

What About Soil Health?

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There has been a lot of discussion over the last couple of years about soil health, some of it useful and some of it confusing. There have been presentations I have heard that leave me scratching my head, wondering what to make of the topic. Many of you may have found yourself in a similar situation. I attended a conference last week that included a symposium on soil health, led by some of the leading educators from the region. Here are a few ideas that I took away from the session.

Soil is a living ecosystem. I think most producers understand the value of soil, and the importance of soil conservation. That is one reason no-till plantings have become the normal planting practice in Tennessee and the Southeast. But sometimes we may think of soil being dirt that contains nutrients for plants to use. In reality, it is a lot more. It is an environment that contains millions of bacteria, fungi, insects, worms, and other living organisms, all interacting with plant roots and each other to live. Products that plant roots release help the microbes, and microbes secrete materials that help the plants. Without both sides, the system will not be as productive.

Soil health describes this ecosystem. With a crop growing on the field, describing it as dead or alive may not give you a complete picture of how well the crop is doing. It might be alive, but not growing as strong as you would like, having a nutrient deficiency or a disease. The same type of thing can occur in the soil. It might have living organisms, but not as many or all of the types that we would like. Rarely are soils dead, but they might not be functioning to the level we would like.

Producers can dramatically influence their soil function. Producers pay close attention to their crops, and spend time and money to ensure the crops are productive. Once we realize that healthy soils contribute greatly to the production of the crop, we should also pay attention to our soil management, which will in turn improve crop growth.

Soil organic matter is a key driver to soil health. It is difficult to come up with a single measurement to determine soil health. One place to start is with soil organic matter. Organic matter contains lots of carbon, which is what most microbes need to function. It also contains nitrogen, another driver of microbial and plant function.

Methods to increase soil organic matter. Organic matter is basically dead plant material. This material comes from plant stems, leaves and roots. Increasing the amount of plant residue in soils will increase soil organic matter. In the Southeast, or humidity and temperature limit how much organic matter we can accumulate in soils. In most situations, three percent organic matter would be considered good in a production field. Here are some methods to increase organic matter in your soils.

- 1. Use no-till plantings.** This is obvious, but tilling the soil causes the organic matter to break down faster, as well as destroy soil structure. Use no-till planting every time

- you can.
2. **Maintain 3-4 inches of stubble.** As leaves degrade, they contribute to organic matter. Leaving a high stubble when grazing or mowing will allow lower leaves to become organic matter. It will also improve the persistence of your perennial grass fields.
 3. **Use cover crops on fallow fields.** If you have fields that or not currently in a crop, or if your grass than is thin, plant an annual crop for the short term. This will allow leaves and roots to be deposited into the soil, increasing organic matter. You don't want to use only annuals for your forage program, but their use in the correct situation van provide great benefits.

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