



Garden Tips & Techniques: Testing Amending, and Caring for Garden Soil

Soil is the foundation of the garden. The humble dirt holds food and water for plants and provides a medium where those plants can anchor themselves and grow roots. Healthy, fertile soil leads to a healthy, productive garden!

So, how do you know if your soil is healthy, and what can you do to create the best soil environment for your garden this year?

A **soil test** is the place to start. We work with the University of Massachusetts most often, due to their affordable pricing for a test that includes a screen for lead. Penn State also offers testing (though lead is an additional test, at an additional cost).

- Plan to take samples when the ground thaws, in early spring.
- Follow the sampling instructions from the soil testing facility you have chosen.
- Allow the samples to air dry, and send the appropriate amount to the facility.

When you receive your soil test results, they may look fairly confusing. Luckily, soil-testing facilities send interpretive information with the results. Here are the most basic and important bits of information to look for:

pH- This number indicates how acidic or basic your soil is. The number 7.0 is neutral. Numbers higher than 7.0 mean that your soil is basic. Numbers lower than 7.0 mean your soil is acidic. Most plants prefer pH between 6.0 and 7.0, as the most nutrients are available at that pH range. These conditions are also optimal for beneficial soil organisms.

-To make your soil more acidic (lower the pH), add Sulfur.

-To make your soil more basic (increase the pH), add lime.

Primary nutrients – Phosphorus (P), Potassium (K), and Nitrogen (N) are the primary nutrients required by plants. Your soil test results will most likely give you amounts of P and K. N is not often measured, since its amount in the soil fluctuates easily and test results can be inaccurate. It's important to have adequate and balanced amounts of these nutrients.

Additions of compost go a long way toward increasing N, P, and K, as well as secondary nutrients and micronutrients in the soil. Compost also creates a better and more effective soil texture. So, as a general rule, add compost. But also take a look at your specific nutrient levels to see if you need to address any deficiencies.

*Please note that adding excessive amounts of nutrients does not help plant growth and can actually harm plants and the environment.

- To add Phosphorus, we recommend composted manure or a commercially available organic fertilizer.
- To add Potassium, commercially available, organic Sul-Po-Mag works well if you need Magnesium too. Or, try wood ash, as long as your pH is somewhat acidic. Potassium leaches easily from the soil, so add it to the soil shortly before planting.
- For Nitrogen, the best plan is to assume that you will need to add a source every year. Some Nitrogen is available in compost, but we recommend adding a more concentrated and easily available source when planting. Blood meal and feather meal are two good options, or try cottonseed meal for a product that is not animal based.

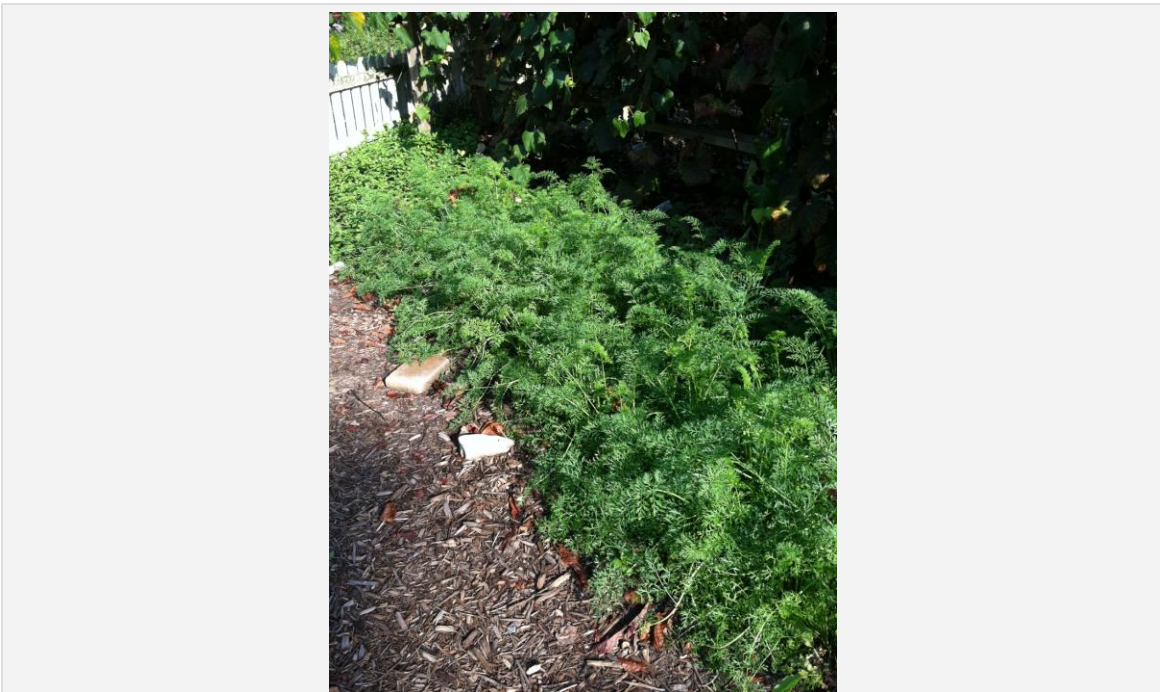
Heavy metals – The main heavy metal we screen for on our sites is lead. Lead causes developmental delays in babies and children and can be harmful to adults as well. We recommend doing more testing or choosing a different garden spot if lead levels are above 300ppm.

- To cut back on lead exposure, even in areas with lead below 300ppm, use these tactics:

- Plant fruiting crops.
- Wash crops well before eating.
- Avoid planting root crops, as it is difficult to wash off all soil from the vegetable.
- Wear gloves when working in the garden.
- Wash hands thoroughly after working in the garden.

Beyond soil testing and adding fertilizers, the most important thing you can do for your soil is to avoid compaction. Plant roots, worms, and microorganisms thrive when there are pockets of air in the soil. Walking on the soil or compacting it with machinery, smashes the soil and destroys these necessary air pockets. Be especially careful not to compact the soil when it is wet, as this causes significant damage to the soil structure.

To protect your valuable, fertile soil, use mulch (like leaves or straw) throughout the gardening season and over the winter. Mulch keeps soil from eroding, or washing away, and helps preserve the soil's structure.



This mulched walkway protects garden soil from washing out of the bed (where the carrots are growing). It also helps to delineate the walkway, so the soil in the bed is not compacted.

To create and maintain healthy, thriving soil for your garden, test the soil on an annual basis. Add some compost every year and specific fertilizers as needed. Avoid compacting your soil and use mulch throughout the year. When you focus your attention on the garden's foundation of soil, your plants will thrive!

**Stay tuned for more soil information, specific to container gardening and raised beds.*