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Is soil health important in feed quality?

Of course it is. The quality of forage and grains, or any food for that matter is dependent on the soil quality and soil health. Poor soils with fewer nutrients or poor soils with nutrients that out of balance will produce less nutritious food or food with nutrients that is out of balance as well. You may say that this is unimportant; we can just add nutrients and supplements to our diet as human beings. But as the animals that we care for that are herbivores and they get 100 percent of their diet directly from forages and grains that are grown on soils, it is important that we grow these forages and grains on healthy well balanced soil.

Soils are made up of three basic parts:

The physical part the clay, sand, and silt that make up the majority of what you pick up and hold in your hand when your are walking through your field or pasture. It also includes the water in the soil as well

This chemical constituent of the soil; the nitrogen, phosphorus, potassium, (the first three numbers on the fertilizer bag), calcium, magnesium (from lime), and trace nutrients that are held on the clay.

The biological constituent of the soil which includes the organic matter, the bacteria, fungi, protists, nematodes, worms etc. This is the most vibrant and changing portion of the soil. It is also the part of the soil that is most forgotten and abused.

All of these basic parts have an effect on one another in positive and negative ways. However the living part of soil is most easily affected negatively. For example in many agricultural systems apply fungicides every week, insecticides once a month, herbicides a couple of times a year and high salt fertilizers a couple of times of year.

Pesticides by definition are designed to kill biological organisms and will also limit the growth of beneficial organisms in the soils. The pesticides work on enzyme systems to kill organisms and they do not care if they are enzyme systems in the pathogens they are designed to kill or the same systems in beneficial microorganisms. High salt fertilizers are painful to beneficial microbes. The best example of this is the next time you get a good cut on your finger take a salt shaker and shake some salt on the cut. Makes you cringe a little doesn't it. This is exactly what happens when we put high salt fertilizers on our soils. It burns the microbial cells. High salt concentration decreases the growth and expansion of beneficial organisms in the soil. This means that organic matter is not

getting broken down, leaving nutrients those plants, fungi nematodes, earthworms all need to survive and grow to make healthy soils. When done for a long enough period of time will result in high level of undigested organic matter that will not let water percolate to the roots when it rains or it takes up and holds water away from the plant roots during times of little water. Both of these situations results in plants that show stress of drought and nutrient deficiencies.

With less available soil water it means only the most soluble nutrients are available. Having this skewed solubility results in unbalanced delivery of nutrients from the soil. For example potassium and sodium are more soluble than calcium and magnesium. However we need to have a good balance in the soil to grow healthy plants. If we have unbalanced soils that are high in one nutrient we will make plants that are unbalanced and high in one nutrient.

Any dairy farmer that spreads manure and tests his soil can tell you this. The fields next to barn that gets the most amount of manure (fresh dairy manure is naturally higher in potassium) have significantly higher potassium levels. High enough to effect crop yield and quality.

Balance and buffer is important in soil health Aroostook Testing and Consulting Laboratory Inc. (ATC Labs) and Currie Chemical Company Inc (CCC) are very involved in balancing and buffering soils by improving the biological environment of the soil.

The biological part of the soil is the most vibrant and easy to change. Most of the organisms in the soil grow and divide in a matter of hours vs. the solubility of some of the nutrients we apply which go into soil solution in days, weeks, and months. Given the fact that the biological portion of the soil is one of the more resilient and important parts of the soil it is important to provide this part of the soil with what it needs to be efficient.

We do this with the addition of important organic and biologically important ingredients.

Humates (humic acid) and fulvates (fulvic acids) are mined from prehistoric deposits of organic matter. These are what are left over from the time of the dinosaurs and jungles of the past.

Humates do several things in the soil; Humates feed the soil by providing organic matter, food for the microorganisms, water holding capacity and holding nutrients in the soil.

Fulvic acid (fulvates) feed the plants and plant roots. Fulvates act as a chelator that delivers nutrients to the plants at a higher level than those nutrients would be delivered without fulvic acid. This allows plants to take up and maintain higher level of nutrients than would be available to them in biologically unhealthy soils.

Beneficial microbes are added that produce plant growth hormones and plant growth hormone precursors. These organisms allow for the plants produce higher root masses and more lateral growth. We also use microbes that degrade organism matter into more useful soluble forms. Not all organic matter is helpful for plant growth. Your wooden desk thrown on to your garden does not do your sweet corn any good but digested compost can really improve your summer corn boil.

ATC and CCC believe and have proven that well balances soils result in well balanced food and feed being produced. There are many things that affect your soil quality and soil performance but one of the easiest and fastest ways to improve soil quality is to supplement and support the biological portion of your soil. It has been our experience that there are huge variety of nutrient deficiencies and soil issues across the country but the one common thread is that all soils are deficient in biological quality. This is one of the things we can improve easily.

What to do to improve the biological health of your soil

You should start by having a standard soil analysis and working toward balancing your soils' nutrients. This can be done through a number of private and public laboratories including our own and you can purchase soil test kits right from our website www.curriecompany.com\atc . There are also a number of laboratories including ours that can test the biological activity of your soil. But one of the most important things you can do is feed your soil the nutrients that enhance and replenish the biological activity of your soil. For the products that best fit your needs feel free to contact Currie Company www.curriecompany.com or one of our distributors