



Found-object sculptor **Jud Turner's** completed freestanding model of a Columbia mammoth skeleton is about to make its way to the Moses Lake Museum and Art Center in Moses Lake, Wash. The mammoth, made completely from recycled farm equipment, will be displayed in an exhibit highlighting the history of the Columbia Basin. — *Dante Zuñiga-West*

PHOTO BY TODD COOPER

gardening BY RACHEL FOSTER

Got Clay?

Crushed rock addresses some sticky issues

In making our last garden on a steep, damp piece of hillside we brought in a lot of material: quarried basalt rock for retaining walls, round rock for drains, an ocean of gravel. When we moved house a few years ago, I was aiming for a garden with a lighter carbon footprint. Among other things, I hoped to save energy by bringing in as little material as possible. As I learned more about our new yard, those hopes went down the drain, so to speak.

We discovered, during remodeling, that the soil immediately around the house is pure clay with a thin veneer of soil. That explained why rain and irrigation water runs straight to the bottom of the garden, where it drains into an alley and forms near-permanent, year-round puddles. Shrubs have shallow root systems, suckering madly and showing drought stress at the drop of a hat. Other areas of the garden have decent soil, but the lie of the land and impervious underlying subsoil combine to ensure that some spots are squishy and anaerobic for much of the year.

Gray, stinky and wet immediately after digging, the saturated loam loses its odor and turns a healthy brown within an hour or less of being exposed to the air. In a few days it is crumbly and useable in a raised bed. What about the true clay, though? What, if anything, can be done to transform a substance you could mold into bricks into something you can plant in? The usual suggestions for breaking up clay — adding plenty of organic matter, for example, seem more applicable to lightening up clay loams, not the pure stuff we inherited.

A few months after we moved, I heard a talk by Maurice Horne of Joy Creek Nursery in Scappoose in which he touted the value of a crushed rock product known as quarter-10 for lightening clay soil. Quarter-10 is crushed



river rock with a range of particle size between one 10th and one quarter of an inch. Heavy clay loams consume organic matter which must constantly be replaced, while quarter-10 is a longer-term investment. I've known for years about spreading quarter-10 on soggy lawns to make them walkable (an idea that also originated with the folks at Joy Creek) ever since garden writer Anne Lovejoy wrote about it in a gardening column. It works.

Horne now promotes a more radical use of the stuff: actually mixing it with the soil to improve drainage, in order to accommodate drought resistant plants and reduce summer water use. I disliked the idea of encouraging gardeners to bring in truckloads of heavy material that has to be mined, washed, and transported using masses of energy and water. How ecologically sound is that? Now, I

am chagrined to admit, I am doing it myself. Does it work? The answer appears to be yes.

To begin with, I used a mix of quarter-10, compost and our own loam and to make shallow raised beds over the top of heavy soil that is wet nine months a year. This allows us to grow a variety of plants in place of the shallow-rooted turf that was there before. The plants love it, and the particles in the gravel are small enough that they don't interfere with cultivation. In some areas we also apply quarter-10 as a mulch on heavy soil. It looks nice and makes weeding much easier.

Using the stuff to open up impenetrable clay is still in the experimental phase, but it does look promising. Here is what we do with clay that is above the water table:

We break up the clay with a shovel to a depth of eight to 12 inches, leaving it in large chunks, and roughly mix the chunks with quarter-10. This permits some air to penetrate, allowing for deeper wetting and drying, freezing and thawing cycles. These processes cause the clay nearest the surface to disintegrate into crumbs. When the moisture content of the crumbs is exactly right, they break apart when cultivated and can be mixed more thoroughly with the quarter-10 as well as organic amendments.

I'd love to hear from readers who have turned clay into soil. Compost tea, probiotics and judicious applications of lime are said to help, and we will try them all. But I'm convinced that getting air into the soil is the first step. Quarter-10 gravel helps to make that possible. We've already planted trees and shrubs in this rough mixture, and they seem to be thriving.

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