

Preconditioning Systems and Management Practices for Beef Calves

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Abstract

Beef cattle producers should consider marketing options for their calves after weaning. Calves can be sold immediately, or can undergo a short preconditioning period before sale. A preconditioning program is typically 45 to 60 days in length, and is a time when a cow-calf/stocker producer will acclimate calves to bunk feeding and build the health status of a weaned calf prior to sale. These practices may result in added weight and potential premiums when calves are sold. Calves that are preconditioned can transition to a stocker or feedlot setting more readily. This paper reviews management practices for producers, and highlights current research and demonstration efforts to provide nutritional strategies for producers considering post-weaning management of beef calves in Alabama.

Keywords: beef calves, weaning, nutritional management, backgrounding, preconditioning

Marketing and Industry Trends

There are many excellent reasons to precondition calves, i.e. it is good for the industry as a whole because you have healthier, better performing calves, it's good for the feedlot because calves adjust quicker and perform more efficiently, and/or it is just a good animal husbandry practice. However, a producer should carefully evaluate the effects that preconditioning will have on his or her farm from an economic perspective. Preconditioning (or backgrounding) calves will cost a producer time and money and could present cash-flow issues. Producers should

carefully consider the cost involved and develop a marketing plan that will help increase their potential for reaping monetary benefit from preconditioning.

Where or how cattle are sold will have a direct impact on whether preconditioning will actually make or cost the producer money. There will always be expenses associated with preconditioning (feed, labor, land, machinery, initial weight loss, etc., etc.), so it is important to maximize the capability to recapture some of that investment. Feeder cattle are marketed in several ways in Alabama, but the majority are marketed either individually (or small groups) through local sale barns, by forward selling through board sales or video/internet marketers, or by retaining ownership through the feedlot system. All of these systems are viable alternatives for Alabama producers, but not all present the same level of profit potential for producers that precondition their calves.

Producers who market through the local sale barn should consider contacting their sale barn manager, and discuss potential sale dates and details of their preconditioning program. While the sale barn manager cannot guarantee that producers will receive premiums for preconditioning (nor can any of the other marketing options), they can certainly increase the opportunity for that to happen if they are aware that these calves will be arriving at the market at a given time. That allows the sale barn manager to assist the producer with marketing his calves.

If a certain feeder calf sale is targeted, it is important to know the program requirements for calves to qualify in the sale. Documentation of these practices is often necessary to participate in the sale, and may require: a history of animal health products used, individual calf identification, a minimum length of ownership before calves can be sold, a certain length of the preconditioning period, and a description of the nutritional plan used for development of the lot. Historically, a

minimum of 45-days has been recommended for the number of days weaned, but 60 days has become more of a desired target by industry.

Producers who retain ownership on calves may have the greatest potential to benefit from preconditioning. Preconditioned calves will perform better than calves that are weaned as they load the truck to go to the feedlot. Producers should expect better gain, quicker adjustment and less death loss from preconditioned calves.

Producers should always look at the cost of gain associated with preconditioning calves and make sure that the value they receive is greater than that cost. There are no guarantees in the cattle industry, and even if a producer does everything right it might prove unprofitable on certain years (and in fairness, even producers who do many things wrong will be profitable in certain years). However, producers who evaluate cost of gain versus value of gain of preconditioning (within the context of where and how they will market their animals) and make their production decisions based on that evaluation will maximize their profit potential and greatly increase their short- and long-term sustainability.

Calf Health and Best Management Practices

A good herd health program is an essential part of any cattle management program. Many producers think about vaccinations, deworming or other treatment strategies when developing a plan. However, management practices that decrease handling and environmental stresses on cattle can also have an impact on herd health.

Vaccinations – Every cattle operation will have unique vaccination requirements based on individual herd goals and marketing strategies, so the following guidelines for vaccinating preconditioned feeder cattle may not be applicable in all situations. The best use of these

guidelines is as a starting point for a conversation with the veterinarian to create a program that meets the needs of the farm. Depending on the producers' marketing strategy, it would also be wise to check on particular sale requirements regarding vaccinations.

Preconditioned feeder calves should generally be vaccinated against the following:

1) IBR/BVD/PI3/BRSV (commonly available in a single vaccine) a) IBR = infectious bovine rhinotracheitis b) BVD = bovine viral diarrhea c) PI₃ = parainfluenza₃ d) BRSV = bovine respiratory syncytial virus 2) 7-way clostridial (blackleg) 3) *Mannheimia haemolytica* 4) Other organisms to consider vaccinating against include *Pasteurella multocida* and *Histophilus somni*.

Properly store and administer vaccines according to FDA-approved label directions, adhere to designated meat withdrawal times, booster primary vaccinations when recommended, and follow all other Beef Quality Assurance (BQA) guidelines. Additional best management practices include deworming, castration, implanting steers and non-replacement heifers, and dehorning cattle where appropriate.

Diet Considerations During the Backgrounding Phase

A good nutritional program can help support growth and performance of calves during the preconditioning period. During this time, calves transition from a milk diet to a forage/concentrate-based diet. Training calves to use a feed bunk or watering trough can be accomplished during the preconditioning phase. Place feed bunks perpendicular to fence lines so that calves can easily find feed when they walk the fence. Calves should have between 1.5 to 2 feet of bunk space per head to prevent crowding. Water troughs should be highly visible and accessible. Small troughs may be more attractive to weaned calves because 1) they can hear it

being refilled quickly and 2) the water supply may turn over more quickly in small troughs than large ones, keeping the water clean and cool.

Rations for weaned calves can vary and may consist of grazed forage and supplemental feed, or a drylot-based diet. Collecting weights at weaning can help producers estimate weight gain goals during the preconditioning period and better formulate an accurate nutritional plan. Have realistic expectations for gain during this time period. Weaned calves will often lose weight during the first week after weaning, but will slowly begin to regain within a two to three week period. Calves should be slowly acclimated to supplemental feeds to prevent acidosis. Begin by providing 0.5% of body weight in feed, and increase to the needed amount by two to three pounds every three days. Calves should always have free-choice access to grazed or conserved forage to support rumen health. Provide access to a free-choice mineral or mix into these rations to help meet micronutrient requirements. Conduct a forage analysis to determine the type and level of additional feed supplementation needed to reach projected gain goals during the backgrounding period.

In 2018, a demonstration project was conducted at the Tennessee Valley Research and Extension Center in Belle Mina, AL to compare locally available feed resources for adding weight and market value to weaned, spring-born beef calves. Fifty four Angus-based, crossbred calves (both steers and heifers) were randomly assigned to one of the following diets for a 54-day backgrounding period: 1) 85% cracked corn and 15% cottonseed meal – hand-fed daily, 2) 85% cracked corn and 15% cottonseed meal + Cargill Ranger® Limiter Feed – fed free-choice, 3) 90% dried distillers grain and 10% salt – fed free choice, or 4) 50% soybean hulls and 50% corn gluten feed – hand-fed daily. Calves were weaned on September 11, 2018 and sold on November 14, 2018. Calves in their respective treatment groups began consuming diets 1, 3, and 4 on

September 20, and diet 2 on September 26. Cattle had free-choice access to mixed dallisgrass/tall fescue pasture during the backgrounding phase. If forage in pastures became limiting during the feeding period, free-choice tall fescue hay was provided instead. The amount of feed provided in hand-fed diets was increased throughout the backgrounding phase to target a high level of feed consumption. Cattle were started on these diets at 1.0% of animal body weight per day, and feed level was increased as cattle began to clean the troughs more consistently with increasing animal size and acclimation to the feeding system. Feed consumption was estimated based on amount of feed provided during the 54-day backgrounding period. Calf average daily gain across all diet types was greater than 2.0 lb/head/day. Feed costs per pound of animal gain were lowest for the 90% dried distillers grain and 10% salt diet, which maintained animal intake at around 1% of animal body weight per day throughout the preconditioning period. This demonstration project illustrated the feasibility of a range of regionally available feed resources, and the importance of evaluation feed costs and labor needs when selecting an appropriate supplementation strategy to fit the backgrounding system requirements for an individual operation.

Although many studies have been conducted evaluating nutritional practices for newly-received, high-risk stocker calves, who primarily represent calves that were unweaned prior to sale, few studies have evaluated the carryover effect of nutritional management during the backgrounding phase on health and performance of calves upon arrival in the feedyard. Current research is being conducted at the EV Smith Research Center in Shorter, AL to determine how various drylot or grazing-based backgrounding systems influence subsequent feedyard performance and health. Fall-born, summer-weaned commercial beef calves (both steers and heifers) were assigned to one of the following diets in late June 2019 for a 60-day backgrounding trial. Diets included: bermudagrass hay and 1% BW dried distillers grains, cool-season baleage (oats, ryegrass, and

crimson clover) alone, with 1% BW dried distillers grains, or with 1% BW CPC Grower feed. These feeds were chosen as locally available feed resources that are reflective of those used by producers or are products that we often receive questions about on our Extension team. Average daily gain and total gain is measured during the 60-day trial. Following the end of the backgrounding period, calves will be shipped to Montezuma, Kansas for finishing at the Hy-Plains Feedyard. Shrink loss estimates will be collected following transport, and animal performance, morbidity, mortality will be tracked until harvest.

Shrink Loss Prior to Sale

Preconditioned feeder calves often have less shrink loss associated with transport from the farm to the point of sale than calves that have undergone abrupt weaning. Unweaned calves that are transported directly to the point of sale may have between 7 to 9% shrink loss, whereas preconditioned calves transported to the point of sale may have 3 to 5% shrink loss. Similar results have been observed through our demonstration work at the Tennessee Valley Research and Extension Center.

Stress Response From Shipping in Backgrounded Calves

Preliminary data from a 2018 calf backgrounding trial at the Auburn University E.V. Smith Research Center Beef Unit reported differences in calf hematological values in calves who grazed summer annual forages or a drylot, conserved forage-based diet prior to transportation to the feedlot and after arrival (Tigue et al., unpublished data). Calves that received grazing without supplemental feed showed reduced red blood cell count, hemoglobin concentration, hematocrit, and reticulocyte counts as compared to all supplemented groups. While these values were within the normal range, this could indicate some level of subclinical anemia. Additionally, statistical

differences in neutrophil count in both post-transportation time points and in lymphocyte count after 24 hours of rest indicate that diet influences the innate and adaptive immune response to transportation stress. In future studies, evaluating different types of feed supplements, level of supplementation, and their interaction with forage type, could help quantify the magnitude at which backgrounding diet can change immune function and health outcomes during the early portion of the feedlot phase. Beef calves receiving co-product supplementation during the backgrounding phase, whether on grazed pasture or along with conserved forage, had greater weights upon arrival and after 7 days in the feedlot compared with those not receiving supplement, but there were no differences in carcass data or final weight. Further understanding of post-weaning management impacts on southeastern feeder calf productivity is warranted to improve resource use efficiency and reduce production risk for the US beef industry.

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Care and Use of Animals: Animal performance and shipping stress response parameters described in this paper are part of an approved protocol by the Auburn University Institutional Animal Care and Use Committee (PRN # 2018-3400 and 2018-3320, respectively).