Three Principles to Graze By

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My consulting partners and I teach a form of grazing that we call Adaptive Grazing. Adaptive grazing, also called Flex Grazing, is first and foremost not a rigid system or even a routine. It allows the practitioner to address multiple goals and objectives, and to adjust to changing conditions. The benefits derived from adaptive grazing far exceed those of any other grazing practice I have experienced. The practice of adaptive grazing can be summarized in three basic principles that we employ.

Before I dive into the three principles, let's look at the basic tenets of adaptive grazing. First, adaptive grazing is goal oriented. It allows us to work with multiple goals simultaneously. For example, we can target animal performance, soil building, development of plant species diversity, and soil aggregation, all at the same time. Second, it is dependent on stock density and not stocking rate. Pounds of animals per acre is the focal point. Third, management and flexibility are key to the success of adaptive grazing. We must manage and adjust to changing conditions using keen observation. Fourth, it is predicated on frequent movement and frequent rest. We are to move rapidly through each paddock and allow plenty of rest for each previously grazed paddock. Fifth, adaptive grazing targets complete plant root system recovery between each grazing. This is very important in the soil and microbe building process. Finally, it is highly reliant on temporary fencing technology. Luckily, today we have excellent electric fencing technology that allows effective grazing practices.

To be highly successful at adaptive grazing, there are three principles that we live by. They are: 1) The Principle of Compounding, 2) The Principle of Diversity, and 3) The Principle of Disruption. Follow these three principles and you will be a successful grazer. We will discuss these principles in a three article series, starting with the Principle of Compounding.

Principle of Compounding

I often call this principle, the Principle of Compounding & Cascading Effects. Why? Because there is nothing we do in agriculture --- or in life, mind you --- that has a singular effect. As a matter of fact, most of the things we do in agriculture have an exponential effect, we often simply don't realize it.

Unfortunately, we have been trained to think "singular". One example of that is we have been taught that if we see a weed in our pastures, we are to take an herbicide, spray the weed, and kill the weed. In our thought process, we think, "see weed, spray weed, kill weed". Job done. Right? Not exactly. Rather we have created a whole series of compounding and cascading effects that will either be positive or negative. You see, compounding effects are never neutral, they are either always negative or positive. We determine which through our management. They impact everything from the soil and soil organisms, to plants, insects, pollinators, birds, wildlife, livestock, water quality, and eventually us.

So, what really happened when we sprayed for weeds? First, we never get rid of "weeds" by using an herbicide. We simply set them back for a while. Otherwise, we would only have to spray for weeds once and never again. They are always there in the latent seed bank. Second, the herbicide may have "set back" the undesirable weed, but it also set back numerous other plant species that have highly nutritive properties for our livestock. Third, we have damaged some of our soil microbiology. No way around this. There are certain microbial species that are associated with certain plants, and when we

set those plants back, we also set back those specific microbial species. Fourth, we have decreased our plant species diversity and complexity because we have set back certain plant species in the mix. With most herbicides, we set back our forbs and legumes. Forbs (or what most people call weeds) are actually loaded with secondary and tertiary nutritive compounds that provide additional nutritional benefits, have significant medicinal qualities, and even contain plant compounds that have natural deworming properties.

These first four compounding effects cause a cascade of other negative effects that we often do not associate with our "singular" practice. The other cascading effects include loss of plant root mass and depth, loss of soil carbon, loss of soil aggregate and water infiltration, reduced animal performance and health, a decrease in soil microbial species and biomass, decrease in soil macro-organism populations, etc. So, we just went from a "singular" act of spraying weeds to triggering a whole series of compounding and cascading effects that create negative consequences that last for years or even generations.

Likewise, poor grazing practices cause a series of negative compounding and cascading effects that last for years and increase our reliance on external inputs, reduce our true carrying capacity potential, and rob us of profits. These include practices such as set stock grazing, continuous grazing, slow rotations, and even high stock density grazing practices where the same methods are employed each day, without any significant alterations. Negative consequences that we routinely observe include seriously compacted soil, poor soil aggregate layer, significantly reduced soil water infiltration rates, reduced plant species diversity and complexity (trend towards a monoculture or near monoculture), poor soil microbial population diversity and biomass, increased reliance on fertilizers, herbicides, and other chemicals, increased reliance on supplementation, increased costs of production, and decreased net profits.

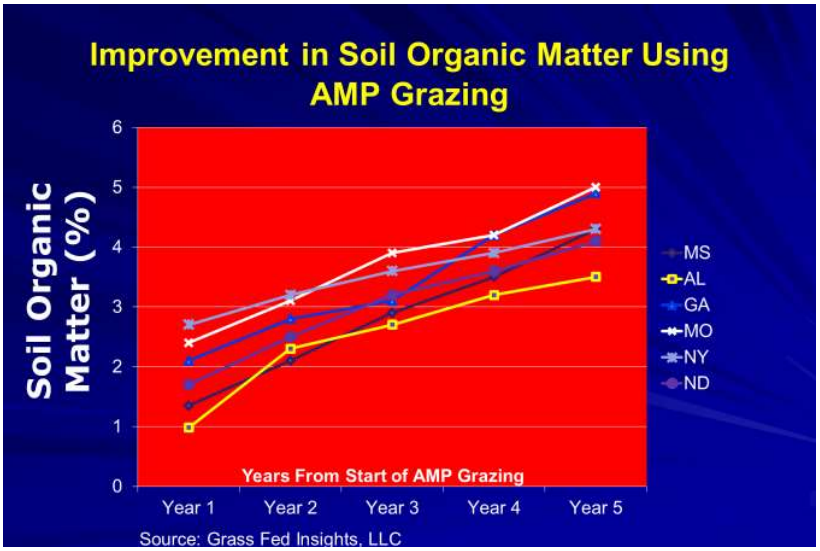
Positive Compounding Benefits

However, the implementation of practices that encourage positive compounding and cascading effects produces a plethora of favorable impacts. These include increased soil health parameters, improved plant species diversity and complexity, enhanced animal performance, better water quality, reduced inputs and costs, increased net profits, and far better quality of life.

Positive compounding is a result of sound adaptive grazing application and implementation. We will discuss specifics of adaptive grazing implementation at the end of our series, tying in all three principles stated earlier.

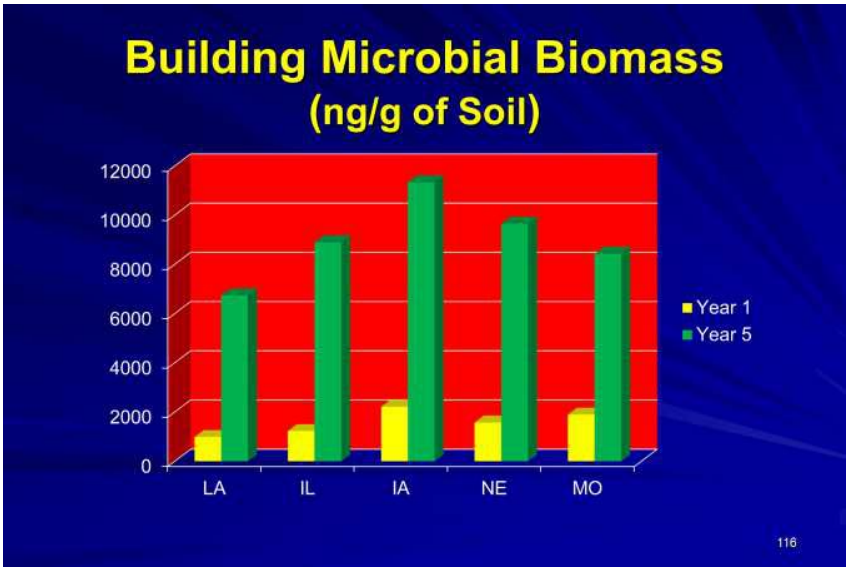
For now, we will look at some of the benefits derived from adaptive grazing that illustrate the Principle of Compounding. Adaptive grazing allows us to more quickly build new soil organic matter (OM). Figure 1 shows how rapidly we can build new OM by employing adaptive grazing principles. Farms from 5 different states are shown with increases in soil OM from Year 1 to Year 5, as a result of transitioning from more traditional grazing methods to adaptive grazing. This new soil organic matter also resulted in greater degrees of soil aggregation, better water infiltration and retention, re-establishment of the plant-microbe pathway through a more viable liquid carbon bridge, relief of soil compaction, reduction in erosion, and a host of other positive benefits.

Figure 1. Adaptive Grazing (AMP) Impacts on Soil Organic Matter.



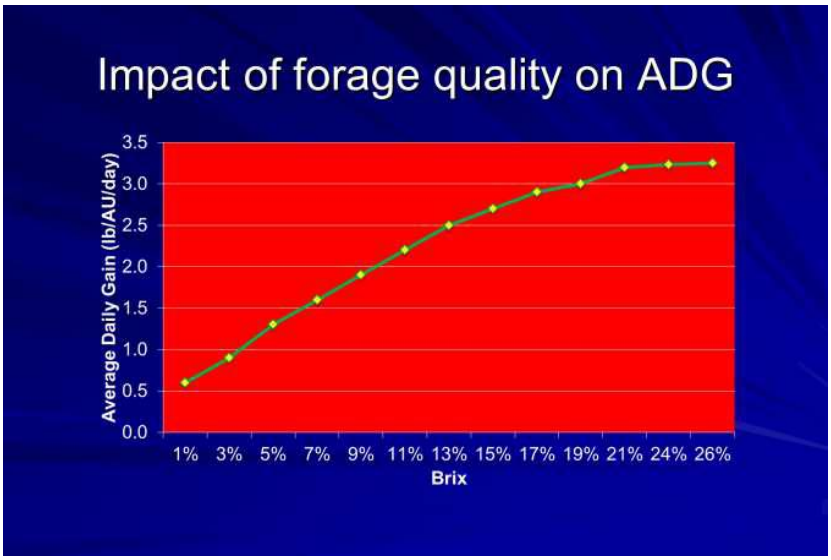
To further add to the compounding effects, we saw significant increases in the total soil microbial biomass or population (Figure 2). In case studies of five different farms in five states, we saw highly significant increases in soil microbial biomass (ng/g of soil) within a five year time period. In all cases, the microbial biomass went from less than 2000 ng/g to more than 6000 ng/g in all cases. One even eclipsed 10,000 ng/g within a five year period. As we increase soil microbial population, we see compounding benefits that include increased soil aggregation due to the soil "glues" produced by mycorrhizal fungi and other microbial species, increased plant root depth and mass, enhanced mineral solubilization and plant uptake, reduced soil compaction, etc.

Figure 2. Soil Microbial Biomass Increases Resulting From Adaptive Grazing.



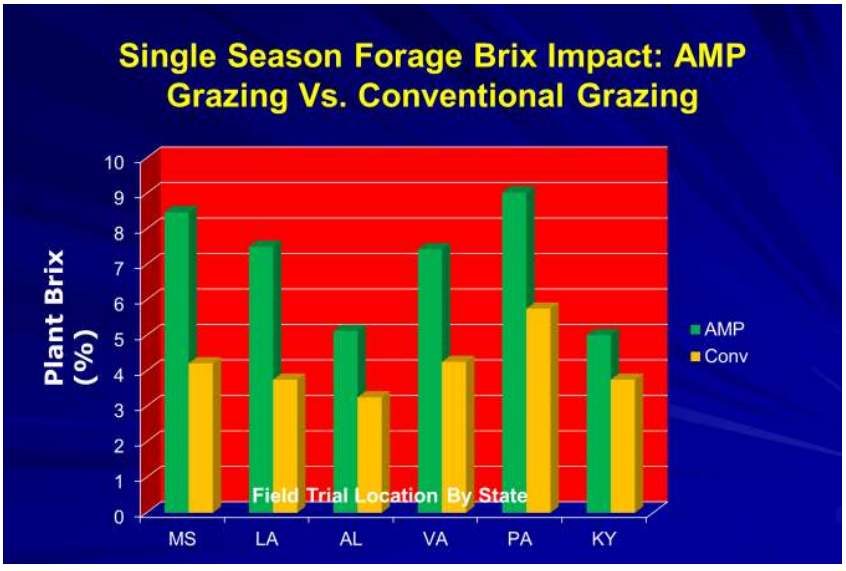
As we improve soil microbial population and soil OM, we also see a requisite increase in plant nutritive value and quality, as measured by plant brix. In Figure 3, improvements in plant brix values result in significant improvements in animal average daily gain (ADG). In the majority of conventionally managed pastures, plant brix ranges from 2-5%, with short seasonal peaks at 6-10%. From the chart below, it is evident that low brix values result in lower gain performance. As plant brix increases, gains improve at a fairly linear pace until we get above 20% brix.

Figure 3. Impact of Increased Plant Brix Value on Animal ADG.



Finally, changing grazing practices from conventional methods (set-stock, continuous) to adaptive methods -- where cattle are moved daily or even multiple times a day under higher stock densities --- results in increased plant brix values, even within the first season of adaptive grazing implementation. In side-by-side comparisons on farms in six different states, adaptive grazing significantly increased plant brix values within a singular grazing season (Figure 4).

Figure 4. Impact of Adaptive Grazing on Plant Brix.



Summary

Everything we do creates or causes either negative or positive compounding effects. Understanding this is key to being able to make sound management practice decisions. It should be noted that keen observation is critical to making the correct decisions. Positive compounding effects are driven by building soil organic matter, soil microbial populations, increasing the soil aggregate layer, enhancing plant species diversity, and using stock density impact to our benefit. These impacts tend to be exponential in nature rather than singular or linear. Create positive compounding effects and you will produce benefits that are multi-year and even multi-generational in nature.

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