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News Column
University of Nebraska Lincoln Extension
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August 2, 2016

BUILDING HEALTHY SOIL COMMUNITIES

In the six inches of soil below the outline of your foot, there are more living beings than there are people living in the world today plus all past humans….12-15 billion living beings. They can vary from a ton to 10 tons of soil livestock. If you like to lie on the ground, do not stay there too long! All of those living beings are looking for the same thing you and I need to live, a carbon meal. Some make their own carbon food source, through photosynthesis with the sun; others feed off each other in a myriad of beneficial, detrimental and bizarre relationships.

I spent two days in August at the Gail Fuller Farm near Emporia, Kansas learning about healthy soil communities from national and international experts. Dr Kristine Nichols the Research leader at Rodale and a very talented soil microbiologist lead the discussion of soil structure improvements with no-till and perennial crops. Carbon makes the world go round. Carbon is present in almost all life on earth and can chemically bind with more than 100 million different compounds. Each carbon chemical bond made or broken stores or releases energy. A year-long research study in Grand Forks North Dakota to look for signs of life in the soil resulted in 24/7/365 activity. Even on the day the temperature dipped to 20 degrees below zero with the soil frozen solid to 4 feet, there was biological activity. Activity slows down in the winter, but it does not stop.

Extending our growing season in the fall and the spring could help us increase carbon both for soil microbe energy and for increasing organic matter in the soil. Organic matter and reduced tillage are the kingpins of improving soil structure, increasing water intake levels and capacity of the soil to store water. In the disc/field cultivate world of the past, the poorly formed soil aggregates (small soil particles) actually explode during rainfall events. The strong soil aggregates formed in no-till farming systems use glomalin and other microbe based carbon glues to form the soil aggregates. They have more water and air space and regulate the incoming rush of rainwater so that compressing air pressure does not destroy the aggregate.

Outside the box: Colin Seis, an Australian farmer in a rainfall zone like ours is growing wheat and oats planted into dormant native grass rangeland. After the mid-summer harvest the native grasses recover and are grazed in the late summer. The system does require native grass in good condition and pasture areas suitable to the cropping adaption. The concept of planting and harvesting a cool season grain crop in living native grass pastures is interesting. And just crazy enough to be experimenting with.

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