

Winter Bale Grazing

These two photos may not look particularly appealing to you. These scenes are very appealing however, if you happen to be a soil building microorganism or a farmer.

Winter bale grazing is one of many techniques that farmers have developed recently to rebuild soil. Such practices go under the headings of Sustainable Farming or Regenerative Agriculture.

Up until a decade or two ago, soil scientists and farmers believed that building topsoil took hundreds if not thousands of years. Farmers have learned that soils can be rapidly restored. We now know that soil building, just like many other things in the natural world is all about habitat. In this case, habitat for soil generating organisms. Most of those organisms are microorganisms. Bacteria, fungi, protozoa, algae and more. There are larger soil building creatures too, like ants, spiders, slugs, worms, nematodes, bugs of countless types, even snakes and rodents.

Civilizations rise and fall based on the productivity of their soils. We seldom give that much thought but the examples in history and in pre-history are incredibly consistent. We have known for a long time that we are depleting our soils. Good estimates are that we have reduced the natural fertility of our American soils by 40% in just a couple of centuries.

The basic mechanisms for soil depletion are erosion and loss of organic material. Erosion is mechanical and can be by water or wind. It is quite easy to see examples of that erosion in fields when they are opened (plowed) for planting. Billions of tons of that eroded material end in the Gulf of Mexico. The even greater form of soil depletion is the loss of organic material caused by continuous crop farming.

The use of chemical fertilizers, insecticides, herbicides, and fungicides destroy the biological life of the soil. Once that occurs, the soils are in continuous decline. The only variable factor is how fast those soils deteriorate.

Rich soils are high in organic material, and they have a fully active biological community. Highly productive soils may have between 4 and 10% organic material.

The organic material in soil is in two forms. Undecomposed and decomposed. Undecomposed roots are the normal seasonal outcome of a vigorous above ground plant community. When plants are grazed, or die back for the winter, some of their roots die off. That is normal and good. Decomposed material is material that has been consumed and excreted by soil organisms. In the decomposition process, those organisms convert the organic material and other soil particles (minerals) into forms that future plants can thrive on. The excrement of these microorganisms is humus.

Humus is very stable in the soil and can remain available for centuries. Humus makes soils dark or black. Using natural techniques, the best farmers can increase organic material from say 2% to 6% in a few years.

That is amazing and extremely important.

Winter bale grazing is one way to jump start this whole soil building process.

For winter bale grazing, I set bales on the poorest areas in a paddock.

The bison eat everything that is palatable in each bale. They will leave a moist, thick mat of hay stems, manure, and urine. It looks messy, I know.

That mat will contain thousands of seeds from the hay. Those seeds will germinate gradually over the next two years.

The plants that are buried under the mat will restart vigorously in the spring. That may be counterintuitive, but the foot traffic does little harm. Most plants, and especially good grazing plants are adapted for that traffic. The positive effect of the added nutrients will give the plants a great boost. In addition, as early as possible in the spring, we will add thousands more seeds. Those seeds will include many varieties of grasses, legumes, and forbs. Forbs are flowering or broad-leaved plants.

We will do the interseeding with a disc planter that will cut narrow slits in the mat where the seeds can germinate.

Legumes are particularly beneficial. The bacteria that thrive on legume roots convert the nitrogen from air into a form usable to plants. (No chemical nitrogen required.) The legumes fertilize the grasses.

For reasons we do not completely understand it is important to use the highest variety of plants possible. Twenty or more types of grasses, legumes and forbs is typical.

Each plant type provides habitat for its own varieties of microbes.

Current thinking is that these countless species of soil organisms exist in symbiotic relationships. Some types are catalysts for others.

In any case, the results are wonderful.

The ridge in the first photo is an ancient sand dune. The soil has been extremely poor for the almost fifty years that I have been here. I have kept it covered with a thin protective grass cover for the past 25 years. It was improving but at the thousand-year rate. Now, with a winter or two of bale grazing, I can greatly improve its fertility and productivity. It will change from a thin cover of quack grass and sandburs to a luscious sward.

I know because I have been using this technique for five years. Each winter I identify a different area to target.

The second photo includes some of the same paddock but also shows the bale placement in adjacent paddocks. The paddocks to the right are predominately native grass. I allowed the grass to go to seed so the bison could plant those seeds with their hooves. Notice that the big round bales are strategically placed in the poorest areas. In a few weeks, those areas will be as matted, and manure covered as the ridge. Just beautiful.

This technique works well with horses and cattle also. With cattle, it is necessary to use a bale ring. If the bales are open as in the photo, cattle will lay on them. Cattle will not eat the hay after that.

Both bison and horses are conservative eaters. They will pick through a bale or a hay pile until they have consumed all that is edible.

The woods in the background were once oak savanna but are now overgrown. Savanna, which is an open grassy wood, is one of the most productive and durable landscapes. We are working to restore our eighty acres of overgrown savanna but that is another story. Best regards. Tom



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