



# BEEF

## Chapter 11

### Integrating Backgrounding Cattle with a Cow- Calf Enterprise

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## Introduction

The backgrounding business is the least clearly defined (and least well-understood) segment of the U.S. cattle industry. This segment of the beef industry can be part of a cow-calf enterprise, part of a feedlot business, or a stand-alone entity. Backgrounding can take many different shapes depending on the feed resources available. Even the words used to this segment are not consistent; the terms backgrounder, grower, or stocker have all been used to describe this industry segment.

Backgrounding generally refers to the period of time after weaning but before a calf enters a feedlot to be placed on a high-concentrate diet. This period would be characterized as using diets based on roughage possibly combined with limited grain and/or by-product feeds to add frame to calves in preparation for entering the feedlot phase. A stocker more commonly refers to cattle that are grazing on some form of forage rather than being fed harvested feed.

Although the terminology and feed resources may be different, these sectors serve the same function in the beef industry; namely to serve as a “shock absorber” to manage the flow of cattle from the cow-calf to the feedlot (Peel, 2003). Approximately 70% of the beef calf crop in the United States is born during the spring, but beef must be supplied to the consumer on a daily basis. Growing cattle on lower costs feedstuffs serves to create a pool of feeder cattle that are available to be placed on higher energy finishing diets in feedlots and eventually harvested throughout the year.

This chapter will examine how backgrounding and cow-calf enterprises can be integrated. Although the term “backgrounding” will be used in this chapter, the general principles also apply to a “stocker” or grazing enterprise.

## ***Types of Backgrounding Management Systems***

Producers recognize that different types of backgrounding systems are needed because of the variety of cattle type. Here is a brief

## Key Points

- Backgrounding generally refers to the period of time after weaning but before a calf enters a feedlot to be placed on a high-concentrate diet.
- The variance between individual operations shows that there are opportunities for a backgrounding profitably increase calf value.
- Price or value per calf is largely irrelevant when it comes to deciding whether or not to retain calves. What is important is whether or not the value of the gain is greater than the cost to put that gain on the calf.

description of the general backgrounding systems.

- **Preconditioning:** Preconditioning is often described as feeding calves for a short period (30 to 45 days) so that they become acclimated to eating from a bunk and drinking from a fountain waterer. One of the challenges of this system is that a substantial portion of the labor requirements occur during this phase with very little time after the calves are started on feed to recoup those expenses. Producers need to make sure that the amount of weight gained and/or the additional price premium captured is large enough to cover costs.
- **Wintering at a low ADG:** Calves are managed for low rates of gain (0.5 to 1.5 pounds per day) through the winter months. This system is commonly associated with preparing calves for turnout on pasture or for developing replacement heifers.
- **Growing:** Targeted rate of gain is 1.5 to 2.5 pounds per day. This system provides flexibility with lightweight calves, since fast growing animals can be sorted off to the feedlot and other calves can go to grass.
- **Grazing cattle:** This system utilizes growing forages as the base feedstuff. Forage could consist of native or introduced grass species, annual forage crops, or cover crops.
- **Accelerated:** Calf performance is targeted to be 2.5 pounds or more per day. At this level of performance this system could be considered an early part of the feedlot phase. Cost of gain is usually the lowest under this type of system however, body condition of these calves needs to be monitored carefully if they are to be marketed as feeders as it is very easy for these calves to get too fleshy and face price discrimination from buyers.

All of these systems can be profitable depending on the cost and availability of feed, current and projected cattle prices, as well as the general growth potential and projected slaughter weight of the calves. Expected selling price at slaughter is also a major factor, as calves that would be expected to

finish at the seasonal high would have more value than those projected to be market ready when the slaughter cattle supply and demand conditions are less favorable.

### ***Advantages and Disadvantages to Backgrounding Calves***

The decision to add a backgrounding enterprise is not simple and shouldn't be undertaken without careful consideration of the risks and rewards. Adding a backgrounding component can offer a number of advantages to a cow-calf enterprise, including:

- Adding value to home raised feedstuffs.
- Spreading out sales and income throughout the year.
- Shifting marketing dates. Traditionally the fall months represent the lowest annual prices for feeder calves. Selling cattle at other times of the year can help spread out market risk.
- Capture premiums or avoid discounts by preconditioning calves.
- Take advantage of superior genetics for growth and feed efficiency by retaining ownership past weaning.
- Adding a summer grazing enterprise helps to “drought proof” a ranch as growing cattle can be sold quickly if grass is short, thus saving resources for the cowherd and avoiding a forced sale of cows.
- Using forage resources to grow smaller framed calves, so that they are more likely to finish at preferred weights.
- Adding an additional enterprise increases asset turnover and the utilization of fixed assets and labor on the ranch.

Of course there are also risks and challenges associated with adding a backgrounding enterprise. Some of these risks include:

- Risk of economic loss due to high costs of gain, poor performance, excessively wide differences between buying and selling prices, or a



combination of these factors.

- Owning cattle for a longer period of time increases the exposure to market risk.
- Risk of disease leading to poor performance and cost of gain, or increased mortality losses post weaning.
- Cash flow or tax concerns caused by selling two calf crops in one calendar year.
- Backgrounding large-framed calves with superior growth genetics at a low ADG for too long can result in cattle that are subject to over-weight penalties by the time they are slaughter ready.
- Backgrounding cattle does require additional management and possibly additional investment in facilities and equipment.

There is a very real possibility of economic loss by backgrounding calves. Lawrence and Ostendorf (2009) at Iowa State University compared eight different scenarios for backgrounding calves over a 14-year period using average feed and cattle prices for each year. Their results indicated that none of their scenarios were profitable more than 50% of the time. However, all but one of the scenarios would have made money 40% or more of the periods studied.

The results of those economic models are supported by actual profit and losses as reported by the Kansas Farm Management Association. The average return to management (where operator labor was charged as an expense) from 2007 to 2012 for backgrounding enterprises in that database was a negative \$60.20 per head (Kansas Farm Management Association, 2013) with only one of those six years showing a positive return on average. When segregated into thirds over that 6-year time frame, the high, middle, and low profit groups had average net returns of \$26.76, (\$73.67), and (\$173.34), respectively. The high third of operations showed a profit in three of the six years.

Collectively these analyses suggest that the decision to background cattle should be made very carefully. Although profits from backgrounding calves can be elusive, the variance between individual

operations shows that there are opportunities for a backgrounding enterprise to make money. Cow-Calf operators need to treat backgrounding as a separate business entity and evaluate income and expenses accordingly, so that any profit or losses can be credited to the correct enterprise. Risk management tools such as forward contracting, futures and option contracts, and livestock risk protection insurance should be strongly considered to manage market risk. The balance of this chapter will focus on strategies to increase the likelihood of showing a profit and avoid situations where losses are more likely.

### ***Determining Whether to Background or Retain Ownership***

As an individual rancher evaluates whether or not to background some or all of their calves, it is important to remember a key difference between the cow-calf segment and the backgrounding or finishing businesses. The costs of cow-calf sector are predominately fixed expenses. For any given year, the major expenses for the cow-calf enterprise such as summer grazing and replacements, and to a lesser extent labor and winter feed costs are generally fixed and difficult to change. By contrast, the expenses of a backgrounding enterprise are for the most part not fixed until the decision to retain (or purchase) calves or to start using feed resources is made.

Many times the decision whether or not to sell calves at weaning or retain them is based upon expected selling price either at weaning or at some post-weaning date. While price at weaning is very important to the eventual returns to a cow-calf operation, price or value per calf is largely irrelevant when it comes to deciding whether or not to retain calves. What is important is whether or not the value of the gain is greater than the cost to put that gain on a calf.

To illustrate this concept, five different price scenarios are shown in Table 1. Initial prices for Scenario #1 and #5 were taken from USDA reported prices in Mitchell, SD on November 7, 2013; final prices for those two scenarios are based on price projection analysis from BeefBasis.com using feeder cattle and corn futures contracts as of November 8, 2013 (Custom Ag Solutions, Inc., Cowley, WY).

The five scenarios are:

1. Beginning with 480 pound steers, feeding for 120 days at 2.0 pounds ADG, selling at 720 pounds. (BASE)
2. Same weights and gains as Scenario #1, but purchasing the calves for \$5 per hundred pounds less than average and selling for \$1 less than average. (UPGRADE)
3. Same as Scenario #1, but because of an advancing market, the selling price was \$5 higher than expected. (SELL HIGHER)
4. Same as Scenario #1, but because of a declining market, the selling price was \$5 lower than expected. (SELL LOWER)
5. Scenario #1, except initial and selling weights were increased by 100 pounds. Prices were obtained using same sources and methods as BASE. (HEAVIER)

The relative differences in value of gain between BASE, UPGRADE, and HEAVIER deserve additional comment. The choice of what calves are retained (or purchased) can have a tremendous impact on the potential returns of a backgrounding enterprise. If a cow-calf operation considering retaining ranch-raised calves would likely have calves fitting both the BASE and HEAVIER descriptions, selling the HEAVIER calves and replacing them with under-valued cattle would lead to a higher average value of gain compared to retaining all the ranch-raised calves.

In a case study of a Texas ranch, the profitability

of retaining ownership of ranch-raised calves was compared to a system involving selling cattle when premiums could be captured and replacing them with cattle that were relatively under-valued (Dunn et al., 2011). Over an eight year period, the ranch-raised cattle showed an average profit of \$8 per head. In contrast, selling ranch-raised cattle for a premium and replacing them with under-valued calves increased profit per animal unit to \$300. This system of arbitrage sometimes referred to as sell-buy marketing, focuses on increasing asset turnover to create additional wealth for the ranch. This example points to the importance of evaluating the cow-calf and backgrounding parts of the ranch as separate enterprises to make the best business and marketing decisions for each calf crop and each enterprise, either as one entire group of calves or when divided by weight and class.

The biological type and growth potential of the calves also should be considered when evaluating which calves should be backgrounded. Placing cattle in a backgrounder or stocker program tends to result in increased carcass weights (Lancaster et al., 2012). This would be a desirable outcome for smaller framed cattle as increased hot carcass weights are generally associated with increased feedyard profits. However, in large framed cattle this could result in significant discounts for over-weight carcasses if the harvest dates were not monitored closely, especially if the cattle were summer grazed.

### Strategies for Controlling Costs Feed Management

The other side of the profit equation is costs. If the cost of gain is more than what the value of the gain will be, the enterprise will lose money. Next to the

Table 1: Value of gain for various buying and selling prices.

Value of Gain	Initial Wt, lbs	Initial Price, \$/cwt <sup>1</sup>	Initial Value, \$/head	Selling Wt, lbs	Selling Price, \$/cwt <sup>2</sup>	Ending Value, \$/head	Gross Margin, \$/head	Value of Gain, \$/lbs
Base	480	195	936	720	166	1195	259	1.08
Upgrade	480	190	912	720	165	1188	276	1.15
Sell Higher	480	195	936	720	171	1231	295	1.23
Sell Lower	480	195	936	720	161	1159	223	0.93
Heavier	580	181	1050	820	157	1287	237	0.99

<sup>1</sup> USDA Agricultural Market Service reports from Mitchell, SD on November 7, 2013

[http://www.ams.usda.gov/mnreports/sf\\_ls758.txt](http://www.ams.usda.gov/mnreports/sf_ls758.txt)

<sup>2</sup> Price estimate obtained from BeefBasis.com, November 8, 2013 (Custom Ag Solutions, Inc., Cowley WY)

cost of the cattle, the largest single expense is feed costs. According to 2012 benchmark data set of South Dakota backgrounding operations (South Dakota Center for Farm/Ranch Management, 2013), low return operations had a feed cost of gain over 50% higher than those operations in the high return group (\$98.89/cwt and \$65.03/cwt, respectively). This amount of variation in feed costs represents an opportunity to apply cost reduction strategies.

An often overlooked nutrient, but one that is critical to use all other feedstuffs at maximum efficiency is water. Calves that are not provided with ample quantities of clean water simply will not eat enough to meet performance expectations. Growing calves will consume five to 15 gallons per day depending on size and temperature. Providing one foot of tank/waterer space for every 20 head should be adequate to ensure that all calves have an opportunity to drink; more capacity may need to be added under heat stress conditions. Watering equipment should be cleaned regularly to remove any build-up of organic matter. Water quality, especially sulfate levels also can be a concern, particularly when byproduct feeds such as distiller's grains are fed. Sulfate levels below 1500 mg/L are considered safe, whereas water with sulfate concentrations over 4500 mg/L is not recommended for use with livestock (Thiex and German, 2004).

Diets can be formulated for a range of ADG goals, depending on the production and marketing objectives for a given set of calves. In general, cattle that gain faster will have a lower cost of gain. A certain amount of an animal's nutrient intake is required to first satisfy maintenance needs. Supplying additional nutrients to support a faster rate of gain will dilute the inputs needed for maintenance over a greater quantity of cattle gain, resulting in a lower cost of gain. Production plans that call for restricted daily gains should be carefully scrutinized to make sure that the anticipated selling price is high enough so that the value of the gain is greater than the total cost of gain, or that there is an opportunity during the ownership period to capture lower cost compensatory gains, such as grazing on pasture or ownership through the finishing phase.

Once the performance objectives have been set, diets need to be formulated to meet those objectives. Accurate feed sampling and nutrient analysis is important, especially for feedstuffs prone to greater variability such as hay and silage. Feedstuffs should be selected based on cost of nutrients. It is important to remember that home-raised feedstuffs need to be priced on a market value rather than a production cost basis so that accurate economic decisions can be made. Tools such as the SDSU Extension Feed Cost Calculator (Renelt and Rusche, 2012) can be used to compare feedstuffs on based on either energy or crude protein content. More sophisticated analysis where the costs energy, protein, and/or other nutrients evaluated simultaneously is available using commercial least cost ration balancing software.

One of the competitive advantages of ruminants compared to non-ruminants is the ability to utilize by-products from other agricultural processing activities that would otherwise be unusable. Feeds ranging from beet pulp, field peas, and stale bread have all been successfully fed to cattle. If priced attractively, these less traditional feedstuffs offer opportunities for cost reductions. However, producers need to be aware that in some cases there are limitations as to the amount of these feeds that can be included in the diet. Before using unfamiliar feedstuffs, producers should consult a nutritionist or use research-based guidelines to determine the maximum amount that can be included in the diet (Lardy and Anderson, 2009).

Controlling feed waste during storage and feeding is an often overlooked opportunity to reduce feed costs. Minimizing exposure losses due to uncovered feed piles or holes in plastic silo bags or tarps will prevent losses in dry matter due to spoilage. In addition, increases in moisture content caused by precipitation events or lowered moisture levels due to sun exposure complicate diet formulation and could lead to performance and efficiency robbing errors in diet formulation (DiCostanzo, 2013).

Managing feed deliveries is another critical component to maintaining competitive feed conversions and costs of gain. Avoiding metabolic disorders and digestive upset is especially important when feedstuffs containing higher levels of starch are

fed. Changes in diet composition and in the amount of feed delivered should be made slowly. Keeping delivery times consistent will help to reduce the cycle of bingeing and crashing of feed intakes (Pritchard and Bruns, 2003).

Taking advantage of opportunities to graze low-cost roughages such as cover crops or crop residues when possible is another option to reduce total costs of gain. These grazing resources typically are considered a sideline to the primary crop, so all the costs of production would not be charged to the livestock enterprise. Figure 1 shows replacement heifers being wintered in Northeast South Dakota on 7 pounds of alfalfa hay plus grazed corn stalk residue. This system would reduce the amount of harvested feed required by about 50% compared to a drylot system as well as reduce expenses associated with manure handling and lot maintenance.



Figure 1: Heifers wintering on corn stalks. *Photo courtesy of Mark Erickson.*

## Management Practices

Other opportunities to manage cost of gain fall outside of simple differences in ration formulation and feed analysis. One of the key opportunities to influence performance and costs is by managing cattle comfort. In particular, muddy conditions can be absolutely devastating to cattle performance and efficiency. Providing sufficient mound space will allow the cattle to find a place to get out of the mud. Pens should be designed so that water drains away from the feeding and watering areas. Concrete aprons behind feed bunks and waterers should be considered an essential design element if cattle are going to be fed during muddy conditions. Routine pen maintenance and grooming need to be a part of the regular operating plan to improve cattle comfort and performance. Providing additional bedding and

wind protection during cold periods of the year and shade or sprinklers during periods where heat stress is a concern has been shown to improve performance and lower costs of gain (Mader, 2003).

The use of ionophores (monensin or lasalocid) is a proven technique to improve efficiency and reduce cost of gain in growing cattle and should be considered a “must-use” practice for stocker or backgrounding programs unless marketing channels prohibit implementation of this technology. Ionophores have been shown to increase ADG by five to 15% and improve feed efficiency by eight to 12% as well as decrease the incidence of coccidiosis and bloat (Hersom and Thrift, 2012). If a cattle producer elects to market through channels that do not allow for ionophores to be fed, the potential premiums should be weighed against the higher production costs that will be incurred.

Growth-promoting implants are another example of technology that has been shown to increase the growth rate and feed efficiency of cattle. Much like ionophores, the use of implants should be strongly considered, unless that avenue is closed due to marketing considerations. The exact implant strategy utilized should be tailored to the cattle and the level of energy provided in their diet to avoid detrimental effects on carcass quality. When “low-potency” estrogenic implants (Ralgro™ and Synovex-H or S™) were used in backgrounded cattle that were being fed to gain over 2.5 pounds per day, average daily gains were significantly increased with no effect on the percentage of cattle grading Choice or Prime (Platter et al., 2003). On the other hand, if implant selection is too aggressive for the cattle and diets in use, depressions in marbling scores and percentage of cattle grading Choice or higher can be seen (Pritchard, 2000; Bruns et al., 2005).

## Health Management

Managing the health status of backgrounding cattle and avoiding disease outbreaks can be a significant challenge, especially immediately after weaning or shipping. These calves are being exposed to a new environment, new feedstuffs and a new social structure. In these instances the level of infectious disease pressure can overwhelm the ability of the animal’s immune system to fend off disease.

While death loss is the most obvious way that financial losses can occur, disease incidence leads to increased veterinarian and labor expenses as well as increased cost of gain due to poorer performance. A complete set of guidelines for managing weaned and backgrounding calves is beyond the scope of this chapter. However, here are some guiding principles for managers to consider.

- Develop a close working relationship with a veterinarian experienced in handling weaned or light-weight calves. Work with that individual to develop vaccination and treatment protocols and then to evaluate the success or failure of those plans in order to refine and improve results.
- Make sure that the facilities and available labor are adequate to properly handle and treat a large number of calves, if necessary.
- Categorizing calves by risk level can be helpful in determining how they should be managed. Preventative treatments may be called for with high-risk cattle that would not be justified in calves that have a lower risk of disease incidence.
- There is no substitute for close observation of cattle. Calves that are treated at the onset of sickness are much more likely to recover than those where the disease progression becomes more advanced.
- The ability to handle cattle effectively with as little additional stress to the calves as possible makes the observation of signs of sickness much easier and treatments much more effective.
- Follow Beef Quality Assurance guidelines for all treatments and vaccinations.
- Keep track of treatment records as a way to monitor the effectiveness of the health management plan.



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