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Taking service to another level

Healthy Soil... Healthy Crops... Results!

Soil health and structure is often overlooked on many farms, other than adding N-P-K and trace-nutrient fertilizers, pesticides, herbicides and fungicides on an annual basis. However, prior to the application of any fertilizers and chemicals, it is a good idea to have soil samples tested from a variety of fields to be seeded! Samples should be submitted to a soil laboratory, helping to determine what the soil may already contain and what may be needed in order to optimize plant growth and development. Simply applying a standard fertilizer may not be the direction to go – and could unnecessarily add to the overall cost of forage production.

Just what should we consider with regard to soil health and structure? How can we improve this natural resource, where good stewardship is pertinent? The goal is to build biologically active soils, which is critical to how well the soil can perform and grow crops. These benefits include:

- Nutrient cycling
 - Nitrogen (N) fixation
 - Convert inorganic N into plant-available forms
 - Phosphorus (P) solubilization
 - Slow-release of nutrients as fungi/bacteria die
- Using less conventional fertilizer (and reducing annual costs related to application, etc.)
- Higher rates of residue degradation
- Building soil organic matter and content
- Improving soil structure
 - Soil tilth – loamy, nutrient-rich soil that resists severe compaction and grows healthy plants/crops
 - Aggregation – how well soil clumps together or breaks apart to allow moisture and air to circulate
 - Enhanced root growth
 - Healthier plants
 - More available nutrients, phytohormones and fewer pathogens

The benefits of improving soil structure for the growth of plants include: (a) reduced erosion due to greater soil aggregate strength and decreased overland flow; (b) improved root penetration and access to soil moisture and nutrients; (c) improved emergence of seedlings due to reduced crusting of the surface, and (d) greater water infiltration, retention and availability due to improved porosity (Cockroft & Olsson, 2000).

If our soils are biologically active, they should improve the overall productivity and profitability of crops being grown, while also increasing nutrient cycling, beneficial bacteria and fungi, and degradation of organic waste. Healthy soil is a year-round opportunity that can yield many benefits and is an investment for today and in the future. Unfortunately, it is often a neglected consideration for many modern farming practices. It has been estimated that productivity could be increased by two to three times the

present level by improving soil structure, because of the resulting access by plants to available soil, water and nutrients (Cockroft & Olsson, 2000).

The Goal - Building Biologically Active Soils: Many things enter into just how the soil can become more biologically active. Briefly, this includes the following considerations:

- **Importance of Microbes:** These are among the smallest forms of life, but collectively they constitute the largest mass of living material on the planet. Humans, plants and animals are all dependent on microbes, including the de-composition of organic matter and recycling of nutrients. The prevalence of these microbes, which include bacteria and fungi, and their diversity and abundance are dependent on what they need (and get) as food and nutrients, environmental conditions (temperature, pH, oxygen and moisture). They are also found in soil, water and the air. Some are very beneficial, while others can be detrimental to the health of other organisms (human, animal and plant).
- **Paying Attention to the Plant's Rhizosphere:** The area surrounding the roots of a plant (rhizosphere) is critical to the plant's ability to grow and develop. This is influenced by root secretions and soil microbes, along with such substances as sugars, carbohydrates, amino acids, organic acids and enzymes that the plant exudes, and the relationship that exists between the roots, soil bacteria and fungi, and the soil health/structure. Beneficial bacteria and fungi can impact this area of the plant by making nutrients more available to the roots and plant, producing growth-stimulating phytohormones, increasing nodulation and N content of plants, and reducing the negative effects of pathogens that may compete with a plant for resources.

We will consider more about soil health and structure in coming issues, as we prepare for planting in the coming weeks and months. Encourage producers to have their soil tested at a lab. The more we learn about our soils the better we can help improve their health and structure for improving productivity and profitability!

(Edited from a presentation by R. Blogg & the USDA Soil Conservation Service)



Interested in discussing topics in this newsletter, or want to do a better job feeding and managing your cows Call W-S Feed & Supplies!
 Our goal is to help you. That's the W-S commitment!

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THE TEAM FOR RESULTS

Spring and then...

It is often said that, "February goes out on cat paws, but March comes in like a lion!" Yes, winter holds on tightly, with cold and wet weather continuing to plague many parts of the country. But, we know that spring is coming and with it the rigors of soil preparation and planting. Even though the temperatures remain cool (or cold), it isn't too early to start planning ahead for those coming days of heat and humidity. The impact of heat stress on your cows can be substantial and critical. Take time to review your management strategies for dealing with heat this spring and summer. This also includes your ration program! Call today and let's take time to plan ahead before the thermometer rises. It can make a difference!

Feeding (and planting) for results...

Cows cannot produce to their optimum level without a quality, balanced ration and good management, which includes cow comfort, fresh, clean water at all times, feed bunk management, etc. A well-balanced ration includes your forages and those other ingredients necessary to ensure each cow is getting the nutrients and energy she needs to maintain condition and produce milk. The same ration also impacts her health and reproductive abilities.

As you begin the cycle of plowing and planting consider the nutrient and digestibility-value of hybrids you have purchased. These will be the predominant part of your rations next fall and winter. Additionally, it is important to look at other available seed products that can help to expand your inventory of forages. This may include BMR sorghum sudangrass, various grass species, triticale varieties, forage oats and numerous proprietary seed mixtures for almost any farm scenario. I can help you examine available information and work with you to select what is best for your operation. And, I can work with you to ensure your entire herd is eating for results all year-round.



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CHECK IT OUT!

