

# Testing Your Soil.....It Generates Wealth!

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A main principle of sustainable and organic farming is that the soil is the primary source of 'wealth'. Healthy, high quality soil is both a bank for, and generator of, wealth. You may have heard the term "solar dollar". The sun provides the raw energy to grow plants and some other organisms by the process of photosynthesis. Photosynthesis is the use of solar energy to convert carbon dioxide into sugars – i.e., plant energy. Plant energy and nutrients are consumable and salable – thus, wealth generating. Most plant nutrients come from the soil via the root system, and a root system does not function well in poor soil. I'm sure all of us have seen (maybe more regularly than we want to admit) excellent growing seasons with excellent plant genetics and even plentiful fertilization result in disappointing crop production. Soil health is a likely weakness. Since soil is so critical to the success of crop and feed production, and animal nutrition, it is vital that we know our soils characteristics and take steps to make them the best they can be. Soil testing and monitoring are important ways to gain this information.

There are two bodies of information that we need to use to ensure that our soils can generate their potential wealth: 1. Soil Health/Quality and 2. Soil Fertility. Simply put, we need to help our soils hold water, air, and nutrients in sufficient amounts, and in ways to promote a thriving and diverse soil biology. This makes soils healthy and productive. The over-simplified ingredient for this is: *organic matter*.

Soil testing can be done at any time, but is usually best done *for fertility* (i.e., plant nutrients) at the same time each year. This keeps comparisons of year to year testing... well... comparable! Testing in the spring or autumn is equally valid, but comparing spring to autumn results are not valid for most nutrients, nor for soil pH.

Taking soils samples for fertility testing purposes requires a bit of discipline. A very small amount of soil – like a teaspoonful – is actually tested in a lab. Sampling the soil must be done well, or the data will be poor, and poor data leads to poor results. Here is a simple, proven procedure for taking soil samples:

- Pick an area or field that you can practically manage as a whole. For example, an open field for a haycrop of 10 acres that has 7 acres along a stream and 3 acres on the hillside should be sampled as two separate areas. As the number of crops increases into a smaller area (e.g., herb and vegetable crops), the more distinct the sampling needs to be, as crop sensitivity to soil differences is taken into account. For ideal testing results, each distinct area needs its own distinct sampling and testing results.

- Now look at the piece you will sample. You want to sample it as representatively as you can for its *unique characteristics*, such as wet/dry areas, shallow/deep soils, shaded/open, and distinct soil types. If 25% of it looks drier than the rest, then take only 25% of your samples from the drier areas, etc.

- Another key to making the final teaspoonful valid is taking *many* samples, mixing them together thoroughly, and sending a representative handful or two to the lab. In most cases, 20-25

samples should be mixed together for *each* area sampled. Sample depth should be at the depth of the root zone for the particular crops grown. Live plant material and sod should be taken out of the final sample to be sent.

- Using a flat or rounded spade works well. Personally, I prefer getting on my hands and knees and using a hand trowel! There are also soil probes sold (or made) that take 'core' samples, and make the job pretty quick and probably the samples are a bit more representative. (Tip: Make sure your tools and sample bucket are clean and rust free!) Why do I prefer the hands and knees method? Mostly because I like to check out (monitor) some soil health factors at the same time. I like to smell and feel the soil, see the soil critters, feel the tension of the sod when I try to pull it up, check out the roots, and even pour some water in to check out infiltration. I can't test all of the soil health factors, but I do get to know my soils better with this fairly intimate approach.

Really getting into soil health can make your planning, management, and sometimes even goals, change dramatically. By considering the value of a soil's structure, tilth, aggregate stability, organic matter, biological diversity, humus level, etc., you consider the foundation blocks upon which all sustainable agriculture – and sustainable societies - are built and maintained. More personally, regarding soil health gives you a broader, and yet, more direct perspective on what really makes things tick – relationships! Health is a word used to describe living things – including relationships. Fertility speaks to the physical state of a living being in a particularly narrow fashion.

Still, why can I make a claim like "your soil determines your wealth"? It sounds like a nice ideal, and very agrarian, mom and apple pie, rural Americana, but let's be real, shall we? What do I base my claim on? It's not MY claim, as most of you know. I just happen to agree with it! Simply put, with thriving populations of soil organisms there is an amount of energy, food, water, and air that is being cycled, moved, processed, released and stored. With weak populations of soil organisms, there is a seriously lesser amount of energy, food, water and air being refreshed, renewed, rejuvenated, reused, or being restored. It is quickly a barren soil, unable to produce or reproduce and, thus, bear no fruit.

It is 'the fruit of the land' that we ultimately harvest and gain our personal wealth from – either by our healthy consumption, and/or by market and sale of product. Good soil health will promote good soil fertility, and under thoughtful stewardship and management, it will produce an enduring harvest of wealth generating fruit for years and generations to come.

## Resources:

[www.attra.org/soils.html](http://www.attra.org/soils.html)

<http://soils.usda.gov/sqi>

[Building Soils for Better Crops](#), by Fred Magdoff & Harold van Es  
[Edaphos](#), by Paul D. Sachs

[Fertility Pastures and Cover Crops](#), by Newman Turner