Improving Pasture Productivity through Forage Management

David Otte
Green Valley Seed
Kahoka, Missouri
dlotte@centurytel.net

I must confess that putting these thoughts and ideas onto paper is more difficult then just opening my mouth and letting those same thoughts roll out. When I began rotational grazing in 1992, I realized there was a lot I didn't know. Today I realize that there is even more I don't know. My management decisions reflect the thought process that I have developed through reading, attending conferences, participating in pasture walks, and trial and error. Without a doubt, the most valuable tool in my possession is the knowledge that I have acquired. Limited time and resources, higher land prices, lower cattle prices, all of these influence the decisions I make. As land prices increase, my carrying capacities must increase and my cost per head must decrease. It will be tough to remain in the cattle business at the ratio of 1 cow/calf pair for every 3 acres; how much nicer it would be to achieve 1 cow/calf pair for every 1.5 acre. So let's take a look at various aspects that can perhaps move us in this direction.

#1 Evaluate your current management style. Here are some choices.

Continuous grazing	Move the cattle onto the pasture, leave them until they run out of forage. Months.
Rotational grazing	Move the cattle onto the pasture, leave them until a set amount of days have passed, then move them on. Weeks.
Managed grazing	Move the cattle onto pasture, let the forage dictate when to move the cows. 12 hours up to 5 days.
Low and Lush	The cattle go on the grass when it's at the peak of nutrition and are removed before they hinder new growth. 12 to 24 hrs.
Mob grazing	Large, or even massive, amounts of cattle being moved into an area for brief periods of time. 2 to 4 times a day.

No matter what your management style, take the time and ask yourself a couple of things.

Why am I doing it this way?

- This is the way we've always done it.
- It fits my lifestyle.
- I'm too old to change.
- They tell me it's the best way.
- I believe it's the best way.

If I want to change, what's keeping me from it?

- Knowledge
- Time
- Finances
- Stubbornness

I encourage you to evaluate where your current management style will place you in the next five to ten years. If you decide to change, you need to remember your forages. Your management style will dictate what forages you'll have the most success with. Each species of forage has its own characteristics. Your management style will greatly influence the development and longevity of each plant.

#2 Evaluate the Existing Forages

If you've been 5 years or more with a certain management style, then your current forages probably reflect it. The plants that can survive under your management style are the ones that are still there or are moving in. That can be good or bad. Now, if you would, ask yourself these questions:

Am I pleased with my forage type?

- Does it produce the grazing days I want?
- Am I pleased with the seasonal productivity?
- Does it supply the nutrition my animals need?

Do I have an adequate stand?

- Are there too many weeds?
- Are unwanted types moving in?

Can I maintain it?

If you like what you've got then don't mess with it, but if not ----

#3 Improving Your Forage Mix

If you have determined that your forages could be improved, then let's look at some methods to use. One is to interseed species into existing pastures by drilling or overseeding; that will enhance your pastures and be economically advantageous. Remember to harvest the older established growth periodically to allow sunlight to reach the new seedlings, they need it.

Legumes---**$$ Nitrogen $$** (Watch your pH levels and inoculate if needed)
Clovers---- Red---- 1-3 years ---75# nitrogen per acre
White---2-8 years ---75# to 150# nitrogen per acre
Alfalfas---Grazing or Hay types---6+ years-85# nitrogen per acre
Birdsfoot trefoil

Grasses----interseed different types in order to achieve more productivity and/or higher nutritional value.
Ryegrass-- Annuals, Italians, Intermediates, Perennials
work well introduced into thin existing stands
need three things to survive—Fertility, Water, Rest
Fescue-----Novel endophyte or endophyte free Dilution is the solution.
Orchardgrass---not as aggressive but works

Herbs---short lived perennials that bring palatability and nutritional aspects to the grazing mix.
Chicory---drought tolerant and high in mineral content
Plantain---very palatable and high in mineral content

Another way is to start all over with a new seeding. You need to think about how you're going to do it. Are you going to no-till or prepare a seed bed, drill or broadcast? There are advantages and disadvantages to each. 7 inch rows leave room for weeds to establish, solid stands take more ground preparation, spinning it on with fertilizer can leave streaks, blowing it on with fertilizer (nice) means hiring it done (it's still nice). Drilling means good seed placement, broadcasting is faster but not as accurate. Do you roll it in or harrow it? However you're going to get the seed there, the soil has to be firm. Fluffy and loose soil is not a good environment for germination or growth. We lose too much moisture and the seeds go too deep. We also have less problems with fall seedings than we do with spring seedings. However you do it, remember to graze your new seeding as soon as possible. That's when you can pull on the plant and it breaks instead of pulling out of the ground. This practice will stimulate the plant into stooling and thus thicken your stand. Don't be afraid to work your new seeding; that's what you put it out there for.

Understand the plants that you want to establish. What percent of the stand do you want them to be? What time of year do you want them available? When do they mature? What are their nutritional requirements? Will they have the nutritional value your animals need? How easy are they to establish? How long will they last? Answering these questions will help determine how the plants will fit with you and each other. Once you achieve the mixture that you desire, here are some management practices that will help keep the balance established.

#4 Management Thoughts

Grazing height—Most often you should start grazing at the height of 8 inches. Of course if you start the first paddock at 8 inches then the last paddock will be way past that point when the livestock rotates to it. That's not all bad. I think it's a good idea at some point during the year to let each paddock get a mature growth in order to push the root system out fully. Alternating your starting paddock and rotation year to year also keeps the same paddock from getting nailed the same way each year. Rotation speed also helps to control the initial flush. Remember: when it grows fast—move fast; when it grows slow—move slow.

Residual height---between 1½ to 3½ inches. Remember that after a few passes at the same height a stubble will be established that the cattle will not want to go beyond. At 3½ inches you're giving up some forage, at 1½ inches you don't have much leaf area left for photosynthesis.

Grazing time---the most important aspect to keep in mind is that most grasses will recover enough within 6 days (some species and conditions, 3 days or less) that the animal can regraze the same area. By limiting grazing time to less than 6 days you do not allow a double take on the forage which then allows you much quicker regrowth from a stronger plant. The less amount of time spent on a given area, the less damage to the forage through hoof, grazing, or manure there will be.

Rest for Regrowth---Once you've grazed the plant off, you **must** allow time for the regrowth period. The amount of time needed will vary with conditions and the species present. In the spring it could be as short as 14 days and in the summer as long as 40 days. This is where your management gets put to the test. Balancing the need for forage and the need for rest is difficult. If you graze too soon you'll weaken the plant and **slow growth**, wait too long and you will allow the plant to go reproductive, lose nutritional value, and **slow growth**. Different methods come to mind that can help manage this situation: 1) Using some paddocks for hay production and putting them into the grazing rotation later, or 2) grazing to 4 inches early in the spring, followed by grazing tighter in July and August (stockpile for summer use), 3) Using supplemental feeding to help slow the rotation, and 4) using temporary fencing to control access and movement. All of these are ways to utilize the forage in the spring and still have forage for summer.

Fertilization---When it comes to fertilizer we all realize that the cost is high. Take soil tests. There's no need to spend money you don't need to, but there's also no need to try to grow something without the necessary ingredients. In pasture situations the animals will replace 75% to 80% of nutrients used through manure and urine, but baling up hay removes nutrients that are not coming back. Apply P and K as needed, and as far as nitrogen goes, we can grow a lot of what we need. Please remember, other than the cost, there's nothing wrong with fertilizer if you use it wisely. **Do not** fertilize and then bush hog it off later. Consider fall applications instead of spring, more fall pasture plus healthier plants going into winter is better than excessive growth in the spring that you don't use. On heavily grazed pastures, split applications of nitrogen allow you a more consistent forage production all season long. Thirty days before you need the extra growth, apply your nitrogen. One pound of N can produce 15 lbs. of forage.

Summer production---My first choice is to have permanent pastures that do the job. Reed canarygrass does well, fescue gives decent growth, whereas orchardgrass does just so/so and bromegrass seems to fade. Alfalfa does very good and red clover does well. White clovers can take the heat but do require water, and trefoil slows down. Native warm season grasses do very well but are limited to a narrower usage window. No matter which forage you have, if you graze too short, it will take a lot of moisture and time to recover. Leave some leaf area. This will help slow down runoff when it does rain and allow for better photosynthesis.

My second choice would be the summer annuals. Summer annuals are great forage producers but do require forethought, money, labor, and space. They are not cheap: $30+ for nitrogen, $20 for P&K, $10 for ground preparation, $8 for drill rental, and seed at $15 to $35 per acre. You should expect 5 to 10 ton per acre, maybe double that, so it is definitely cheaper than buying hay. Probably the hardest decision is choosing the product that will fill your needs. Do you want to graze only, put up dry hay, silage, haylage, or stockpile growth for winter? How important is quality and tonnage? Every product has its pros and cons. When you study the list of products available sometimes it's wise to eliminate the products you don't want and then chose from the remaining.

Water---is necessary. **Location, Location, Location**. Can affect forage persistence and quality. The forage within 800 feet of water, if managed, will be your best.

Shade---affects manure distribution, which affects forage growth.

At the beginning I stated that I have a goal of 1 cow/calf pair per 1.5 grazing acres. That may not seem like much to some of you or unrealistic to others. It's my goal for now. Year round grazing with low inputs will hopefully make this a profitable situation. All that I have written or talked about is information to consider but not necessarily to practice. It's your farm; you have to make the decisions. I encourage you to never stop gathering information; you never know when you might use it.