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The challenges of gardening atop mudstone and sandstone formation at the top of a windy canyon

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As a resident atop a mesa in Claremont, California my yard contains heavy clay soil atop mudstone atop sandstone.

I could build up raised beds and not worry about breaking up and amending mudstone layers, and in some places I do this.

But I am also a proponent of the sunken bed method of gardening. Because I live on a canyon in an arid region, and dry winds frequently blow over my garden, sunken beds have a number of advantages. During rare rains, sunken beds collect rain from the patio surrounding the garden. They act as a sink to store much needed moisture. Newly seeded sunken beds don't have to be watered several times a day in windy weather to maintain a moist enough environment for seeds to germinate in.

To prepare a double dug sunken bed in my yard, I need several tools: a flat edged shovel, a polaski (a type of pickaxe), buckets or a wheelbarrow to place stones, mudstone and pieces of clay in, and a place to put the displaced top layer of soil during a double digging project. I also wear a dust mask, sun protective clothing, a sun hat and gardening gloves.

Prior to digging, I place paving stones in a pathway around the bed to be dug.

Once the top layer of soil has been removed, and large rocks picked out, I reach the mudstone formation. At this time I use a polaski to break up the mudstone. Then I fill 5 gallon buckets halfway with large pieces of mudstone, and dump them in a location where they are exposed to the weather where they can break down into clayey soil. Under the mudstone is a layer of easily deformed sandstone that will break down into sand if rubbed at in a gloved hand or chopped up with the polaski, or beaten with the back of a shovel. I work this yellow sand back into the soil to improve drainage.

When I am ready to refill the hole with soil, I add alternate 1-2" layers of local clay soil, sand or sandy soil and homemade compost or composted steer manure, stirring with the shovel once I have three layers, and repeating the process until the bed is filled to within about 1" of the top.

I find many advantages to preparing a bed in this laborious manner:

-I can grow crops such as watermelons and cantaloupes that would otherwise be impossible to grow in my soil

-Once prepared, I can quickly and effortlessly dig and/or amend the bed to replant it no matter the weather conditions. In my unamended clay soil, I am severely limited as to when I can dig the soil. If it is too dry, the soil forms clayey clumps that have to be bashed apart with the back of a shovel or crumbled with gloved

hands. If it is the least bit too wet, the soil is like mud and using metal tools in it just causes it to later dry into clayey bricklike lumps.

-My plants' roots can reach down much deeper, causing them to grow much larger, suffer less water and nutrient stress, and be more resistant to insects.

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