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**Opportunities and Constraints  
to Expanding Value-added Beef Production  
in the Northern Great Plains**

**Nancy M. Hodur  
F. Larry Leistritz  
Daniel J. Nudell  
Clint Clark  
Duane Griffith  
Tammie Jensen**

**Department of Agribusiness and Applied Economics  
Agricultural Experiment Station  
North Dakota State University  
Fargo, North Dakota 58105-5636**

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## **Absract**

Ruminant livestock production in North Dakota, South Dakota, Montana, and Wyoming is critical to the region's economy. Because of the economic significance of ruminant livestock production, producers in the four-state area are continually looking for opportunities to increase income and improve the viability of their farm and ranch operation. Accordingly, the Four-state Ruminant Consortium, an integrated research and extension program, was created to specifically address issues related to ruminant livestock production. The purpose of the Four-State Ruminant Consortium is to enhance economic development in the target study area of southwestern North Dakota, northwestern South Dakota, southeastern Montana, and northeastern Wyoming by strengthening and capturing value from the ruminant livestock industry. This study sought to identify opportunities for and constraints to expanding value-added enterprises within the beef cow-calf sector. A number of sources were utilized in assessing opportunities and impediments to adopting value-added beef enterprises. A mail questionnaire was delivered to 5,270 livestock producers in 37 counties in the 4-state study area of southwestern North Dakota, northwestern South Dakota, southwestern Montana and northwestern Wyoming. The questionnaire was designed to solicit a wide variety of information about operators' current production practices, including marketing, backgrounding, retained ownership, herd management and feed and forage practices. Following the survey, focus group interviews were conducted with groups of producers in each of the four states. Other individuals knowledgeable about other aspects of the region's livestock industry such as auction manager, banker, feed dealers were also interviewed. The results detailed in this report are a combination of a summary of key findings from the written questionnaire and findings from the focus group meetings. Findings from the focus group meetings are detailed in terms of opportunities and constraints and key themes articulated by focus group and interview participants.

Key words: backgrounding, feeder cattle

# **Opportunities and Constraints to Expanding Value-added Beef Production in the Northern Great Plains**

Nancy M. Hodur, F. Larry Leistritz, Daniel J. Nudell,  
Clint Clark, Duane Griffith, and Tammie Jensen<sup>1</sup>

## **Introduction**

Ruminant livestock production in North Dakota, South Dakota, Montana, and Wyoming is critical to the region's economy. In 2002, 59 percent of farms and ranches in the four-state study area raised beef cattle, while more than 8 percent raised sheep and lambs (USDA 2004). In 2004 in the four-state area cattle and calves accounted for one-third of farm and ranch receipts, ranging from 16 percent statewide in North Dakota to 75 percent statewide in Wyoming (USDA 2006).

Because of the economic significance of ruminant livestock production, producers in the four-state area are continually looking for opportunities to increase income and improve the viability of their farm and ranch operation. Accordingly, the Four-state Ruminant Consortium, an integrated research and extension program, was created to specifically address issues related to ruminant livestock production. The purpose of the Four-State Ruminant Consortium is to enhance economic development in the target study area of southwestern North Dakota, northwestern South Dakota, southeastern Montana, and northeastern Wyoming by strengthening and capturing value from the ruminant livestock industry. This study sought to identify opportunities for and constraints to expanding value-added enterprises within the beef cow-calf sector.

## **Methods**

A number of sources were utilized in assessing opportunities and impediments to adopting value-added beef enterprises. Interviews with a number of ruminant livestock research and extension specialists were conducted early in the project to identify enterprises that appeared to have the greatest potential to enhance producer profitability and increase value added in the region's beef industry, as well as circumstances that might limit adoption of these enterprises. Findings from the interviews guided development of a written questionnaire. The questionnaire was designed to solicit a wide variety of information about operators' current production practices, including marketing, backgrounding, retained ownership, herd management and feed

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<sup>1</sup>The authors are, respectively, research scientist and professor, Department of Agribusiness & Applied Economics, North Dakota State University, Fargo; Agricultural Research Specialist, Hettinger Research/Extension Center, Hettinger; County Extension Educator, South Dakota Cooperative Extension Service, McIntosh; Farm Management Specialist, Montana State University Extension Service, Bozeman, and Extension Educator, University of Wyoming, Lusk.

and forage practices. The questionnaire also solicited operators' attitudes on a wide variety of issues related to opportunities for and impediments to the expansion of the ruminant livestock industry. The questionnaire was mailed to 5,270 livestock producers in the 37-county study area (see Figure 1) and more than 1,000 usable questionnaires were returned, providing an extensive database on current production and marketing practices (Hodur et al. 2007). Following the survey, focus group interviews were conducted with groups of producers in each of the four states. Other individuals knowledgeable about other aspects of the region's livestock industry such as auction manager, banker, and feed dealers were also interviewed. The results detailed in this report are a combination of a summary of key findings from the written questionnaire and findings from the focus group meetings. Findings from the focus group meetings were detailed in terms of opportunities and constraints and key themes articulated by focus group and interview participants.

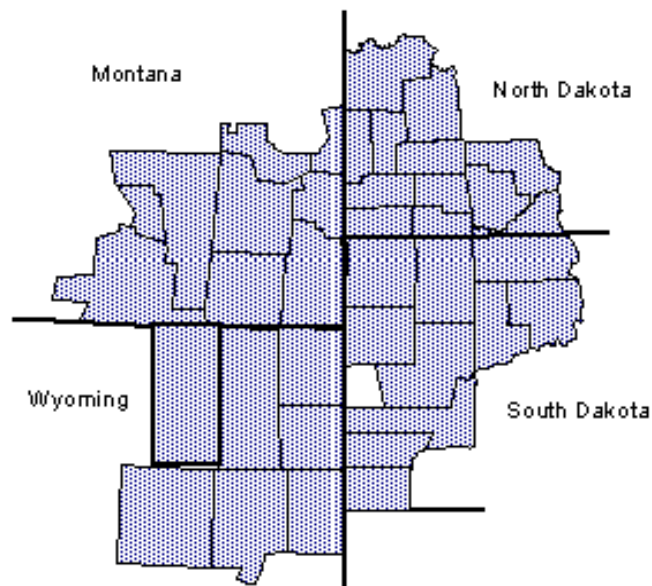


Figure 1. Study Area

## Results

### Current Production and Marketing Practices

The beef producers surveyed reported an average cow herd of 215 head and a calf crop of 204 head (95 percent). They retained an average of 36 replacement heifers (17 percent). Of the remaining calves, 64 percent were sold at or soon after weaning, and the remaining 36 percent were still on the ranch as of January 1. Of the survey respondents, 74 percent reported that they market some or all of their calves at weaning, while 51 percent reported that they background some calves on their ranch. Backgrounding was more common for ranchers with larger herds. Of those with 300 cows or more, two-thirds reported backgrounding some animals, compared to only 42 percent of those with less than 100 cows. Overall, 61 percent of the calf crop was sold at weaning, 3 percent was marketed 15 to 45 days after weaning, and 17 percent was marketed 46 to 120 days after weaning. Ranchers' preference for marketing alternatives varied between states; two-thirds of calves in Wyoming were sold at weaning, compared to 51 percent in North Dakota. Conversely, 29 percent of calves in North Dakota were marketed 45 to 120 days after weaning, compared to 9 percent in Wyoming. Auction markets were the primary marketing channel regionally and accounted for 59 percent of calves marketed. Auctions accounted for the majority of calves sold in each state except Montana. Auctions were the predominate marketing outlet for producers with smaller herds; of those with herds less than 100 head, almost 77 percent of the calves were sold through auctions. On the other hand, larger volume producers more frequently used alternate marketing channels. For ranchers with herds of 300 or more, only 38 percent of calves were marketed through auctions, 19 percent were marketed through video sales, 17 percent to order buyers, and 12 percent through contract sales.

Drought conditions have had a major impact on ranchers in this region (Hodur et al. 2007). When asked why they do not background calves on their ranch, two-thirds cited feed shortages resulting from drought conditions. Region wide, 48 percent of ranchers indicated they had decreased the number of cow-calf pairs in the past five years, ranging from a 36 percent reduction in North Dakota to a 64 percent reduction in Wyoming. Similarly, 38 percent of producers indicated that the number of calves they feed or background had decreased over the past five years, ranging from a 30 percent reduction in South Dakota to a 53 percent reduction in Wyoming. When asked why the number of calves fed or backgrounded had decreased, 92 percent of producers cited drought conditions while 54 percent cited an inadequate feed supply. Looking forward, 57 percent of ranchers surveyed wish to expand their cow herds. Almost 20 percent would like to increase the number of feeder calves they background, and 15 percent would like to retain ownership of more calves through backgrounding and/or finishing.

Producer responses to a series of attitude questions shed light on their views toward backgrounding as a value-added alternative. Region wide, 62 percent agreed that 'availability of forage and feed is the biggest impediment...' to backgrounding, while 60 percent agreed that 'I would be willing to background...if it would increase net revenue'. Almost 58 percent of ranchers agreed that weather conditions were a major factor preventing them from backgrounding, and 57 percent would prefer to use available feed and forage to expand their cow



herd. Labor was seen as a serious constraint by 45 percent of ranchers, and risk associated with market volatility was a concern to 40 percent. On the other hand, only 27 percent felt they did not have sufficient expertise in feed and forage regimes, and only 16 percent were concerned about financing.

While the questionnaire provided a snapshot of typical production practices in the region at the time of the survey, each of the focus groups reiterated that “typical” production practices depend on circumstances, both individual circumstances and those beyond the control of the individual producer. Decisions to sell, retain, improve, expand, or contract are influenced by a wide variety of factors such as availability of feed, market conditions, the weather, and industry and commodity trends and can vary from year to year. The need to respond and adapt to changing conditions was illustrated by a comparison to the producer that does the same thing every year, regardless of current conditions. Focus group participants in every group cited the individual that sells their calves on the same date every year. While production practices can and do vary considerably and can be influenced by a wide range of factors, there seemed to be a consensus that feed availability and market conditions were perhaps the two most overriding influences on production practices. Participants also articulated the necessity of adapting to changing circumstances and conditions as critical to a successful operation.

### **Opportunities for Expanding Value-added Enterprises**

Backgrounding and/or preconditioning programs have been frequently identified as a widely applicable opportunity for producers to add value to their feeder calves (Watt et al. 1987, Popp et al. 1999, Dhuyvetter 2004, Ward and Lalman 2003). As previously reported, about half of the ranchers surveyed retain some of their calves for backgrounding, and 20 percent would like to increase the number of head they background. However, the past few years have not been conducive for backgrounding in many parts of the study region. Feed supplies in some areas have been scarce and expensive as a result of drought conditions. One focus group participant reported selling one half of his cows during past droughts and another reported his herd numbers were still down as a result of the drought. At the same time, feeder calf prices have been at record levels (in nominal terms). Thus producers had a major incentive to sell some or all their calves at weaning and take the profit available. A local banker interviewed said producers with operating loans were especially encouraged to take the profit. Feed saved by not backgrounding could be used to maintain the cow herd, or could be readily marketed especially when feed and forage are in short supply. If more favorable weather conditions return to the region and the cattle cycle moves into a period of somewhat lower prices, the potential returns from backgrounding may improve. At least one focus group participant said the decision to background is contingent on whether or not they could raise a sufficient quantity of hay.

Backgrounding was also described as a marketing strategy rather than a value-added strategy. By delaying marketing until after the main marketing period in September and October, producers may be able to take advantage of an increase in the market. It was also noted by some focus group participants that in the near future, the feedlots themselves may provide the incentive to add weight to feeder calves. Because of high corn prices, an “improved” calf in the

near 800 pound range may be preferred to the more typical 600 pound calf. Feedlots may be willing to pay a premium price for a slightly heavier calf in an effort to reduce their feed costs.

Some producers include backgrounding as part of a more extensive program to add value to their calves. For example, several focus group participants mentioned that they were marketing their heifer calves in the replacement heifer market. This typically means wintering the heifers on a high roughage ration and marketing them in the spring; alternately they could be pastured and bred during the summer and be sold as bred heifers in the fall. Focus group participants felt that with both local and national inventories down and relatively strong cattle prices, the replacement heifer market should remain strong for some time. Producers who have developed herds with superior genetics should have excellent opportunities in the replacement market over the next few years.

An alternative to backgrounding calves on the ranch is to retain ownership while the animals are backgrounded or finished at another location. About 15 percent of ranchers surveyed reported retaining ownership of some animals through backgrounding or finishing. Ranchers who chose not to retain ownership most frequently indicated that they preferred to take the profit available from marketing the calves. Price differential was also cited as a key consideration in the decision to background. Some years the differential between feeder calves and heavy steers is such that backgrounding is not profitable. They suggested that the risk of feeding may be too high, especially when the high cost of feed per day per animal is considered. Further multiple feeding strategies that even the experts don't always agree on may also contribute to the decision to not background. One focus group participant suggested that some producers may not have the experience or expertise to feed calves. Producers that indicated they kept feeder calves until finished and marketed for slaughter commented on the absolute critical importance of a good feed base, knowing what feed costs are, and knowing the average cost of gain. Another focus group participant said he would rather use available feed to expand his cow herd rather than background calves.

An incentive for some producers to retain ownership of their cattle is the opportunity it may provide for the rancher to obtain data on the animals' feedlot performance and/or carcass quality. Among the ranchers surveyed, 21 percent obtained information on feedlot performance and/or carcass quality for some or all of their cattle. Of those who obtained this information, 84 percent reported that they used it in making management decisions (Hodur et al. 2007). In general, retaining ownership with feedlot and carcass information returned to the rancher represents a means to improve information transmission from the packer and feeder to the cow-calf operators whose decisions on breeding animal selection ultimately determine the genetic potential of the animals moving through the supply chain. Several focus group participants cited expanded use of AI (artificial insemination) and increased attention to genetics in order to improve uniformity and consistency. Progressive producers are paying attention to genetics, carcass traits, and other characteristics to raise animals that have the best performance. Animals that perform and grade well earn a premium. Even producers that do not retain ownership in large commercial lots indicated retaining small lots of 5 to 40 head in test programs to obtain carcass data. As previously noted, 15 percent of ranchers surveyed would like to retain ownership of more animals.

Response to consumer demands for an “all natural” product was cited as a potential opportunity. Some focus group participants indicated they were participating in “natural beef” programs that require the producer to adhere to specific management practices (e.g., animals must be raised without antibiotics or implants). Animals must have individual identification, so that an animal that required antibiotics for a health problem could be removed from the natural program. Some focus group participants reported that the price premiums offered for natural beef made the program worthwhile for them, although they were wary of the potential for liability if the “all natural” protocol was violated after the animals left their premises.

A niche market opportunity cited by one focus group participant was the use of heifers as surrogates for embryo transplants. While very lucrative and low risk, the focus group participants indicated in their opinion, the practice is very technical, very specialized and will remain a niche enterprise. Breeding and feeding dairy cattle, branded products, and country of origin labeling were also cited as potential niche opportunities.

Other opportunities fit more into the input side of production as several focus group participants talked about the importance of managing input costs. For example, one producer was calving later and matching the calving cycle with the natural cycle of feed production to lower direct input costs. The lower input cost could mean producers don’t need to market a large calf, a 500 pound calf could be just as profitable as a larger calf. Another participant was considering calving earlier and weaning a slightly larger calf. Another was experimenting with a smaller cow, 1,100 to 1,200 pounds as some heifers in his herd were in the 1,700 pound range and required too much feed. They said they had purchased some smaller moderately priced heifers that have been performing and wintering well. Other cost cutting measures were cited such as grazing rather than haying marginal hayland and buying addition hay as needed. Not haying the land reduces equipment and overhead costs. A similar strategy of crop sharing irrigated alfalfa eliminates the need to purchase, operate, and maintain expensive equipment.

### **Impediments or Constraints**

The drought conditions experienced over the past few years demonstrate that the region’s ruminant livestock industry is ultimately limited by its forage supply. In adapting to drought conditions, many ranchers had to make difficult choices about the best use of their resources. For example, would they be better off buying additional feed and continuing to background, or to use their feed to maintain the cow herd and sell the calves at weaning. To conserve feed, some ranchers in the region resorted to early weaning. Bastain et al. (2007) report that in Wyoming 36 percent of ranches practiced early weaning in 2004. Producers will need to evaluate options in light of changing forage conditions.

Producers will also need to analyze enterprise alternatives in light of changing market conditions. Markets for cattle, grains, and farm/ranch land have all been dynamic, raising a variety of opportunities and concerns. Major increases in grain prices over the past year raise immediate concerns for ranchers and feeders. Most analysts believe that corn prices will remain at higher than historical levels for a number of years, buoyed by the growing demand for corn by

the rapidly expanding ethanol industry. Some industry observers believe that high corn prices will lead to livestock production regimes that require less corn, perhaps through backgrounding with high roughage rations and/or summer grazing of yearling cattle. Others, however, question the source of the additional forage to support such a production system, as they feel that the region's forage supply is already fully utilized.

Land values were cited as a source of concern by each of the focus groups. Participants cited anecdotal reports of tracts of farm or ranch land throughout the region being sold at prices much greater than appear justified based on agricultural values. Outside interests seeking land for recreational use or as an investment were often blamed for the rapid increase in land values. Some focus group participants expressed opinions that escalating land values will make it difficult for young people to enter ranching/farming, while others saw an increased need to advise producers about options for intergenerational transfer of assets. In this regard, it may be worthwhile to note that 63 percent of the ranchers responding to the survey operate their ranch with a family member and 53 percent indicated that they plan to transfer the ranch to a child or other family member. Because of the average age of ranchers in the study area and historical impediments for younger operators to enter the industry, one participant suggested there may be a significant industry transition in the near future.

Labor was cited by focus group participants as an increasingly serious problem. The region's booming energy sector has led to a very tight labor market. Producers find it very difficult to compete with high paying jobs in the energy sector. Some participants cited that even the energy sector has struggled to meet all of its labor requirements. Also, a high percentage of wives are now employed off the farm or ranch, and one focus group cited an example where both spouses work off the farm and still run their ranch operation. With one or even both spouses working off the farm or ranch, operators are increasingly considering labor issues when making enterprise choices such as whether or not to background, consideration of alternate calving dates, or when to market.

Feedlot capacity was another constraint for some producers. Of the ranchers who do not background calves, almost 56 percent that responded to the written questionnaire identified lack of feedlot capacity as a constraint (Hodur et al. 2007). However, several industry observers noted that feedlot capacity had increased recently in some parts of the region, but that much of that capacity was idle because economic conditions were not conducive to backgrounding. Across the region, 60 percent of ranchers indicated they would be willing to background calves if it would increase their net revenue, and 23 percent would be interested in building or expanding feedlot capacity if cost share funds were available. On the other hand, feedlot capacity was seldom mentioned as a constraint by the focus groups.

Financing apparently was an issue for some producers. While only 16 percent of ranchers felt that financing issues would keep them from backgrounding, a number of focus group participants and agricultural lenders felt that financing issues might inhibit some producers from opting for production systems that cause income to be deferred by backgrounding or retaining ownership. Deferring income was cited as an especially important consideration for

producers that are leveraged or trying to overcome poor returns from previous years. Participants articulated that it can be difficult to break an established financing cycle.

### **Options for Overcoming Constraints**

The livestock industry in the Northern Great Plains has had to adapt to changes in markets and weather in order to remain viable. As price takers, livestock producers must respond to changing conditions to remain competitive. The beef industry also faces pressures to meet consumer demands for product consistency and uniformity. Meeting those demands likely will require improved transmission of information from packers to feeders to ranchers, so that breeding and production programs can be geared to producing the products desired by consumers. Several focus group members reported entering some of their animals in feeding tests in order to obtain data on feedlot performance and carcass quality.

Because the region's livestock industry is ultimately constrained by its forage and feed supply, producers will need to continue to examine feed and forage options. More intensive grazing management systems likely will be of continuing interest as will the use of relatively inexpensive by-product feeds (e.g., distillers dried grains from ethanol plants). Changing grain markets may also affect feed availability and cost. For example, poor grain crops that might be cut for hay during a period of low grain prices may now be harvested for grain. Also, at what point does marginal cropland that has been converted to hayland return to cash crop production? One focus group participant questioned whether high feed costs will pull up prices for alternate forage crops.

Many of the choices facing producers hinge on economics. Many focus group participants noted that current conditions require a greater level of sophistication in terms of controlling input costs, marketing, risk management, commodity trends and feed rations. Several focus group participants cited the need for a much more aggressive and intensive level of planning, management, and monitoring for all aspects of farm and ranch management. More than half of the ranchers surveyed expressed interest in learning more about marketing options and risk management strategies. The economics of alternate forage production and economics of alternate weaning dates were also topics of interest for more than half of the ranchers surveyed.

Each producer faces the need to develop the beef production and marketing program that will maximize the return to their resources, and those resources (e.g., land base, labor supply) vary greatly among ranches. For some, a value-added production system that involves backgrounding feeder cattle may be the best option, while for others, a program that maximizes feeder calf production with calves sold at weaning may continue to be the best alternative. For those who wish to consider backgrounding or retained ownership, programs like the Southwest Feeders Program in North Dakota or the SDSU Calf Value Discovery Program offer stockmen the opportunity to gain insight into potential returns from these activities without the commitment associated with building a feedlot or custom feeding an entire pen of cattle. These programs also provide ranchers with information on feedlot performance and/or carcass quality that may prove useful in management decisions.

It is clear that a one size fits all approach is not appropriate. Options for expanding or adding value to commercial beef cattle operations in the four-state area will likely vary not only between regions in the four-state area, but also from ranch to ranch. While this report identifies some of the constraints faced by livestock producers, it also outlines potential opportunities, neither of which represents an exhaustive list. And as focus group participants pointed out, the key to continued viability and a successful operation is the ability to adapt to ever changing circumstances and not become stuck repeating the same practices year after year regardless of market demand and market and production conditions. Programs like the Four-state Ruminant Consortium and Land Grant Universities' Extension and Experiment Stations will remain important resources for producers as they explore alternate practices and raise their level of expertise to meet industry demands.

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