants perform best when their environment in the garden most closely approximates the natural environment from which they originate. They also need space in which to grow and best display their unique beauties.

Considerations that should be taken into account include:

- **Plants should be in an irrigation zone that meets their needs.** Putting non-desert plants into a desert landscape or vice-versa is problematic at best, and can be disastrous.
- **Place plants in an area where they receive an amount of sun in which they can thrive.** This seems obvious, yet it's a very common mistake. Sun-lovers and shade-lovers are straightforward enough, but there's also a group of plants that need both quite a bit of sun, yet also need protection from the hottest sun of the summer. These plants should be planted on the east side of shading structures or plants, or in filtered shade beneath trees.
- **Plants need room to grow to maturity.** All too often beautiful plants are sheared or cut way back, destroying their natural beauty, and often their health too. Other wonderful plants are removed all-together, because they just get too big. This is especially true of trees.
- **Arrange plants to draw the eye into the landscape.** Generally speaking, this means the largest plants are in the background, middle sizes in the middle and the smallest and lowest plants up front. However, this rule of thumb should also be slightly violated, so that monotony is avoided, and hence some groups or individuals of larger stature should be used in middle areas. Also, large shrubs or grasses near walkways can be particularly offsetting, blocking views. Even low hedge plantings can be a barrier to both the feet and the eye.
- **Arrange plants to both contrast and compliment in color, form and texture.** The fall-down of many a garden is when all the plants are far too similar, usually all a similar color of green. This is where bluish, silver and purple foliated plants are so wonderful. Contrast of form and texture works in a similar fashion. An example of all three brought together would be to plant a bold fountain-shaped bluish Agave in the midst of a soft, small-leaved greenish plant like Sierra Gold Dalea.
- **Keep poking plants away from walks, entry and driveways.** Simple enough.
- **Watch out for plants that create excessive litter.** All plants create some debris, and that which builds up beneath them should be considered mulch. But plants that produce a lot of litter (spent flowers, seeds, leaves) can be very frustrating when located near a pool or patio. Remember, many evergreens produce constant messes, such as pine trees or African Sumacs.
- **Give tree root systems room to grow.** While small trees can be planted almost anywhere, larger specimens should be kept at *least* 5-10 feet away from walls, driveways, sidewalks and foundations, so they won't damage the structures with their roots. Deep, infrequent watering promotes deeper root growth and helps reduce the potential for damage. Also, trees placed too close to walls adjoining a neighbor's property are often subject to severe damage from the neighbor.

Choosing a Good Quality Tree from the Nursery

Many trees (and some other plants) come into our gardens with severe flaws, often fatal ones, which result from the poor methods of the nursery which grew them. Good tree selection is critical, and good installation practices as well.

Some of the potential problems to avoid or correct include:

- **Watch out for girdling or encircling roots from being in a container too long.** This is the killer. If a plant stays in a container too long, the roots reach the edge, turn and can circle round and round. Unless this is corrected, the roots will never “straighten”. Nurseries typically start plants in small pots and keep moving them up in size. This problem can occur in any of the containers in which it was grown. While girdling roots from the container from which it was planted can be corrected by making several vertical slices through the outer 1-2”, this procedure does not work on girdling roots from smaller container sizes during its nursery life. The way to largely avoid this problem is to hold the container firmly while wiggling the trunk of the plant. It should be well rooted into the *entire* soil mass. If a “plate” of soil heaves around the trunk while surrounding soils do not, it means it was likely girdled at an earlier stage. Similarly, sometimes roots near the surface are exposed, and they should not show kinked or encircling forms.
- **Trees should have good solid trunks with lower foliage.** Trunks should be strong enough to easily hold their own weight. Low foliage on the trunk does much to strengthen it, as well as providing shade (sunburn protection). If a tree has a weak trunk, any adventitious (spontaneous) growth from the trunk should be allowed to remain, likely for a year or two, and then slowly, progressively removed, branch by branch. These are temporary branches and will serve greatly in strengthening and protecting the trunk. If these temporary branches get too long, they can be pruned (pinched or headed) back out of the way.
- **Many trees with exposed trunks are subject to sunburn.** Sunburn can be a particularly devastating, and often fatal, injury. Trees that are potentially subject to sunburn (usually non-desert trees) should have their trunks wrapped, or painted with a white latex (water-based) paint. I prefer to use a product called “Easy Gardener Tree Wrap”, for it expands with the trunk and also allows those trunk-strengthening new buds to form and break through the tiny holes. It can be purchased on-line at DoItYourself.com for \$3.49 a roll, and one roll will do 2-4 young trees.
- **Watch out for poor structure (weak crotches), especially in multi-trunk trees.** Weak crotches are characterized by a narrow angle of separation at the point where they attach. While weak crotches in the canopy can usually be corrected (removed) over time with good pruning, if this condition exists at the base of a multi-trunk tree it *cannot* be corrected. This condition is, unfortunately, all too common in multi-trunk trees. Similarly, if too many or too important limbs in the canopy are weakly attached, the tree should be rejected.

Planting and Staking Procedures

The treatment plants receive on the day they are planted often makes the difference between long lives and slow deaths. These few simple steps help assure good results on planting day.

- **Plant at the right depth.** Usually this means just digging the hole as deep as the plant is in the container. Surrounding soils should also be amended or loosened, but only to the sides of the rootball, not below. However some plants actually are planted too deep in the container, a mistake made in the production nursery. There are two ways to check for this. One is to seek the root flare at the base of the tree. The trunk should flare out at least slightly at the point where it enters the soil. This is where the trunk tissue is changing to root tissue. The other way to check is to wiggle the trunk. The tree should “pivot” at the point where it’s entering the ground. If it seems to “wallow about” in a hole, it’s likely planted too deep. These two methods can be used to check on proper planting depths for both plants in containers and plants in landscapes. Planting too deep kills many plants, especially trees...and unfortunately, the death usually takes so long to occur the warranty period has expired.
- **Score rootballs with vertical slices.** While such a procedure does do some short term damage to plants, it provides important long term benefit of eliminating girdling roots.
- **Handle rootballs gently.** They are filled with very fine and microscopic fibers that do all of the water and nutrient uptake. While vertical slicing of potentially girdling roots is important, any further disturbance to the root system should be avoided.
- **Remove the nursery stake on the day of planting.** This is the stake that is attached directly to the trunk. If left in place, it actually weakens the trunk over time. It also tends to abrade the trunk, often causing very serious wounds.
- **Stake properly.** If the tree needs staking to keep it upright, two or three stakes should be used, placed outside of the rootball. The tree should be tied to these stakes in a manner that allows trunk movement in winds. Such movement encourages the trunk to strengthen. Use tying material that won’t cut into the tree. Remove excess portions of the stakes that extends up into the canopy of the tree.
- **Check the stakes and ties frequently.** It’s possible that a stake can rub against a branch or trunk causing unnecessary wounding. Similarly, a trunk or limb can grow in girth to the point that a tie can start “choking” it. If either of these conditions exist or threaten to exist, correct them.
- **Remove stakes within 1-2 years after planting.** If a tree can’t stand on its own after that long a period of time, it likely never will be able to. Staking is not a viable alternative to the structural support that a good root system will give.

Principles of Tree (and Shrub) Pruning

Good pruning combines knowledge, craft and art. But a few simple rules of thumb, when adhered to, make the difference between healthy, beautiful trees and poor, sickly specimens.

- **Don't prune too much in one season.** The general rule of thumb is that no more than 25% of the total foliage should be removed in any one year. This amount should be modified based on the health and age of the tree. On younger, vigorously growing trees, this amount can be increased to 30 to 40%. On older trees, the amount removed should be reduced to 5 to 15%. Weak or sickly trees should not be pruned at all, except to remove diseased or dead wood, so that they can use all they can get of the energy produced by the leaves.
- **Don't stub-cut branches.** This is the practice of making a cut in the middle of a branch, leaving a stub sticking out. Branches should be cut back to either:
 - A lateral branch growing off of it, that's at least one-third the diameter of the branch being cut back.
 - All the way back to the branches point of attachment to another branch or the trunk. Often, at this point, there is a swell of tissue visible called the branch "collar". The collar should be left intact so the wound can cover more quickly.
- **Remove all dead wood.** Dead wood provides the tree no benefit. Its presence can also prevent the closing of wounds. Remove all dead wood from the tree by pruning back to, but not into, live tissue. The change from dead to live tissue is usually very easily distinguishable.
- **Remove all (larger) crossing or rubbing branches.** Large, woody branches that rub against each other cause injuries that cannot heal until the offending wood is removed. One of the two branches should be selected for removal. If younger branches are crossing one another's path, they likely will rub when they are more substantial, and again, one should be removed. A good rule of thumb is that a branch should only grow out into the area from which it originated. For example, a branch that originates on the south side of a tree should only be allowed to grow out towards the south.
- **Watch out for weak crotches, and remove them when possible.** Weak crotches are characterized by a narrow angle of attachment between two limbs and the presence of bark that's been "sucked" in between them. This condition prevents the two limbs from joining strongly with one another and can cause limb failure when the branch gets large and weighty.
- **Thin trees appropriately.** There should not be too many limbs coming off of a trunk. Limbs should be spaced at least 6-24" apart, depending on the eventual size of a tree. Too many limbs detract from beautiful structure. However, be careful also that not too much foliage is removed from the interior of the canopy of a tree. The inner foliage often provides great benefit, sometimes continuing to work for the tree when outer foliage has shut down due to high temperatures. Its presence also helps strengthen limbs, preventing failure. The unfortunate practice of removing too much inner foliage seems especially prevalent on pine trees.