

# WHITEWATER RIVER WATERSHED NEWSLETTER



## Soil organic matter: The secret to successful farming

Dennis Hancock for Progressive Forage Grower

The most important and least appreciated component of most farm operations is the organic matter in the soil. If you want to increase your farm's return on investment, focus on protecting and improving soil organic matter (OM). Scientifically speaking, soil OM is a collective term that refers to the amount of carbon-based material in the soil. In a sense, soil OM quantifies the living component of the soil (i.e., roots, fungi, bacteria, earthworms, etc.). Healthy soils have more species at work in one teaspoon than there are people in our whole country. The number and type of these organisms are an indication of how much productivity is occurring in a soil.

There is a tremendous amount of diversity in the OM levels in the soils of the U.S. It is no accident that the most productive farmland in the U.S. is located on soils where soil OM is very high (greater than 5.0 percent).

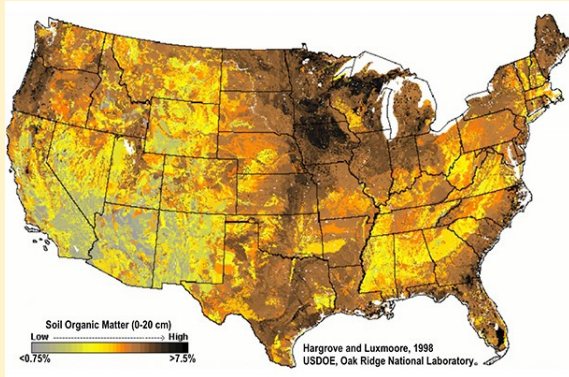


Fig. 1: Percentage of organic matter in the top 8 in. of soil in the U.S.

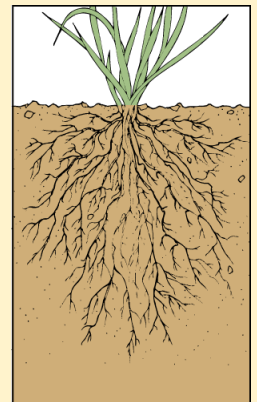
Soil OM matters for several reasons. First, soil OM holds up to 90 percent of its own weight in water, so it acts like a giant sponge. Soil scientists have found that a 1 percentage point increase in soil OM can increase the soil's water holding capacity by 20,000 to 27,000 gallons of water per acre, which is nearly 1 acre-inch of water. An acre-inch of rain can sometimes mean the difference in profit and catastrophic losses.

Soil OM is also a sponge for nutrients. It can hold up to 20 times more nutrients than an equivalent weight of sand, silt or clay. As a rule of thumb, every 1 percent of soil OM will release 20 to 30 pounds of nitrogen (N), 4.5-6 pounds of phosphorus pentoxide ( $P_2O_5$ ), 10 to 40 pounds of potassium oxide ( $K_2O$ ), and 2 to 3 pounds of sulfur (S) per acre over the course of each year.

Because this release is dependent upon biological activity, most of these nutrients will be released in warm weather (i.e., spring and summer) and may not be as beneficial to winter crops. Additionally, soil OM buffers against changes in soil pH. This means that soil pH of soils with high OM are much slower to decrease than low OM soils, allowing more years between lime applications.

Soil OM also provides a major improvement in the structure of the soil. Soil OM helps soil particles to aggregate or clump together. These large aggregates are a sign of healthy soil. Soil with larger aggregates allows water to infiltrate faster, absorbs more water and decreases runoff. Because the soil more readily absorbs water, greater OM levels also can substantially decrease erosion.

To produce more soil OM, one must stimulate new root growth. The roots of grasslands, whether in a pasture, hay or silage field, are regularly turned over. The frequency of this turnover is dependent upon how frequently the crop is cut or grazed. Cover crops can provide living roots throughout the whole year and an increase in soil OM for cropland. The cycling of nutrients and regular re-inoculation of the soil with microbes via animal manure has a major positive effect.





# Whitewater River Watershed Project

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<http://www.dearborncountywatersheds.org>

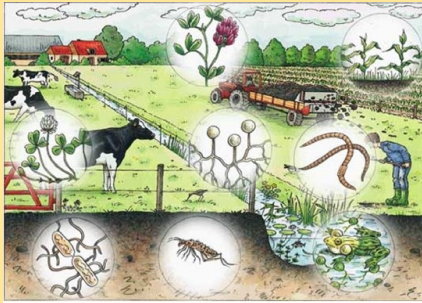
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## Conservation Tillage Breakfast & Workshop

**Saturday, March 12th, 2016**

**Breakfast starts at 7:30 and Workshop from 8:30 am to Noon**

**Zimmer Tractor - 405 E. 7th St. Brookville, IN**

**8:30-9:00am Franklin County FSA, SWCD, NRCS, Purdue Extension, Whitewater River Watershed Project updates "Programs and Services Available"**

**PARP: 9:00-12:00pm CCH for Category 1 and RT**

**9:00-10:00am John Obermeyer Purdue University "Insect Pest Management Update"**

**10:00-11:00am David Brandt, Ohio Producer "Cover Crop Mixes & Soil Health"**

**11:00-11:45am Joe Ikley and Doug Spaunhorst , Purdue University "Weed Management Update for 2016 "**

**11:45-12:00pm Anna Morrow, Ag and Natural Resources Extension Educator, Purdue Extension—  
Franklin County "Bee Aware"**

David Brandt shows his porous soil with high organic matter, thanks in part to thousands of earthworms.



**RSVP: Franklin County SWCD at (765) 647-2651 Ext. 3 by Wednesday, March 9th**

David Brandt farms 1,150 acres in central Ohio's Fairfield County. He began no-till farming in 1971 and has been using cover crops since 1978. David has participated in yield plots for corn, soybeans and wheat into various covers. This information has been used by seed growers as well as county agents and universities to encourage other farmers to adapt no-till practices in their farming operations. He has also been planting various blends of cover crops to find out what benefits they provide to improve soil. His systems approach has led to increases of soil organic matter from 1% to 5%, improved resiliency to weather events, and an ability to significantly reduce inputs.