

Keeping Animal Performance High for a Quality Finish

*Jim Gerrish
American GrazingLands Services LLC
May, Idaho*

Producing quality finished meat from pasture depends on keeping animal performance at a high level through most of its life. While a lifelong, steady rate of gain will get animals to their target finish point most quickly and is reputed to give the highest quality finish, it isn't always possible to keep them gaining at a constant rate due to climatic or seasonal weather conditions. However, there are critical times when an animal must be in a gaining state to assure a quality finish and there is a minimal rate of gain that should not be dropped below to assure animals reach their genetic potential for finish weight and grade.

There are three really critical times in the life of a meat animal that determine how well they will finish. Paying attention to animal nutrition during these critical periods is one of the first keys to producing high quality meat.

Within the first few days of life is the first critical period. Studies with both sheep and cattle have shown that if the young animal is nutritionally stressed within the first 48-96 hours of life they will not begin the process of fat cell creation that is necessary for intramuscular fat deposit (marbling) later in life. Difficult births in tough weather conditions and inadequate dam nutrition often result in lack of colostrum intake by lambs and calves. Failure to ingest adequate colostrum within the first 12-24 hours of life affects the health status and growth potential of that animal for the rest of its life. Ample milk consumption over the next several days is also key to future growth potential. The fat cells that ultimately will produce the desirable marbling at finishing are already being laid down at this beginning stage of life.

As a beef animal approaches a year of age there is further development of these fat cells. If growth is restricted at this time, marbling potential will be reduced. Very often this critical time is in late winter for spring born calves. Growing stockers over the winter should be gaining at least 3/4 lb/day to ensure they will growth enough to reach the appropriate target weight and marbling level. Allowing cattle to go stagnant or backwards for anything longer than a couple of weeks will compromise their ability to finish. This is true whether they are in a feedlot or being pasture-finished.

The final critical stage is the actual finishing phase. We generally consider the finishing phase to be a minimum of 60 days gaining at least 2 lb/day. A longer period with continuous gain at this rate is preferred, but not always feasible. A shorter time period with a higher rate of gain does not give as satisfactory result. Ideally, try for at least 120 days gaining in excess of 2 lb/day.

There are numerous publications and resources available explaining the importance of late gestation and early lactation nutrition for both cows and ewes. Likewise there are many resources dealing with nutrition of growing stock. The remainder of this paper will focus on grazing management during the finishing phase to ensure achieving high rate of gain during this

critical period.

The three Biggies of pasture finishing: Quantity, Quality, and Intake

The first step in successful pasture finishing is making sure there is always something there for the stock to graze. While this may sound utterly simplistic, it is one of the most common failures for achieving high rate of gain on pasture. This doesn't mean farmers are putting stock into pastures with no feed available. It usually means they are leaving them on the paddock too long. More about this in the intake section. It might also be a case of not planning far enough ahead to ensure pasture would last as long as it needs to for the animals to reach the target finish point.

Knowing when you typically have your best forage supply is important for planning when stock will be finished. Don't plan to have cattle finishing when you don't normally have adequate amounts of quality forage available. If growing conditions permit, you may have to use annual forage crops to extend the finishing window, but it will likely add to the cost of production.

The primary business of pasture-farming is harvesting solar energy. Marketing the solar energy as finished meat is just incidental. Beginning to think of your landscape as a giant solar panel is the first step to ensuring you will have adequate pasture quantity as many days of the year as possible. Focusing on growing green leaves and avoiding bare ground and overmature plants leads to the most efficient solar panel and the greatest possible productivity from your pastures.

Using effective irrigation and fertilization management are two additional tools for ensuring forage supply. Timely irrigation will keep forage supply greater and usually also results in higher quality forage than inconsistent irrigation. Forage crops that are allowed to become water deficient repeatedly are often higher in indigestible fiber and, hence, lower in digestible energy than regularly watered crops. When thinking about fertilizer, don't think in terms of nitrogen necessarily. Managing the P, K, Ca, Mg, S, and, sometimes, micronutrients is more important for long term pasture productivity and species composition. Using N fertilizer can boost short term forage availability and is sometimes an appropriate tool but it does nothing for long term pasture health and productivity.

Is it necessary to plant the latest, greatest super forage to be able to finish cattle on pasture? No, but some change in species composition may be appropriate or at least helpful. The right grazing management can usually generate a good quality finish off some pretty common pasture. By the same token, poor grazing management on the highest quality pasture will likely not produce a high quality finish either.

When it comes to forage quality, most farmers and ranchers almost always think of protein first. Truth of the matter is protein is almost never limiting in cool-season pastures. The limiting factor is almost always energy. Beef animals gaining between 2-3 lb/day, the appropriate range for finishing, require an energy:protein ratio of about 6:1 based on TDN and CP measurements. For example, the TDN requirement for 3 lb/day gain is 72% and the protein requirement is about 12% for a ratio of 6 to 1. The reality of grazing is a pasture with 72% TDN is likely to have crude protein content greater than 20% or a ratio nearer 3:1. While the excess protein may be metabolised for energy, it is an inefficient process and can result in ammonia toxicity in the rumen. Excess protein is more likely to depress performance, than enhance it. The limitation of

getting steers to gain 3 lb/day is always going to be an energy deficiency, not protein. The situation is a little different for warm-season pastures such as bermudagrass, switchgrass, or corn. As a general rule, warm-season species are lower in protein than are cool-season species. As warm-season plants mature, the protein content can drop below the level required by many classes of livestock. Fully mature bermudagrass or switchgrass will be deficient in protein even for just a dry, pregnant cow. Maturity management of warm-season pastures is more important than it is for cool-season forages.

Thus, the challenge for high performance on pasture is how to get more energy into the animal. In the absence of supplementation with a high energy concentrate, the key is to get a greater volume of forage into the animal. We did quite a bit of grazing intake research while I was at the University of Missouri. The conclusion we arrived at was grazing intake on cool-season pastures was determined about 75% by the available forage and only 25% by the nutrient content of that forage. For warm-season pastures, it's about a 50:50 effect.

For total nutrient intake management, maintaining adequate forage availability at all times is the critical factor. We found pre-grazing forage availability to only explain about 23% of the variation in total forage intake by grazing animals. Post-grazing residual explained 82% of the variation. What that means is how much you leave in the pasture is more important than what you remove through grazing when it comes to determining intake. And intake is what determines rate of gain.

Almost every farmer and rancher can recognize a good pasture when they first put stock in the paddock. The problem is most don't recognize when the stock need to come out. I think it is the fear of wasting grass that makes most graziers leave their stock on a paddock too long. The reality is leaving taller residuals accelerates pasture regrowth, keeps the root system healthier, protects soil structure and life, and, coincidentally, results in higher daily intake by grazing stock and higher rate of gain.

While a lot of graziers move stock every day in finishing situations, they might fail to monitor whether or not the stock actually have something to eat throughout the 24-hour period. Leaving a taller residual is a pretty good indicator they had something to eat. One ranch I was working with was having disappointing gains in their finishing herd. Over the telephone they reported they were moving cattle every day, the pastures were at least 10 inches tall when they put the stock in, but they just weren't getting the gains they needed. The problem was the paddocks weren't big enough for the number of head they were using. The pastures were fully utilized by evening of the first day and nothing was left for the cattle to graze until they were moved to a new paddock the following day. If the move didn't happen until 10AM, the cattle had already missed the biggest part of their natural grazing cycle. Basically, they were screwed for the day.

Summary: Finishing livestock require having available pasture at all times. When grazing cool-season pastures, maintaining adequate availability is more important than worrying about quality per se. Until the pasture is reaching boot stage, it will be adequate to support gains in excess of 2 lb/day with appropriate grazing management. For warm-season pastures, pay close attention to both availability and quality to keep intake high. Basic guideline for finishing on pasture is the more you eat, the fatter you get.