

Organic matter: The lifeline of soil

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Farmers are well-versed in how to select a variety and plant it; how to control weeds, pest and diseases; and how to fertilize and water plants. So why does the ability to grow 300-bushel corn, 100-bushel soybean and 100-bushel wheat still seem outside the grasp of many farmers? To answer this question, I will start by asking another question. How many farmers know about the health and condition of their soil? Considering that the soil is the foundation of the entire farming operation, it is not surprising that our most successful farmers, those who consistently produce high yields, are focused on growing the soil.

Why don't more farmers "grow the soil"? It is just like with our bodies -- we can get by with supplements and medications without investing in cultivating a healthy lifestyle. But eventually our health declines and our demand for supplements and medication increases just for us to remain functional. Surprisingly, we all know what to do to stay healthy, but it is not until we find ourselves in a doctor's office or in a hospital bed that we are forced to change and do what we already know we should be doing. It is the same with the soil. All farmers know or have heard many times the importance of growing the soil, improving soil health, and increasing soil organic matter.

In my opinion, organic matter is to a soil like blood flowing through our bodies. For example, if you're a blood donor and you give blood regularly, but your body does not replenish itself, donating blood will eventually weaken or kill you over time, despite your good intentions. This is what we do to our soil each time we put a plow or other tillage implement to it. Soil management practices can have a significant effect on organic matter levels in the soil. Soil organic matter affects both the chemical and physical properties of the soil and its overall health.

The composition and breakdown rate of soil organic matter affects the diversity and biological activity of soil organisms, plant nutrient availability, soil structure and porosity, water infiltration rate, and water holding capacity.

Building organic matter in a soil system is a function of numerous factors: 1) organic matter inputs (above-ground residues and roots), 2) climate (rainfall and temperature), 3) physical and chemical properties of the soil, and 4) land use and management.

Back to the question of why more farmers don't grow the soil? I think there are two main reasons:

- Building soil organic matter through appropriate farming practices may take several years, especially in dryland areas where limited moisture reduces biomass production and soil biological activity.
- Identifying soil management practices that promote soil organic matter formation and moisture retention, and that ensure productivity and profitability for farmers in the short-term can be very difficult.

Contrary to the two points above, it is not impossible to build soil organic matter, although it might be difficult and require some change in farming practices. In my opinion, cover crops, use of manure, and no-till are good starting points for anyone interested in building soil organic matter. In taking steps to build soil organic matter, don't forget that regardless of the practice used, green growing material does not build organic matter, but brown dead material does.

In sum, it may be time to start thinking about growing your soil as well as your crop. You can start evaluating your soil by monitoring soil organic matter.