

MAXIMIZING STOCKER GAINS ON PASTURES

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Stocker enterprises by definition utilize pasture forages to add weight to light weight feeder cattle. These operations add value to calves by assimilating small groups of calves and combining them into larger uniform packages. Stocker operators also enhance quality through livestock husbandry practices that “upgrade” feeders which could include castrating bulls, dehorning, improving immunity and other attributes. In an effort to optimize profit margins, stocker operators must manage feeders to ensure high rates of gain while finding a balance in stocking rates that provide adequate gains per acre.

Gender has a known impact on performance. Growth is highest for bulls, followed by steers and then heifers. Steers have been shown to have 0.3 to 0.4 lb or about 15-20% per day greater daily gains compared to heifers (Brazle & Higgins, 1999). This decreased performance results in lower efficiency of gain. However, producers account for this reduced efficiency through pricing with heifers being discounted to steers and bulls. In calculating the gain per acre, steers will be greater than heifers. Bulls that have been recently castrated also have near zero gains following the procedure. This loss of gain and increased risk to BRD from the added stress must be factored into the bid price. If one is seeking maximal gain per acre, it is best achieved with steers. This is not to say that maximal profit will come from steers.

Continuing the discussion with the initial purchase, previous management can influence subsequent performance. Research has shown that the degree of finish or fleshiness can negatively impact weight gains of feeders turned out to grass (Brazle & Higgins, 1999). This is primarily observed in heavier weight feeders (500-700 lbs). This degree of flesh is correlated with the plane of nutrition that was supplied to feeders prior to purchase. Previous rate of gain negatively impacts gain of stockers going to pasture. Greater rates of gain over the winter period have been shown to result in lower pasture gains (Lewis et al., 1990). Heavier placement weights on grass have lower rates of gain than lighter calves (Ackerman et al., 2001). As feeders get heavier, the tissue mass to support increases driving nutritional requirements up for maintenance. This increased maintenance nutritional need must be offset by either increased dry matter intakes or by increasing the quality of forage (i.e. more nutrient dense and / or greater digestibility). The latter rarely occurs as the forage base is a constant. Buying decisions can directly impact the rates of gain of feeders on pasture.

One of the largest factors that impact the performance of feeders managed in a stocker operation is health. Sick calves simply do not perform as well as healthy calves. When looking at spring placed feeders, feeders that were sick for eight days or longer resulted in 0.4 lb/d lower daily gains compared to healthy feeders (Pinchak et al., 2004). In addition, the previous work illustrated that the timing of placement and subsequent month marketed influenced the overall rate of gain. July marketed feeders had about

0.5-0.6 lb/d higher rates of gain compared to August marketed feeders. This is likely attributed to two factors, lower quality of forages to support gains as cool-season forages mature and increased heat stress. High risk feeders (light weight, unweaned and transported a long distance) are often treated upon arrival with an injectable antibiotic labeled for prevention of bovine respiratory disease (BRD) which is commonly referred to as metaphylaxis. Metaphylactic treatment can curb the degree of morbidity and control the spread of BRD. It is critical that stocker managers understand the classes of antibiotics and how to best select the correct treatment regime. Cattle managers should consult with a veterinarian to develop a treatment protocol for their operation.

Technology is available to increase rate of gain of feeders on grass. The use of growth promoting implants has routinely shown positive returns in relation to the dollar invested in the product used through increased weight gains. A summary of four trials involving fescue-based pastures covering KY, MO, NC, and TN revealed that feeders implanted with either Ralgro or Revalor-G had greater daily gains compared to non-implanted calves (<https://www.depts.ttu.edu/afs/implantdb/dbhome/p/br.asp>). The increased daily gain resulted in an approximate return of \$15-\$20 per dollar invested through increased weight gain. Feed additives can also enhance growth and efficiency. Ionophores (i.e. Rumensin, Bovatec) are a feed-grade antibiotic that has an impact on the rumen and large intestinal microflora. Ionophores in the rumen shift fermentation towards greater propionic acid and reduced methane improving fermentation efficiency. In the lower GIT, ionophores helps prevent coccidiosis. Early research with ionophores illustrated a 0.2 lb/d increase in daily gain. Controlling internal / external parasites provided an additional 0.2 lb/d gain or 30 more pounds after a 149 day grazing season (Powell et al, 2008). Thus, technology can be employed to enhance performance.

Managing nutrition can also impact the gain of grazing cattle. Nutritional management revolves around the forage component. In an effort to maintain the desired performance, forages must be present in adequate amounts and quality. However, not all the nutrients are supplied at levels to meet the nutritional requirements of growing cattle from the forage alone. Several minerals are frequently deficient in forages. Both macro- and micro-minerals can be deficient. Sodium generally is supplied at about 60-70% of the calves needs by the forage and requires supplementation. Salt is used as a base in mineral supplements to help drive and limit intakes. The trace minerals such as copper, zinc and selenium are also frequently deficient in forages. A complete mineral mixture was shown to provide 0.1 lb/d greater daily gain over salt alone (Barnhardt et al., 2007). Generally, phosphorus is adequate to marginally adequate and rarely needs to be supplemented to cattle grazing cool-season forages in the upper mid-South. Potassium is typically well above the requirement and doesn't need supplemented. Grass tetany is rarely observed in growing calves and generally a high-mag mineral is not necessary for growing calves as their requirement is greatly less than that of a lactating cow. Individuals using corn and/or corn-based coproducts such as corn gluten feed and distillers grains should be using a high calcium (>20%) and low (3-4%) to 0% phosphorus mineral to maintain a calcium to phosphorus ratio greater than 1:1 and closer to 2:1 to prevent water belly.

Forage quality is a major driver of performance of grazing cattle. Stocker cattle derive 50% or more of their daily intake from pasture forages. The limiting factor is

often digestibility. The lower the digestibility, the lower the gains. Volatile fatty acids are the end products of fermentation and are the main source of energy for grazing cattle. Maintaining forages in a vegetative state will increase the rumen digestibility and subsequently performance. Not only is the energy yield greater, but the availability of minerals and protein are greater in forages that are vegetative compared to those that are mature. Obviously, some forages have more digestible fiber due to the chemical structure in the cell wall. Legumes can increase the digestibility when consumed at the ideal maturity and incorporating them into the stand in the mid-South can benefit livestock performance. Increasing forage digestibility and available protein as well as diluting the alkaloids from wild-type infected tall fescue by interseeding legumes into the pasture will enhance performance of cattle. Other anti-nutritional factors such as tannins which can bind protein, alkaloids that impact palatability (i.e. reed canary grass), alkaloids that impact physiology of the animal (i.e. Kentucky tall fescue) and others can negatively affect performance and should be managed accordingly.

Maintaining forage quality is one factor of forage management for optimizing cattle performance. The amount of forage presented for grazing is another factor that must be considered. The greater the forage availability presented to the cattle increases the bite size or amount consumed per bite. This ensures that dry matter intake is maximized. Cattle have a limited amount of time they spend grazing. They will seek shade to avoid the heat, rest and ruminate reducing the amount of time spent grazing. As forage availability becomes limiting, more energy is required to seek forages to graze due to greater walking. The amount forage available is function of the forage growth, stocking rate and forage rest period. Generally, as the stocking rate is increased, intake selectivity is reduced and performance declines. However, stocking rate must be managed to ensure adequate production per unit of land, especially under limited land resources. Greater stocking rates can yield lower individual gain but greater production per unit of land. However, greatly increasing stocking rates can limit the individual performance to the point that gain per unit of land is decreased. Finding the optimal stocking rate is important and understanding that it is not a constant is critical to maximize gains. It is also important to know and understand that forage growth rate differs seasonally. Cool-season forages will have high growth rates in the spring and fall while warm-season forages will have rapid growth rates in mid-summer. Using a mixture of warm- and cool-season forages can aid in ensuring adequate forage is available for cattle. Providing supplemental feed such as coproduct feed or hay can allow greater stocking rates as forage intakes will be reduced with increasing level of supplemental feed.

In summary, there are several factors that must be managed to maximize stocker performance. It begins with the purchase decision to ensure calves have the opportunity to gain efficiently. It is paramount that the forages be managed to provide ample, high quality pasture to allow calves to perform while supplemental feed may be necessary to achieve the rates of gain desired. Producers should employ tried and true technologies to capture additional weight gain. Managing the stocker operation requires a systems approach to ensure target gains are achieved.