Should I soil test?

Dr. Emily Glunk

Forage Extension Specialist

I get a lot of questions on the importance of soil testing, and if it’s worth it. My answer: yes.

A soil test can give you a lot of very helpful information that can help in your forage production, for a relatively small amount of money. I like to use the comparison of feeding your livestock to feeding your forages. When we develop a ration for our cattle, we make sure that they are meeting their energy, protein, vitamin and mineral needs so that they can perform to the best of their abilities. Why wouldn’t we do the same for our forages? By neglecting to ensure that there is sufficient Nitrogen (N), Phosphorous (P), Potassium (K), Sulfur (S), etc. in our soils, we are decreasing that plant’s ability to produce to its maximum potential, also decreasing the amount of nutrients that it can supply to the foraging animal.

The first thing I always ask when people look for advice on forages to establish is “what is your pH?” This piece of information is so important, and can save you a lot of time, money, and headache down the road. However, the only way to accurately estimate this is by performing a soil test.

The pH of a soil is important for a couple of reasons. 1. It gives you an idea of whether or not a species will be able to establish in your soils. For example, sainfoin does not particularly like acid soils, so if your pH comes back at a 6, then you may have some issues getting sainfoin seeds to germinate. And 2. It gives you an idea of the availability of the nutrients in your soil

Not every nutrient is going to be highly available at every pH. Macronutrients, such as Nitrogen, Phosphorous, and Potassium are usually more available to a plant at a more neutral to alkaline pH, or a pH greater than 7. Micronutrients like Iron (Fe), Copper (Cu), Molybdenum (Mo), and Manganese (Mn) are typically more available at slightly lower pH, say around 6. Knowing this helps us to cater to the soils, and provide adequate amounts of necessary nutrients for plants.

Soil tests will also give us an idea of how much of a particular nutrient is already in the soil. This will help us in developing a fertilizer regimen, and potentially save us some money in the long term. Instead of applying the same amount of fertilizer year after year, which may or may not be needed in that particular amount, we can provide only what is necessary to produce a healthy plant.

Nutrients will differ in how long they “stick around” in the soil. Nitrogen is a highly mobile nutrient, and fertilizing annually (if recommended from the test) is usually appropriate. However, because it is highly mobile, we don’t want to over-fertilize, which can lead to nutrient leaching, and wasted money on fertilizer. Nutrients such as Potassium and Phosphorous are relatively immobile, and usually are in the soil for longer periods of time after fertilization. In fact, if a stand is deficient in Phosphorous, and adequate amounts of P are applied, you may not see a huge increase in yield or quality until up to a year after that first application, due to its slow release.

When soil testing and fertilizing, don’t forget to look at the micronutrients. While needed in much smaller amounts that the macronutrients, these can play just as important of a role in forage production and quality. Things like Selenium (Se), Boron (B), and Manganese (Mn) can all be limiting to plant growth if they are in too small of amounts, or too large of amounts as well. With Boron, for example, it can be easy to surpass sufficiency needs and enter into toxic levels of applied B. Soil testing is extremely important in determining exactly how much your plant needs so that you can feed it properly. To help in developing these recommendations, Montana State University Researchers are looking into fertilization guidelines, and have developed several publications, with more still on the way. Most can be found on my website (<http://animalrangeextension.montana.edu/forage/>) or on the other Extension specialists’ websites as well.

For more information on how to soil test, or if you have any questions, please contact Dr. Emily Glunk at 406.994.5688 or emily.glunk@montana.edu.