



Environmental Horticulture Notes

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MANAGING CLAY SOIL IN GARDENS AND LANDSCAPE PLANTINGS

Clay soils are not so bad. In fact, they can be very good if they have good structure. On the other hand, if they have poor structure, they are very dense and hard to work; they absorb water slowly and also drain slowly when wet; or they are so poorly aerated that plants have a hard time making a living in them. Some clay soils just naturally have poor structure. Others once had good structure that has been destroyed by working it either too wet or too dry. Running equipment or even walking on clay soil when it is wet compacts it into a dense poorly aerated mass. However, such soils can be improved enough to grow good gardens and landscape plantings by working them only when the soil moisture conditions are right and by working organic material into them.

WORKING CLAY SOILS

Working most soil, either too wet or too dry, destroys its structure, and this is especially true of clay soils. Clay soils must be worked when moist enough that the tines of a spading fork can be pushed all the way into the ground, but not so wet that it sticks to the tools. Frequently, moisture conditions in clay soil is "just right to work" for a very short time.

Small areas may be worked with a spade or with a spading fork. A spading fork makes the job easier and can be used when the soil is a little more moist without injuring soil structure. As the soil is turned over, break the clods by hitting them once or twice with the side of the spading fork. After spading, let the clods dry. When they are completely dry, sprinkle with about ¼ inch of water. A few empty cans may be placed in the area to measure the amount of water. After wetting, let the clods dry for a few hours, then try and break them with a rake or hoe. If the area is still full of clods, allow them to dry out again. Then repeat wetting, drying and working process until most of the soil breaks down into tiny clods 1/8 to ¼ inch in diameter. A few clods an inch or so in diameter mixed in will do less harm than continuing to work it. Over working soil is apt to break it down into powder and make the problem worse.

FLOWER AND VEGETABLE GARDENING ON CLAY SOIL

Flowers and vegetables usually grow better if planted on raised beds. This can be done by digging a series of furrows and using the soil from the furrows to make beds between them. Planting on raised beds improves drainage of excess water from the soil around the root crowns which reduces root rot diseases.

ORGANIC SOIL AMENDMENTS

Animal manure, green plant material and leaf mold all decay quickly so they are especially helpful in improving soil structure. As these materials decompose, organic glue is produced that improves soil structure by sticking many tiny particles together to form larger particles or aggregates. This improves both water penetration and aeration.

Peat moss, straw, sawdust, shredded bark or leaves may also be used, but they decompose slowly and may cause a nitrogen deficiency unless 1½ to 2½ pounds of nitrogen is added for every 100

pounds of the material. Mixing large quantities of slow-decaying material with soil improves water penetration but only to the depth to which the material was mixed. So watering must be done very carefully to prevent water logging of the soil at the bottom of the layer in which the material was mixed.

SURFACE MULCHING WITH ORGANIC MATERIAL

A mulch of organic material on the surface of the soil reduces the need for cultivation, reduces evaporation from surface soil, and reduces crusting of surface soil. Some materials, such as lawn clippings, must be loosened frequently to keep from forming a mat that prevents water from reaching the soil.

CHEMICAL AMENDMENTS

GYPSUM

The structure of highly alkaline soil may be improved by adding gypsum. However, it usually does not make garden soils easier to work. To find out what gypsum will do for a particular soil, apply it at the rate of 20 pounds per 100 square feet on a small area. Gypsum leaches out of the soil, so where it helps, it must be added every year or two.

LIME

Most California soils contain sufficient lime, but in areas of high rainfall it may improve soil structure. Lime should only be used on soils that are excessively acid. Do not use lime on slightly acid, neutral or alkaline soils.

LAWNS ON HEAVY CLAY SOILS

Lawns on heavy clay soil are often difficult to water, especially if they are on a slope. For lawns to do their best, the soil must be kept moist to a depth of at least six inches - twelve inches would be better. Most sprinklers put water out faster than heavy clay soil can absorb it, so the water runs off before it has a chance to soak down more than an inch or two. The result is a shallow rooted lawn that must be watered every day most of the summer. This encourages crabgrass, other weeds and perhaps fungus diseases.

This problem may be reduced by using sprinklers that put water out at the slowest possible rate. Even these are too fast for some places. Often it helps to divide each watering into several short periods. For example, running the water 15 or 20 minutes three or four times with an hour or more between runs may get more water into the soil, and less into the gutter, than running it an hour all at one time.

Often it helps to use an aerator to make holes in the soil that are three or four inches deep and three or four inches apart.

When areas in a lawn turn brown for lack of water, seeping water into them with a soaker hose will do more good than watering the entire lawn more frequently or longer at a time.