Nutrient Dense Soil

Transcript – Module 5

Hey, Tom Bartels from GrowFoodWell.com and welcome to module five of the soil certification workshop. This is the final section in that series and it's kind of a wrap up module. I'll be talking about a few soil subjects as well as best practices and offering a bit of context as to why it's so important to take care of your garden soils to keep them resilient and fertile for growing food. Historically, most human cultures that have come and gone over the past several thousand years have contributed to their downfalls in a large degree by mismanaging their soils. This is a pretty frequent contributor to decline of sustainability across human cultures and today is no different. We modern people think we're smarter than that and we won't succumb to the mistakes of these ancient cultures. In the United States through the extractive behavior of industrial agriculture over the past hundred years or so, we've degraded the majority of agricultural soils and are continuing to do so.

Now, there's an inspiring change in that arena with the growing regenerative agriculture movement and I would recommend for those of you who want an inspiring story to research what's happening in regenerative agriculture because it's a valuable tool we need to support. What they're doing in essence is using the same methods that have been used in organic gardening communities for eons but implementing them at much larger scale. By moving toward no till methods and the use of cover crops and compost, they're improving soils, sequestering carbon back into the soil and increasing yields organically without the use of synthetic chemicals. And it's a breath of fresh air literally. But let's talk about a few things on the home scale that are good reminders as to how to treat your garden soil for the long haul. Now many of you are going to be starting new garden beds or resurrecting some dormant garden plot of some kind and tillage is a hot topic, should you till or not?

The answer is always based on the conditions of any one growing area, but in general, some soils are so compacted or absent of life that tillage is necessary to aerate the soil and amend with organic matter at least to start out. There's no need to feel guilty if you really feel the need to get a rototiller to break up some concrete garden bed to get started. My recommendation would be to only do that once if necessary. Then right after doing so, you want to go down to that layer where the rotary blade was at its furthest extent down in the soil profile and you'll find a layer that's called the plow pan. It'll be a shiny compressed layer at the bottom reach and that blade actually polishes the layer as it goes through soil. It's pretty typical for rototillers and plows, so you wanna find that layer after you rototill or plow it.

Go down to that layer. It's usually about a foot down or so, depending on the size of that blade and you'll find that compacted hard layer. You want to break that up with a garden fork or a broad fork all the way down the profile of that bed so that it doesn't impede your drainage on that bed. You only have to do that once, but that's only if you had to rototill something. Break up the plow pan using a fork or a broad fork and then you're set to go. You're assuming that that bed was amended while it was rototilled or shortly thereafter with compost and organic matter and then from that point forward, you'll just be top amending with compost and that bed will improve incrementally over time. The intention each year is to move toward a low-till or no-till situation, but that can take time. If left to its own devices, it would take years for this bed to get enough organic matter deep into the soil profile, which is why it makes sense to do it all at once. On the first year, do a deep amending of compost into the soil and aerate that soil deeply down, two feet down, and then from that year forward you can just do low-till or top amendments and compost that are just worked into the top six inches of soil. If anything, eventually the bed can get to the point where it needs no tillage whatsoever. You just add the compost each year and plant directly into the top of the bed.

Try to make sure to always keep your soil covered either with plants that are planted in blocks with intensive spacing or mulch or using compost, straw or leaves. When you leave the soil uncovered, it dries out, microorganisms diminish, water holding capacity diminishes, and it leads to compaction and erosion. And with any raised bed, you want to make sure to never walk in the bed itself. Always work on the sides, reach into the center, but don't put your feet right into the bed cause that'll add to compaction.

And remember the value of compost. Any soil type is enhanced by the addition of organic compost. Sandy soils are enhanced with the capacity to hold more nutrients with the compost in it, as well as increasing retention of water. In clay soils, you get more organic matter which breaks up compaction and aerates the soil. Balanced organic compost should be your main annual source of fertility. It adds life to the soil in the form of humus and all the microorganisms that we talked about that populate the soil food web. Avoid using intense amendments, especially liquid fertilizer with too much phosphorus or nitrogen. You can create an imbalance in the soil where there wasn't one to start.

So, start with the soil test to get a map of what's going on and then move on from there. If you didn't get a soil test, that's an even better reason to just use organic compost since its slow release and doesn't add too much of any one thing. Keep an eye on your plant growth. The plants will tell you when there's an imbalance by the way they grow. Avoid using too much manure in compost as well as it can add too much nitrogen and phosphorus. Another way to safely fertilize is to use legumes as a cover crop or a main crop to fix nitrogen in the soil without overdoing it. Mimic nature, observe what's happening with your soil and get your hands in there. There is one cautionary note with amendments in your soil and your compost. I always warn my students about herbicide carryover and that's when you unsuspectingly bring in chemicals that are embedded inside straw and manure and mulch from off site.

What happens is many farmers add a broadleaf herbicide to their hay crops, but it carries over. It's a very persistent chemical and can reside in compost for up to six years. So, if you add that amendment that's been infused with this chemistry into your garden soil, it can actually ruin your garden soil if you actually incorporate it into the soil profile. It's hard to get rid of and you should always question the origin of any amendment that's coming from off site. I'll put an article link about herbicide carryover in the resource links on this module. Thanks for taking the time to learn more about soil and its relationship to growing nutrient dense food and I hope this inspires you to become an ambassador for healthy soil. Now, get out there and grow some food.