Five basic principles increase soil health

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Are you a cattle manager, a grass manager or a soil manager? Many cattlemen view livestock as their base crop through the sale of beef. Others view grass as their base crop. While management of breeding, vaccinations and marketing is important, all livestock need forage to produce pounds of beef. This forage is, in turn, heavily dependent on the health of the soil. Consequently, the management of soil health, specifically the biological components, is of vital importance to producers as it is the dynamic resource that supports plant life.

As managers, we often focus on managing the aboveground production in our pastures while paying little attention to what happens belowground. Microbial action in the soil builds natural fertility that increases plant production. Sound grazing management is the art of capturing sunlight and water while recycling the aboveground parts of the plant through livestock. The animal eats a portion of the plant which is then deposited as urine and manure. The remainder of the plant is trampled into the ground to begin decomposition into the soil. This feeds the soil microbes that in return feed the plant. The manure, plant organic matter and carbon dioxide captured from the air by the plant combine to build a carbon bank in the soil that holds water and nutrients for plant use.

Building soil health can be accomplished by employing five principles.

1. **Armor the soil**
   Bare ground is enemy number one and is detrimental because increased soil temperatures caused by the lack of soil cover can decrease and even kill biological activity. Once soil temperatures reach 140 degrees Fahrenheit, soil bacteria die. The soil must be covered to minimize bare ground; this is accomplished by forage and crop residue.

   **Minimize soil disturbance**
   Physical soil disturbance such as plowing and overgrazing can result...
in bare ground and compacted soils that disrupt soil microbial activity. Incorporating reduced tillage methods in cropping systems and proper grazing management in pastures will keep soil covered.

**Increase plant diversity**
Increasing plant diversity above-ground allows for a more diverse underground community. Specific soil microbes require specific plant types. The more diverse the microbial population in the soil, the better the forage will respond, due to increased biological activity.

**Integrate livestock grazing**
Grasses evolved under grazing pressure. Soil and plant health is improved by grazing, which recycles nutrients through improved manure distribution, reduces plant selectivity and increases plant diversity. The most important factor in grazing systems is to allow adequate rest for the plant to recover before being grazed again.

The primary goal of a rancher should be to improve soil health. As more grass is grown, more organic matter is available to recycle into the soil for feeding microbes. This captures and holds more water and nutrients, growing more and larger plants that can gather more sunlight to power the process. This constant recycling is dependent on the animal and your knowledge of managing grass growth.

The health of our landscapes and soil health are interdependent. Our land’s condition is characterized by the functioning of both the soil and the plant communities. Following these five principles will allow the site production, health of the soil, and mineral and water cycles to greatly improve, resulting in an increase of forage production and animal production.