

This week we will take a look at a factor that has a direct impact on cow cost per year- soil quality. Soil quality is important in a cattle operation because it greatly affects the quantity and quality of forage produced. When soil quality decreases, forage quality and quantity also decrease. In some instances this results in an increased need for supplemental feeding to take place in order for the cow's requirements to be met. It also results in the need for fertilizer and/or lime to be applied to the soil. The increase in these needs leads to more money being spent than what is necessary. To best understand how to monitor and manage soil quality it is important to examine the factors that affect it.

Soil quality can be evaluated by using three different types of indicators- chemical, physical, and biological. Chemical indicators, such as a soil test, are one of the more popular methods used in determining soil quality. Basic soil tests primarily include results that reveal soil pH, salinity, and phosphorus, potassium and nitrate content. However, some tests reveal more information about other nutrients that the soil contains. It is important to note that accurately determining soil quality requires an assessment of each of the three types of indicators because a soil test alone does not reveal the physical or biological quality of the soil.

The second indicator, physical, is the indicator most dependent upon management of the land. This includes things such as the degree of subsurface compaction, and soil tilth and mellowness. Other factors such as amount of runoff, the soil's ability to hold water, and nutrient holding capacity, are great indicators of whether or not the physical quality of the soil is where it should be.

Biological indicators are also widely used in determining soil quality. These may be identified in the form of living organisms, or inhabitants of the soil. Some of the most easily identifiable biological indicators are earthworms and dung beetles. Earthworms are extremely beneficial, as they aerate the soil and create top soil. This is important because it reduces soil compaction, resulting in promoted healthy root growth of forages. Beetles are also beneficial, as they work to incorporate manure piles back into the soil, reducing the need for a fertilizer spreader. Below, we have attached a photograph of a manure pile that has been inhabited by dung beetles.



The fresh soil on top of the manure shows that the beetles have already begun the process of incorporating the manure back into the soil. Based on this photograph, we can be confident that the biological quality of the soil in this area is good.

Truly knowing the quality of your soil requires much more than simply having a soil sample tested. Although we highly recommend that you test your chemical soil quality, it is equally important to evaluate the soil quality on a physical and biological level. When used together, these three types of indicators help a producer know if his/her soil is lacking in nutrients, or if soil quality is sufficient, preventing unnecessary fertilizer and/or lime costs. For information about interpreting soil tests, or for help with determining if your soil quality is where it should be chemically, physically, and biologically, please contact us.