Forages, Grazing Management, and Supplementation – Making it Work

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Focus on Efficiency

As the US beef industry works toward expansion, revisiting the goal of individual herd improvement begins to shine again in the spotlight. Cattle prices have decreased from an all-time high and projections indicate that price premiums will not be as high as recent years in the months ahead. Improving cow herd efficiency and careful management of input costs will become increasingly important to maintain profitability.

There are several measures of efficiency in the cow herd. Perhaps the most common one that comes to mind is the pounds of calf weaned per pound of cow exposed to breeding. We often hear the saying that "you can't manage what you don't measure" when it comes to making the operation more efficient from a reproductive standpoint. Measures of reproductive and feed efficiency are tangible factors that we can track over time to improve efficiency. Maintaining cow herd nutrition can make up over 50% of the total input costs in the operation, leading to the question of how can we improve efficiency with our forage and feed resources. The following provides some insight on factors that can be tracked to increase the efficiency of forage use in our production systems:

Forages and Grazing Management

Improving Productivity – Amount of Quality Forage Production per Unit Land Area

Forage production in Florida is largely dominated by perennial warm-season grasses such as bahiagrass (*Paspalum notatum*), bermudagrass (*Cynodon dactylon*), and to a smaller extent, limpograss (*Hemarthria altissima*). Producing an adequate quantity of high-quality forage to meet animal demand requires the ability to track the following:

Fertility

Burton et al. (1997) evaluated the optimum fertilization levels for Pensacola bahiagrass and observed a linear response in forage production with increasing rates of nitrogen application (50 to 400 lb N/acre). Within this range of responses, the authors noted that at low levels of N application, P and K removal within the system is limited. However, as N application levels increase to 200 lb N/acre, soil reserves of K may begin to be depleted when N-P-K are applied in a 4-2-1 ratio. Depletion of soil reserves may lead to decreased stand persistence over time and overall low productivity of bahiagrass. Certainly an operator must determine what is an economical level of N-P-K application without sacrificing total production system sustainability. In grazing systems, low rates of N application do not cause the removal of much P and K from the system while still garnering a response in yield and productivity. The return of nutrients to the soil profile through manure mineralization and urine decrease the need for yearly P and K application in these systems. In a two year grazing evaluation, Vendramini et al. (2013) observed that at an N fertilization rate of 55 lb N/acre/year, forage production and persistence of Argentine and Tifton 9 bahiagrass was maintained when grazed every 4 wk. These data illustrate that low levels of N application in well-managed grazing systems are a worthwhile investment to improve forage production efficiency. Dual-purpose grazing and hay production systems (higher input) may need to be evaluated more closely on an annual basis to determine if soil P and K levels are adequate to maintain good stand persistence.

Using Pasture Stand Health Indicators

Evaluating overall pasture health is critical to ensuring that forage production potential can be achieved within a given management system. Conducting a visual assessment of pasture health on an annual basis

is necessary to understand where resources can best be allocated to improve pasture productivity. Estimating the relative percentage ground cover of desirable forage species in the stand compared to weeds and bare ground provides a starting point for making management decisions. Frequency of occurrence in the pasture also provides an indicator of the relative distribution of these species, and can help identify the total area affected by undesirable species or areas of overuse. When desirable forage species are not at their best level of productivity, this creates the opportunity for weeds or lower quality forage plants to move into the stand, decreasing production efficiency. When reviewing pasture ratings for the first time, start with soil testing results as an initial step in determining the cause for changes in stand composition. Second, consider other causative factors such as weather, insect or disease pressure, and grazing management (i.e. Overgrazing) and what changes can be made to improve overall stand productivity.

Variety Selection

One step to improving overall forage production potential is to carefully select improved varieties that will meet your production goals. When considering pasture renovation, starting with the right forage species and variety for your operation is critical. Pensacola bahiagrass is the most widely used warm-season perennial grass in FL with well over 2.5 million acres in commercial use as pastures and hayfields (Newman, 2014). It is widely known for its persistence under intensive grazing management. Since its introduction into the US in the 1920s, forage breeding programs in the Southeast have actively developed and released new varieties of bahiagrass that further improve on its resilience in our climatic area. Tifton 9 and TifQuick were both released in the 1980s as varieties with increased forage yield, particularly in the early spring and late fall, compared to Pensacola. Argentine bahiagrass is a more upright growing ecotype known for its high production potential, ability to spread rapidly, and relative cold tolerance compared to other tetraploid types. UF Riata is a more recent release that provides greater early- and late-season growth compared to Pensacola, and was developed for its improved cold tolerance and disease resistance. Limpograss breeding efforts have also released two new varieties since 2014 – KenHy and GibTuck. The release of planting material to producers is currently underway, and relative availability of plant material is increasing. These new lines have superior production characteristics including yield, nutritive value, and good persistence under grazing (Wallau et al., 2015) that may further improve forage production efficiency in FL.

Improving Grazing Season Length – More Grazing Days per Year, Less Hay Feeding Days

Another measure of forage production efficiency is the total number of grazing days per year in the operation. Increasing the number of grazing days per year decreases reliance on stored forage reserves, which can drive up the total cost of production in the operation, especially during the winter months. Indicators of efficient grazing management may include:

Stocking Rate – Number of Animals per Unit Land Area

Stocking rate is one of the most dynamic factors influencing grazing management strategies because it accounts for 1) forage production potential, 2) animal demand and utilization, and 3) time on pasture. Mackowiak et al. (2013) suggested that when bahiagrass pastures are fertilized with low levels of N (50 to 60 lb N/acre), a stocking rate of 3 acres per cow is necessary. However, if higher stocking rates are used, then greater forage production may be needed to support animal demand. Aguiar et al. (2015) noted that stockpiled limpograss in South Florida can be grazed from early October through December at a stocking rate of 1.3 cow-calf pairs/acre when forage production is between 3,500 and 4,000 lb dry matter per acre. These examples illustrate that grazing efficiency may be improved by periodically assessing stocking rate in the operation, and making necessary adjustments based on forage availability and animal demand.

Identify Alternatives – Grazing Days per Unit Land Area

Practices such as stockpiling or overseeding warm-season grass pastures may increase the forage production potential per unit land area, and provide additional grazing days per year. Stockpiling is the

practice of allowing forage to accumulate for a time of later use, typically during the fall for subsequent grazing in the winter months. In South Florida, limpograss is a desirable forage for stockpiling because of its greater herbage production and digestibility during the fall time period compared to bahiagrass and bermudagrass. A recent study in Gainesville showed that GibTuck and KenHy limpograss had greater herbage accumulation and digestibility than Floralta when stockpiled for a period of 8, 12, or 16 weeks (Wallau et al., 2015). Crude protein concentration decreased more rapidly, and indicates that stockpiled limpograss may require additional CP supplementation to adequately maintain animal requirements during this time period. Stockpiled limpograss may provide additional forage for grazing from December through March in South Florida. In North Florida, stockpiled bermudagrass or bahiagrass may be an option for early winter grazing. Research conducted in south Alabama demonstrated the feasibility of using stockpiled Tifton 85 bermudagrass for maintaining lactating beef cattle during the winter months when grazed from November through January (McNamee, 2014). Stockpiled bahiagrass may produce lower forage mass when accumulated for late fall-early winter grazing, and decline in quality is more rapid compared to bermudagrass. Evers et al. 2004 suggested that bermudagrass may be more suited for stockpiling because of these characteristics.

Strategic Supplementation – Optimizing Supplementation to Meet Known Deficiencies

Providing supplemental feeds to beef cattle is often necessary to maintain or increase animal production during certain times of the year. Strategic supplementation of known nutrient deficiencies can improve production efficiency in the herd by:

1) Determining the nutrient requirements of the animals in your herd based on their average weight and stage of production
2) Estimating the amount of nutrients animals will receive from the forage base
3) Comparing #1) and #2) to see if a deficiency exists, and identify supplemental nutrients needed
4) Assessing supplemental nutrients on a cost per pound of nutrient basis.

Understanding changing forage quality throughout the management season enables producers to more accurately assess if and when supplementation strategies are needed. When supplementing grazed forages, having background information on expected changes in forage nutritive value may help create supplementation strategies that change along with animal requirements throughout the season. The use of this approach as opposed to a static or constant supplementation rate may increase animal production efficiency through better (Sechler, 2016).

Implications and Conclusions

Forages represent the main source of nutrition in beef cattle herds in the Southeast. Because of their importance in maintaining herd productivity, measuring plant-animal efficiency can help improve overall herd sustainability. With changing cattle market prices, understanding indicators to improve forage utilization, quality, and supplementation can help provide better management of input costs in southeastern livestock operations.

And remember…You can't manage what you don't measure!

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