



Chandler · Arizona



## Desert Soils

If you are new to the desert, our hard, dry soil may be quite a shock. If you have lived here awhile, you have likely come to the conclusion that trying to change it is futile. To have a beautiful landscape, the best strategy is to quit fighting Mother Nature and choose plants that are well adapted to our native soil.

Low desert soils usually have a high clay content, low organic material content (less than 1%) and a high pH, meaning the soil is very alkaline (salty). The high clay content helps the soil to retain water and nutrients. This may sound great, but that same clay also compacts easily, can be void of vital oxygen, and can make it difficult to dig planting holes. At the other end of the spectrum, you may have sandy soils, which like clay soils contain little organic matter and do not retain moisture. The clay, silt and sand content refer to the soil **texture** which is nearly impossible to change. The best plan when designing your landscape is to choose plants that have evolved in the desert and are adapted to our soils. Trying to grow a plant that prefers the loose, acidic soils found back east will only end in frustration for you and death for the plant.

You may have heard that organic amendments can improve the soils nutrient content, water holding capacity and improve water penetration. While this is common practice in other regions, it is not recommended in the desert. In our alkaline soils, organic matter decomposes rapidly and can actually have a detrimental effect on plants. Here, organic material is best used on the soil surface as a mulch both as a temperature and moisture regulator, and to reduce weed growth. The mulch material should be spread in a three inch layer around plants, out to the drip line (edge of branches). Be careful not to put the organic material directly against the trunk or stems of the plant. Plants that like acid soils should be grown in large containers where the pH can be monitored.

In small areas, you can create annual flower beds or vegetable gardens. Adding organic matter will greatly benefit these plants, but it must be replenished annually by adding 3 inches and incorporating it into the soil.

Organic material comes in many forms:

**Compost** – can be made at home from vegetable waste or leaves or purchased at a nursery and has a low nutrient content but improves water holding capacity.

**Manure** – use manure only from plant eating animals such as cows, sheep, horses, rabbits and chickens. It needs to be well aged (six months to a year) or it could damage your plants' roots with its high salt content.

**Leaves** – best if composted first, but if you have leaf drop in your yard, consider leaving it under your plants rather than raking it up. Leaves contain nutrients that are important for a plant's health.

**Mulch** - Many materials are used as mulches such as grass clippings, leaves, hay, straw, kitchen scraps, sawdust, woodchips, shredded newspaper, cardboard, etc.

**Shredded bark or wood**– available from your local nursery or garden center. The small bark pieces eventually interlock and will not be disturbed by the wind. Bark could be used as a total landscape cover in place of crushed granite. Do not use large bark or wood pieces as these do little to slow evaporation and can be a hiding place for insects and other critters.

## Compacted Soils

A compacted (hardpan) soil layer can cause homeowners frustration. Hardpan is created when builders spread excavated subsoil over the soil surface and repeatedly drive heavy equipment over it. A hardpan layer close to the surface may be broken up with these steps:

1. Moisten the soil in the area where you plan to dig.
2. Till the soil to a depth of 1 foot or more.
3. If tilling is not possible, drill through the hardpan with a soil auger to the porous soil below.
4. A hardpan layer may require the installation of a French drain and/or water chimneys.
5. Use raised planting beds and in fill with topsoil.

You may hear the term 'caliche' used when discussing soils. Caliche (Ca – leach – ee) is layer of soil in which the soil particles are cemented together by calcium carbonate ( $\text{CaCO}_3$ ). These concrete-like pieces range in size from one inch to several feet across. Layers of caliche can be loose or may be found in solid formations. The only time [caliche](#) is a problem for plants is when the layers of material don't allow water to drain through it. Aside from removing the pieces of caliche, there is no practical way to eliminate it from our soils.

***Be sure to visit the City of Chandler Water Conservation web pages for free landscape workshops, landscaping tips, rebates, frequently asked questions and more.***

[www.chandleraz.gov/water](http://www.chandleraz.gov/water)

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