



Salty soils

One of the many challenges facing intrepid gardeners here in the Mojave Desert is that many local soils are salty, i.e. have high ionic levels. About 500 million years ago, this area was covered by shallow seas, which were filled with salt water. Over the course of time, that water evaporated, leaving behind a soil that contained a number of chemical ionic compounds, including sodium chloride, common table salt. The white rings that appear on the soil around a plant can be a result of soil being drawn up to the surface.

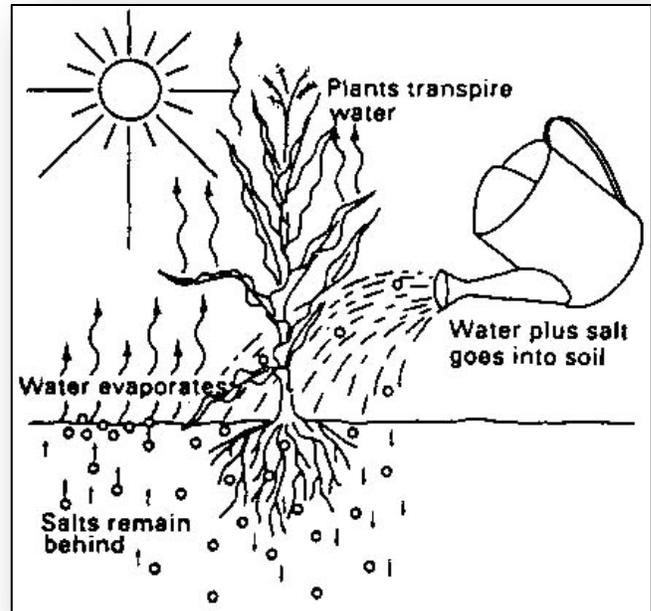
In nature, there is an ongoing balancing process, and this can be a problem when trying to grow plants in an area where the soils have unusually high levels of salt. Water moves from an area of lower salt levels toward areas with higher levels. Ideally, water moves from the soil, through the roots to the rest of the plant, whether it be a vegetable or a tree. Most plants rely on this movement to provide essential water and nutrients.

When the fluid in the soil solution is saltier than the fluids within a plant, the direction can be somewhat reversed, with the soil actually pulling water from the roots. Rarely is this so pronounced that the plant loses all its water, but it certainly is not beneficial to plant health. Another problem with salty soils is that plants may take up water that is high in ions other than nutrients. These ions can replace the necessary ones, with the result that the plant suffers from a lack of fertility. A symptom of this that is frequently seen is a brown ring around leaf perimeters. To some degree, this resembles a potassium deficiency, which is not surprising, since the sodium can occasionally replace potassium.

A few steps can, if not cure, at least remediate a salty soil problem. Heavy irrigation can flush out salts, but it can also eliminate critical nutrients that need to be replaced. This can be done by adding compost or fertilizers. Many conventional fertilizers, however, should be used with care.

Soluble fertilizers (aka “plant food”), which are the most common ones, are good sources of readily available nutrients, in particular nitrogen, phosphorus and potassium. These three are present in all general purpose fertilizers, although the concentrations of each may vary. They are not perfect, unfortunately. For one thing, they are useful only while the solution is in the immediate vicinity of the plant roots. Once they have flowed down past the root zone that benefit is gone.

Another problem is that many actually increase the salt levels in the soil, which would defeat the purpose of flushing out ions in the first place. There are ways to avoid increasing the salt concentration. One is to use a higher analysis fertilizer (higher numbers of N, P, K), since



less of the product is actually needed to provide the same level of plant nutrition. Using these, followed by a slow release product or compost, should result in a soil healthier for most plants.

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