

Creating deeper garden soil

Question: How can I improve the depth of my garden soil? The top 4-5 inches of my garden soil is nice and friable, but under that is hard, compact soil.



Bruce Gravens
Master Gardener

Answer: One option to quickly increase quality soil depth with minimal soil disruption is to use a broad fork.

The broad fork reaches down about 12 inches and pulls that hard soil to the surface, allowing the top 3-6 inches of high organic material soil to fall into the hole. You can see the before and after in the first picture.

On the right side of the picture, you see the garden bed before I used the broad fork. It is very nice and friable. On the left side you see a similar bed after I used the broad fork.

That topsoil is now deep underground and the harder lower organic material soil is on the surface. I added a bunch of compost to the surface and tilled the compost into the soil the broad fork had brought up.

I now have 3-4 inches of new top soil and below that I have 8-9 inches of older top soil and chunks of harder soil. In the second picture you see the compost on the surface and in the final picture you see the compost tilled in to create a nice layer of friable topsoil.

After two or three years of this effort, I will have a good 12 inches of high-quality topsoil.

As a hand tool, broad forks are on the mildly expensive side, but if well-treated will last for generations. I selected a 30 inch-wide 12 inch-deep broad fork made by Treadlite. My beds are 5 feet wide set on 7 feet centers, so a 30 inch wide broad fork requires two passes through each bed.

Using a broad fork does require a good bit of effort. The good news is it is low impact on your body and does not require any action that feels like it might hurt you. The effort consists of balancing on the broad fork while rocking back and forth on the step bar to drive the forks into the soil. This requires a sense of balance and feels like it would help improve your balance.

Once it is fully embedded, you just let your body weight rock the broad fork backward

and leverage the hard soil to the surface. In the end it is a very gentle action, with no heavy lifting or twisting.

This tillage does disrupt the soil structure and you will want to give the soil plenty of time for the microbes in the soil to recover. In my case, three of these beds will be planted in garlic and shallots in mid-October. The other beds will be planted in the spring of 2023.

I plan to do the rest of the garden as the summer crops finish up and before the rains start. This will give them all winter to recover.

When selecting a broad fork, the narrower the broad fork, the easier it is to operate. Select a broad fork that fits best with the width of your beds. I recommend broad forks with a round surface to stand on that is as big as possible. The square steps are harder on your feet.

I also recommend forks that have blades that look like sheet steel vs. spikes. The spike versions are not as strong and often bend.

There is a down side to using a broad fork. This work creates a disruption to the soil structure due to the tillage. While it is not as disruptive as other techniques, it is a disruption. In my case, I very much wanted to disrupt the hard clay soil structure of my subsurface soil.

There are other less disruptive techniques promoted by the no dig folks. Those techniques take much longer and are not nearly as certain to achieve the desired result.

Anytime you are introducing air into the soil, which the broad fork does, you will increase microbial action – which will consume (mineralize) more organic material. You want to replace that organic material or you will end up where you started with hard, low organic material soil. In the end, nature will always want to return the soil to its natural state. Gardening includes a



PHOTOS BY BRUCE GRAVENS

(Top) Before and after. (Left) Broad forked beds covered with 3 1/2 inches of compost. (Right) Finished beds after tilling in the compost.

constant effort to move your soil composition from its natural state to the state that best serves your needs. In most of the gardens in the Umpqua Valley, this effort includes working organic material into the soil as

deep as you can.

A broad fork will help with this effort.

Do you have a gardening or insect question? Contact the Douglas County Master Gardeners at

douglasmg@oregonstate.edu or 541-672-4461 or visit 1134 SE Douglas Ave., Roseburg. Douglas County Master Gardeners are trained volunteers who help the OSU Extension Service serve the people of Douglas County.