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A LITTLE BIT COUNTRY
WARREN FROELICH
NDSU EXTENSION AGENT
WILLIAMS COUNTY

Fungi Are Beneficial to Soil Quality

Over the past year or two I have given considerable attention to the importance of soil quality as it relates to crop production. A quick definition of soil quality is the maintenance or improvement of soil organic matter (SOM). For our area, most cropland is in need of SOM improvement.

Improving SOM in this semi-arid of northwest North Dakota should become an important goal of crop producers simply because of its ability to hold more water with higher levels. More water almost always results in higher yields and greater profitability.

Healthy soils means there is a broad range of macro- and microorganisms present to play a critical role in breaking down old organic plant material into mineral nutrients which can be used by growing plants.

Fungi and bacteria have a symbiotic relationship which recycle all the carbon, nitrogen, phosphorous, sulfur, and other nutrients in SOM into mineral forms.

There are certain fungi in the soil which facilitate the process getting phosphorous, calcium, zinc and copper into plant available forms. They work with bacteria and other organisms in the soil to change the chemical configuration of the nutrients.

These specific fungi known as vesicular-arbuscular mycorrhizal (VAM) simply take the sugar from the roots of the plant and feed it to the bacteria and other microorganisms in the soil. These organisms then help convert the nutrients in the soil into plant available forms.

When VAM fungi are not active in the soil the important nutrient phosphorous is not available to plants. When this process is absent crop growers must then add synthetic phosphorous fertilizer. Jill Clapperton, a renowned soil scientist who has done extensive research

in Canada and Montana, tells us many no-till farmers are able to reduce costly applications of phosphorous fertilizers because of the mycorrhizal fungi activity.

In general, Clapperton says that when VAM colonize roots, the plants have higher rates of photosynthesis, improved water-use efficiency and are able to move more and different kinds of carbon compounds to their roots. She also states that plants vary in their dependence on VAM fungi as a means of accessing nutrients. Highly dependent crops such as peas, beans and other legumes are characterized with limited root systems whereas wheat and other cereals have a lower dependency because of their larger and fibrous root system.

It seems to me that every 3-5 years the agricultural production community experiences a new concept which has potential to significantly improve crop yields. I think today's big opportunity is the improvement of soil organic matter. For the astute produce, land with high levels of SOM will mean the land will have greater value.

Fall Care of Home Yards

As summer winds down, this is a good time to give trees, shrubs, and lawns a deep watering. The lengthy dry summer has put a lot of stress on plants making a heavy watering even more important. Conifers as well as all newly planted trees and shrubs should have adequate water until the ground freezes. Roots of these plants grow vigorously in fall and will continue to grow until soil temperatures dip below 40 degrees.

Now is also a good time to give the lawn a final cut. Many homeowners prefer to mow their lawns a little lower than usual at the last cutting to prevent problems with snow mold and voles. A tall lawn promotes vole activity creating bare pathways in the grass. More importantly, the voles will grow on the bark at the base of trees and shrubs, sometimes killing them.