

Get the gist of adding gypsum to soil

Leimone Waite, Master Gardener, Feb. 8, 2019

Q: I've read that adding Gypsum improves soil structure and is a "must add soil amendment" when preparing garden beds for planting. Is gypsum something I should be adding to my soil?

A: Gypsum is a popular soil amendment with gardeners. However, there is a lot of misinformation out there about its use and effect on soils. Many gardeners claim gypsum improves soil structure. This is true, but only under specific soil conditions. Most of our local soils will not see a benefit from incorporating gypsum because of the soil chemistry and the abundant amount of calcium natural occurring in the soil. Gypsum is the common name for calcium sulfate, a water-soluble form of calcium — thus making it a good source of plant-available calcium and sulfur.

When we talk about soil structure we are referring to soils that have all their tiny particles held together in small clumps, clods, or "peds" (the term soil scientist's use) to allow for better air and water movement, thus ultimately creating good soil structure.

In many soils, calcium is primarily responsible for helping to hold clay particles together which helps to create better soil structure. However, this only works if there are low concentrations of calcium in the soil. If calcium concentrations are already high, such as in many soil on the west side of Redding or south of Cottonwood, then an application of gypsum has little or no effect.

The addition of gypsum is most beneficial to soils where excess sodium is present. This is the case for many areas in California where annual rainfall is less than 25 inches per year. It's not the case for Redding area soils unless you have a water source with naturally high levels of sodium which, when used for irrigation, will cause sodium to accumulate. Over time, excess sodium causes clay in the soil to become dispersed. When clay disperses, the individual clay particles are no longer held together in aggregates, allowing them to fill in spaces preventing water infiltration and percolation. Frequently, this layer of dispersed clay is so dense that the movement of water and oxygen is severely limited.

When I lived near Bakersfield this was a common soil problem. An application of gypsum would provide a dramatic improvement in returning the soil to a more permeable condition. The calcium present in gypsum actually displaces the sodium and allows sodium to be leached deeper into the soil when accompanied by deep irrigation.

Gypsum does not work well to adjust soil pH. If you need to raise your soil pH, agricultural lime is the best choice. This is another calcium-containing soil amendment but unlike gypsum, lime solubility is dependent on soil pH. Its solubility increases in acid soils and decreases as soil pH increases. When soil pH is above approximately 8.2, lime becomes insoluble. Many of our soils are acidic and will benefit from agricultural lime applications but pH should be tested before applying lime. If you need to lower soil pH, elemental sulfur should be used.

Sometimes gardeners add gypsum to treat blossom end rot, a disease of tomatoes and peppers caused by calcium deficiency. This is only effective if the soil lacks calcium. Most of the time this disease is caused by infrequent watering as calcium is only available to the plant if it has adequate water. So a regular watering schedule and mulching around the plant can help with blossom end rot.

The Shasta Master Gardeners Program can be reached by phone at 242-2219 or email mastergardener@shastacollege.edu. The gardener office is staffed by volunteers trained by the University of California to answer gardeners' questions using information based on scientific research.